National Cancer Institute

DIVISION OF CANCER EPIDEMIOLOGY AND GENETICS

Linkage

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NIH/Oxford/Cambridge Fellowship Program

Since 2001, the NIH/Oxford/Cambridge (NIH/OXCAM) Scholars Program has offered graduate students the opportunity to collaborate on research with mentors at NIH and either Oxford or Cambridge University and earn a doctoral degree along the way. An NIH/OXCAM scholar earns a Ph.D. or D.Phil. in four or five years—about half the national average. Moreover, scholars do this while immersed in student life in the United Kingdom, collaborating on projects in Bethesda, and potentially conducting fieldwork anywhere in the world. Four current scholars are doing research with DCEG investigators.

"The scholars program is designed to give a unique opportunity to top-flight students," said Dr. Michael J. Lenardo, Scientific Director of the NIH/OXCAM program and a senior investigator in the National Institute of Allergy and Infectious Diseases.

Of special interest to DCEG is the M.D./Ph.D. option, in which a scholar typically completes two years of medical school and then earns a Ph.D. while splitting time between NIH and either Oxford or Cambridge. The scholar can then return to his or her home university to complete medical school. "We try to make the M.D./Ph.D. program flexible," Dr. Lenardo said. "Overall, we look for people who've made a real commitment to a research career."

The British university and/or NIH fund the Ph.D. component of the program. NIH funding comes from the intramural division of the institute at which the student conducts research, whereas funding for the M.D. component comes from the extramural division of the same institute. "This is one example of a very successful partnership between intramural and extramural parts of NIH," Dr. Lenardo said.

Clare College at Cambridge University

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES

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DCEG *Linkage*

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Joseph F. Fraumeni, Jr., Director
Shelia Hoar Zahm, Deputy Director

Managing Editor
Samantha Nhan (nhans@mail.nih.gov)

Scientific Highlights Editor
Patricia Madigan (madiganp@mail.nih.gov)

DCEG Linkage **Reporters**
Epidemiology and Biostatistics Program
Sarah Loftness (loftnesss@mail.nih.gov)
Biostatistics Branch
B.J. Stone (stoneb@mail.nih.gov)
Clinical Genetics Branch
June Peters (petersju@mail.nih.gov)
Genetic Epidemiology Branch
Barbara Rogers (rogersb2@mail.nih.gov)
Hormonal and Reproductive Epidemiology Branch
Patricia Madigan (madiganp@mail.nih.gov)
Nutritional Epidemiology Branch
Amanda Cross (crossa@mail.nih.gov)
Occupational and Environmental Epidemiology Branch
Phyllis Nimeroff (pnimerof@mail.nih.gov)
Radiation Epidemiology Branch
Jenna Nober (noberj@mail.nih.gov)
Viral Epidemiology Branch
Gwen Murphy (murphygw@mail.nih.gov)
DCEG Committee of Scientists
Barry Graubard (graubarb@mail.nih.gov)
DCEG Representative to the NIH Women Scientists Advisory Group
Montserrat García-Closas (garciacm@mail.nih.gov)
Ann Hsing (hsinga@mail.nih.gov)
DCEG Representative to the NIH Tenure-track Investigators Committee
Sam Mbulaiteye (mbulaits@mail.nih.gov)
DCEG Representative to the NIH Staff Scientists/ Staff Clinicians Organization
Dalsu Baris (barisd@mail.nih.gov)
DCEG Representatives to the NIH Fellows Committee
Jiyoung Ahn (ahnj@mail.nih.gov)
Steven Moore (moorest@mail.nih.gov)

Palladian Partners, Inc.
Emily Krebbs (ekrebbs@palladianpartners.com)
Robin Moore (rmoore@palladianpartners.com)

More than 100 students have participated in the program so far. The four current DCEG students are in the M.D./Ph.D. program and hope to eventually combine research with clinical practice.

Elizabeth Azzato

As a young child, **Elizabeth Azzato, M.P.H.,** wanted to be an actress, an astronaut, or President of the United States. Being a physician was not on her radar: "They went to school too long!" However, Ms. Azzato changed her mind and then some—she earned her M.P.H. in 2005 and is now working toward an M.D. from Duke University and a Ph.D. from Cambridge.

Ms. Azzato is working with **Neil E. Caporaso, M.D.,** a senior investigator in the Genetic Epidemiology Branch, and Dr. Paul Pharoah at Cambridge to determine germline variants associated with survival after a diagnosis of breast cancer. Ms. Azzato will also explore relationships between germline variants and somatic gene expression.

"It takes a lot of organizational skill to deal with the logistics of two research projects as well as trying to keep your life together on two different sides of the pond," Ms. Azzato said. "I think this program is great for people who enjoy the challenges of working with people from different cultures."

Outside the lab, Ms. Azzato is a competitive basketball player; she played as an undergraduate and intramurally in medical school, was the Cambridge Women's Blues team Most Valuable Player last year, and is now president of the team.

Kelly Bolton

Kelly Bolton once wanted to be a professional musician; she studied the piano and pipe organ for years. However, her college years at Cornell

Kelly Bolton and Julia Ciampa

University—where she had an interdisciplinary major called "Biology and Society"—turned her toward science.

Ms. Bolton completed her first two years of medical school at the University of California, Los Angeles, before becoming part of the Howard Hughes Medical Institute-NIH Research Scholar program. Under the program, Ms. Bolton spent a year at the National Human Genome Research Institute, where she identified genes associated with attention deficit hyperactivity disorder.

This is Ms. Bolton's first year in the NIH/OXCAM program, and she is studying germline genetic polymorphisms associated with survival after diagnosis of ovarian cancer with **Montserrat García-Closas, M.D., Dr.P.H.,** a senior investigator in the Hormonal and Reproductive Epidemiology Branch, and Dr. Pharoah at Cambridge. Ms. Bolton will also investigate methodological questions about the immunohistochemical analysis of breast cancer tissue microarrays.

She notes that the U.K. universities have an organization for every interest. She enjoys wine tasting and is a member of the Blind Wine Tasting Society at Cambridge. "It's a competitive team; we have an annual match against Oxford," she said.

Julia Ciampa

Julia Ciampa, M.Sc., is in her first year of the NIH/OXCAM program. The Massachusetts native is working toward a doctorate from Oxford (where she recently earned a master's degree in applied statistics) and a medical degree from the University of Massachusetts.

Ms. Ciampa collaborated with a member of the Biostatistics Center at Massachusetts General Hospital while working in the Neuroendocrine Unit during her time at Harvard University. "At our first meeting, something clicked, and I knew I'd found what I wanted to do with the rest of my life," she said.

Ms. Ciampa has begun two projects with mentors **Nilanjan Chatterjee, Ph.D.,** Chief of the Biostatistics Branch, and Dr. Chris Holmes of Oxford. The first project uses prostate cancer data from the CGEMS (Cancer Genetic Markers of Susceptibility) project to explore gene-gene interactions of a known susceptibility region with the remainder of the genome. The second focuses on the performance of multilocus tests for the detection of disease association with candidate genes and biochemical pathways.

After receiving her degrees, Ms. Ciampa hopes to combine clinical practice and research. "At least early in my career, I plan to follow the traditional M.D./Ph.D. path of four days each week for research in a biostatistics department and one day for clinical work in a neurology unit." She is also a competitive runner who finished the 2007 London Marathon on the Oxford Blues team fast enough to qualify for the Boston Marathon.

Tricia Peters

Tricia Peters, M.Phil., is in her third year of the NIH/OXCAM program at Cambridge, where she also completed her master's degree in epidemiology. Ms. Peters is coordinating a project for a European Union–commissioned study focusing on the genetics of diabetes and obesity. The project involves researchers from several European countries and includes 350,000 study participants. She is comparing data from a heart-rate monitor/movement sensor to self-reported questionnaire data in 200 volunteers from each of the 10 countries. Her research has given her the opportunity to visit study centers in Berlin and Athens.

Ms. Peters's DCEG mentor is **Michael F. Leitzmann, M.D., Dr.P.H.,** a tenure-track investigator in the Nutritional Epidemiology Branch; with him, she is studying the relation of physical activity to cancer risk. Recently, she published a paper in the *American Journal of Epidemiology* (2008; Epub ahead of print) on the relationship between mammographic breast density and physical activity.

"I'd like to focus on preventive medicine," Ms. Peters said. "My research would be conducted in a clinical setting, where I can also do one-on-one counseling."

Ms. Peters is also the captain of her college's football (soccer) team and participates on Cambridge's running and triathlon teams. The Binghamton, New York, native attended Colgate University and then spent a summer conducting research at Stanford University. She will attend medical school at Stony Brook University after completing the Ph.D. program.

To learn more about the NIH/OXCAM program, visit http://oxcam.gpp.nih.gov. ■

—Nancy Volkers

MARK SCHIFFMAN RECEIVES MEDAL OF HONOR

Mark Schiffman, M.D., M.P.H., a senior investigator in the Hormonal and Reproductive Epidemiology Branch, received the American Cancer Society (ACS) Medal of Honor for Clinical Research at the society's 2007 annual meeting in Atlanta. As ACS's highest commendations, medals are awarded annually to individuals who have made outstanding contributions to the fight against cancer.

Mark Schiffman presents his work on human papillomavirus. *(Photograph Credit: Richard Lubrant)*

Dr. Schiffman received his medical degree from the University of Pennsylvania and an M.P.H. in epidemiology from Johns Hopkins University. He has led the HPV Research Unit and its predecessor, the Interdisciplinary Studies Section, since 1996.

The society praised Dr. Schiffman for "his tremendous dedication to molecular epidemiology relating to the human papillomavirus; for his ambitious and far-reaching studies to better understand how cervical cancer arises in populations and for his insights about preventive strategies; and for his willingness to mentor scientific investigators and researchers to further the understanding of cancer science."

In addition, Dr. Douglas R. Lowy of NCI's Center for Cancer Research was awarded the ACS Medal of Honor for Basic Research for his seminal work leading to the development of the highly effective human papillomavirus vaccine.

—Alyssa Minutillo, M.P.H.

SHARON SAVAGE: GENE DISCOVERY AND DIAGNOSTIC TOOLS


Sharon Savage

Sharon A. Savage, M.D., a tenure-track investigator in the Clinical Genetics Branch (CGB), has hit the ground running since joining DCEG, with several high-impact observations regarding the genetics and molecular biology of the telomere maintenance pathway. She recently led a team in discovering a novel germline susceptibility gene for the rare inherited cancer susceptibility syndrome known as dyskeratosis congenita (DC). She also identified single nucleotide polymorphisms (SNPs) in various telomere genes as candidate cancer risk modifiers. Along with **Blanche P. Alter, M.D., M.P.H.** (CGB), and other collaborators, Dr. Savage helped develop a useful new diagnostic tool for DC based on telomere length. Currently, she is working to identify novel genetic determinants of telomere length.

Dr. Savage came to CGB after training in pediatric hematology-oncology through the NCI Pediatric Oncology Branch/Johns Hopkins University Fellowship Program and extensive molecular genetics and bioinformatics training with **Stephen J. Chanock, M.D.,** Director of the NCI Core Genotyping Facility and Chief of the Laboratory of Translational Genomics. With skills and training in pediatrics, hematology-oncology, epidemiology, genomics, molecular and population genetics, and bioinformatics, Dr. Savage is well positioned to advance the understanding of genetic risk factors for cancer, particularly pediatric cancers and cancer predisposition syndromes. She combines clinical and epidemiologic observations with the latest genomics tools to identify important molecular pathways in the development of osteosarcoma and other cancers.

When Dr. Savage joined CGB, Dr. Alter's protocol on inherited bone marrow failure syndromes was studying DC, which is characterized by abnormalities in telomere biology, and researchers knew that germline mutations in several genes were implicated in telomere biology (*DKC1, TERC,* and *TERT*), accounting for about 40% of known cases. Within a year, Dr. Savage completed a family-based genetic linkage study that identified a mutated telomere pathway gene, *TINF2,* in a subset of DC patients. The finding was confirmed in five separate families with the syndrome. No mutations were found in almost 300 healthy controls, in any of the probands' relatives with normal telomere lengths (more than the first percentile), or in DC patients with mutations in other known susceptibility genes. *TINF2* is the first disease-causing mutation identified in the telomere protein protection complex, known as shelterin, a finding that may provide new insights into DC pathogenesis. Dr. Savage's findings were published in the *American Journal of Human Genetics.*

In a 2007 publication, Dr. Savage, with Dr. Alter and colleagues from the University of British Columbia, University of Bern, Switzerland, and University of Pittsburgh, confirmed that very short

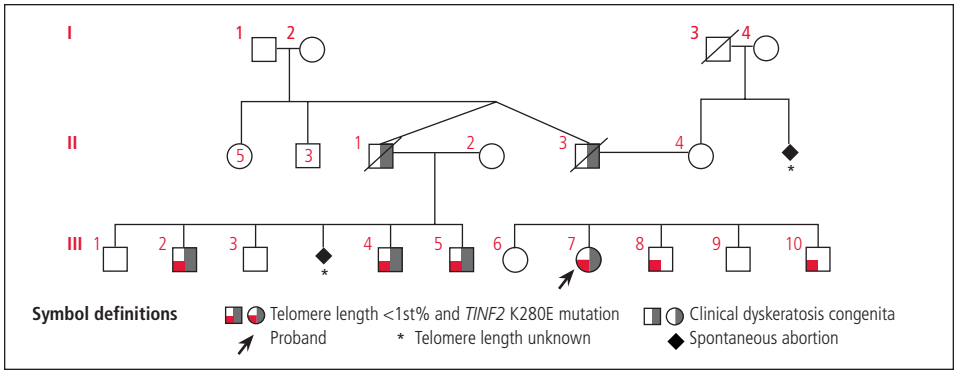


Figure 1. Pedigree of Family A used in the linkage study. The monozygotic twins in generation II had five sisters and three brothers. Telomere length was determined on individuals except where indicated by an asterisk.

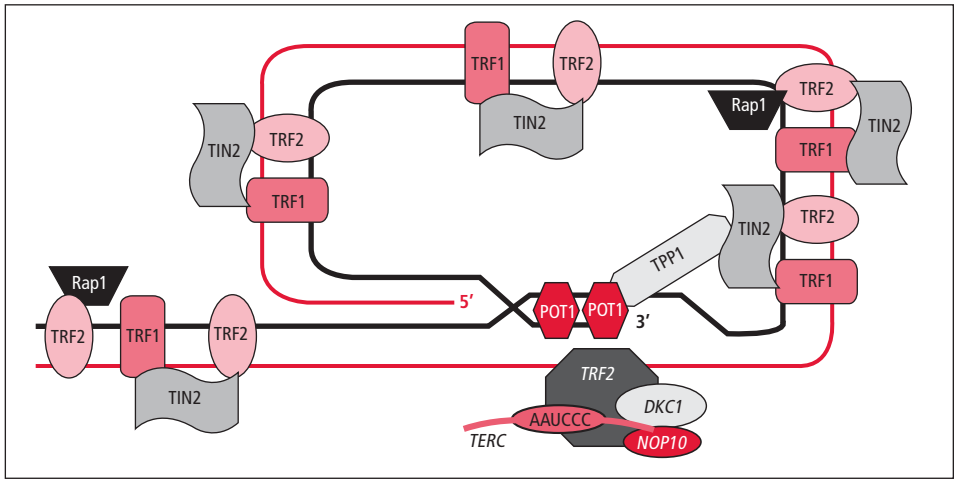


Figure 2. The shelterin telomere protection complex. *TINF2* is mutated in dyskeratosis congenita.

telomere length—measured by flow fluorescence *in situ* hybridization (flow FISH)—is a useful new diagnostic tool for identifying patients with DC. This diagnostic test can discover an abnormality in affected individuals and even in some family members before signs and symptoms of DC appear. The team proposed adding leukocyte subset flow FISH telomere length measurement to the evaluation of patients and families suspected of having the disorder because the ability to make an early and accurate diagnosis has major implications for cancer screening, management, and bone marrow transplantation in affected individuals.

Dr. Savage also actively collaborates with intramural and extramural investigators on other projects. With funding from a competitive DCEG Intramural Research Award and in collaboration with **Richard B. Hayes, D.D.S., Ph.D.,** a senior investigator in the Occupational and Environmental Epidemiology Branch, **Nilanjan Chatterjee, Ph.D.,** Chief of the Biostatistics Branch, and investigators from Harvard University, Dr. Savage is studying germline telomere length as a risk factor for prostate cancer as well as genetic determinants of telomere length. She is also investigating how telomere length can vary in different tissues of the same person and methodological issues in determining telomere length.

Dr. Savage's second major research focus is on the role of germline variation in the risk of osteosarcoma (OS), the most common primary malignant bone tumor. OS may occur as a manifestation of Li-Fraumeni syndrome; retinoblastoma; Diamond-Blackfan anemia; and Werner's, Rothmund-Thomson, and Bloom's syndromes. Because OS occurs more commonly during the adolescent growth spurt, Dr. Savage led a prospective, hospital-based, case-control study focusing on 52 SNPs in 11 growth-related genes and identified *IGF2R* variants that appear to modify OS risk. She is developing a follow-up analysis of biologically plausible candidate genes in a series of 500 OS cases in collaboration with the Children's Oncology Group.

In addition to teaching clinical fellows and seeing patients as an attending physician in the Pediatric Oncology Branch (POB) of NCI's Center for Cancer Research, she mentors **Lisa Mirabello, Ph.D.,** a research fellow in CGB. Dr. Savage is serving as a bridge between POB and CGB and has a long-range goal of establishing a collaborative research program on the genetics of childhood cancer.

Dr. Savage serves on DCEG's Technical Evaluation of Protocols Committee, is a peer reviewer for several major journals, is the NCI liaison to the American Academy of Pediatrics Committee on Environmental Health, and is a member of the recently formed outcomes and biospecimen working groups of the International Childhood Cancer Cohort Consortium. ■

—June A. Peters, M.S., C.G.C.

AMERICAN COLLEGE OF EPIDEMIOLOGY MEETING: 25 YEARS

In September, DCEG scientists joined epidemiologists from around the country at the 25th Annual Meeting of the American College of Epidemiology (ACE). The meeting, held in Fort Lauderdale, Florida, focused on "Positioning epidemiology for a changing environment: The next 25 years." Scientific sessions addressed the national and global burden of disease, ethics and pandemiology, epidemiologic responses to disasters, and planning for the future. The meeting also included poster sessions, workshops, roundtables, exhibits, and special award presentations.

Robert Hoover, Parveen Bhatti, Regan Howard, Michael Cook, REB Chief Martha Linet, and University of Michigan professor David Schottenfeld. *(Photograph Credit: Sandra Rothschild)*

Many Division members participated in the meeting. **Michael B. Cook, Ph.D.,** a postdoctoral fellow in the Hormonal and Reproductive Epidemiology Branch, received the Best Poster Award for his work on "Risk of testicular germ cell tumors in relation to childhood physical activity." **Parveen Bhatti, Ph.D.,** a postdoctoral fellow in the Radiation Epidemiology Branch (REB), presented a poster on "Routine diagnostic x-ray examinations and increased frequency of chromosome translocations among United States radiologic technologists," and **Regan A. Howard** (REB) presented "Risk of leukemia among survivors of testicular cancer: A population-based study of 40,576 patients."

Stephen J. Chanock, M.D., Director of the Core Genotyping Facility and Chief of the Laboratory of Translational Genomics, gave a keynote presentation on "The impact of biotechnology on epidemiology." **Michael C.R. Alavanja, Dr.P.H.,** a senior investigator in the Occupational and Environmental Epidemiology Branch, moderated the presidential address and the awards banquet. **Robert N. Hoover, M.D., Sc.D.,** Director of the Epidemiology and Biostatistics Program, spoke on "The role of 'big science' in the future of epidemiology" and was honored as a past recipient of ACE's Lilienfeld Award, as part of the special 25th anniversary festivities. **Sandra Rothschild,** Office of the Director, manned the DCEG exhibit and recruitment booth.

SYMPOSIUM IS TRIBUTE TO AARON BLAIR

In November, DCEG held a symposium titled Current Topics in Occupational and Environmental Cancer to honor **Aaron E. Blair, Ph.D., M.P.H.,** former Chief of the Occupational and Environmental Epidemiology Branch (OEEB). Attended by colleagues from around the world, family, and friends, the program highlighted Dr. Blair's seminal contributions and sustained leadership in the areas of occupational and environmental cancer epidemiology and agricultural health research, as well as his studies of specific chemicals, such as formaldehyde and acrylonitrile, that are widely used in industry and in consumer products. Dr. Blair recognized the importance of accurate exposure measurements and worked with industrial hygienists to improve the methodology, which was a great benefit and innovation to the field.

Debra Silverman, Stephen Blair, Dale Sandler, David Savitz, June Blair, Andrew Olshan, Aaron Blair, Robert Hoover, Shelia Zahm, Joseph Fraumeni, and Carol Rice.

Following a welcome by OEEB Chief **Debra T. Silverman, Sc.D.,** Deputy Division Director **Shelia Hoar Zahm, Sc.D.,** made opening remarks recognizing Dr. Blair's scientific accomplishments and leadership abilities. She noted a recent review in the *Scandinavian Journal of Work, Environment, & Health* of "Citation classics in occupational medicine," which ranked one of Dr. Blair's papers 15th in citations out of more than 15,000 papers published by the top five occupational medicine journals since 1949. Dr. Zahm described Dr. Blair's generous mentoring, management abilities, and humor, themes that were repeated in accolades of respect and admiration sent in by peers at institutions around the world.

The scientific program included a presentation by Dr. Blair's brother, Dr. Stephen Blair of the University of South Carolina, covering physical activity, fitness, obesity, and health, as well as humorous personal reflections on their family life. Dr. David Savitz of Mount Sinai School of Medicine described Dr. Blair's research leadership in occupational cancer epidemiology and methods development. Dr. Dale Sandler, Chief of the Epidemiology Branch at the National Institute of Environmental Health Sciences, reported on Dr. Blair's 30-year record of accomplishment in research on agricultural exposures and cancer, including several landmark studies of farmers and cancer risk and his key role in providing critical guidance for the long-term Agricultural Health Study. Dr. Carol Rice from the University of Cincinnati praised Dr. Blair's visionary role in incorporating exposure assessment into epidemiologic studies and fostering industrial hygiene methods development. Dr. Andrew Olshan of the University of North Carolina at Chapel Hill presented a summary of epidemiologic research on formaldehyde, which has been classified by the International Agency for Research on Cancer as carcinogenic to humans, based to a large extent on Dr. Blair's research.

Dr. Dale Sandler reported on Dr. Blair's 30-year record of accomplishment in research on agricultural exposures and cancer, including several landmark studies of farmers and cancer risk, and his key role in providing critical guidance for the long-term Agricultural Health Study.

Joseph F. Fraumeni, Jr., M.D., Division Director, closed the symposium by presenting Dr. Blair with a DCEG Special Recognition Award and expressing his thanks for Dr. Blair's 31 years of dedicated leadership and service to NCI. After the symposium, a reception was held at the NIH Stone House, where **Robert N. Hoover, M.D., Sc.D.,** Director of the Epidemiology and Biostatistics Program, commended Dr. Blair for his scientific contributions, integrity, and selflessness. Upon his retirement from the federal government, Dr. Blair was appointed an NCI Scientist Emeritus, and he continues to contribute to the research and mentoring programs in DCEG. ■

—Alyssa Minutillo, M.P.H.

CHATTERJEE AND SILVERMAN APPOINTED NEW BRANCH CHIEFS


Nilanjan Chatterjee

Nilanjan Chatterjee, Ph.D., has been named Chief of the Biostatistics Branch (BB). Dr. Chatterjee joined DCEG in 1999 after receiving his doctorate in statistics from the University of Washington. He has focused his research on developing statistical methods for molecular epidemiologic studies. Dr. Chatterjee has created techniques for assessing genetic association and gene-environment interactions, for modeling the etiologic heterogeneity of cancer, and for two-phase stratified sampling. His Branch-wide priorities will include: 1) developing new designs and methods for epidemiological studies, 2) providing collaboration and consultation for epidemiological studies within DCEG, 3) developing tools and resources to assess population-level disease risks, and 4) training and mentoring new scientists in biostatistics. Dr. Chatterjee noted that scientists in BB make fundamental contributions to quantitative methodology for epidemiologic studies, and he is "excited to be leading the Branch at this particular time because of the unparalleled opportunities to study the etiology of cancer using modern genomic and molecular technologies."


Debra Silverman

Debra T. Silverman, Sc.D., has been selected as Chief of the Occupational and Environmental Epidemiology Branch (OEEB). Dr. Silverman joined NCI as a biostatistician after receiving a master's degree in biostatistics from Johns Hopkins University in 1972. In 1981, she received a doctorate in epidemiology from the Harvard School of Public Health. She is an internationally recognized expert in the epidemiology of cancers of the bladder and pancreas and in the carcinogenicity of diesel exhaust. Dr. Silverman is a member of the American Epidemiological Society; a fellow in the American College of Epidemiology; and a recipient of numerous awards, including the Public Health Service Special Recognition Award, the American Occupational Medical Association's Merit in Authorship Award, and the DCEG Mentoring Award. She envisions that OEEB will focus on interdisciplinary research melding state-of-the-art exposure assessment, genetics, and epidemiology to study main effects and gene-environment interactions in cancer. "I am honored to be chosen to lead OEEB now, when it is positioned to make major contributions to our understanding of the occupational and environmental causes of cancer," she said. ■

—Amber K. Boehm, Ph.D.

MEETING DISCUSSES GASTROINTESTINAL CANCERS


Second GI cancers meeting participants *(Photograph Credit: Shelia Zahm)*

The first meeting of the International Study of Second Gastrointestinal (GI) Cancers was held at NCI in December. The primary purpose of this collaborative, multicenter study is to quantify dose-response relationships in cancers of the stomach, esophagus, and pancreas following radiation treatment for primary cancers of the cervix, breast, and testis as well as Hodgkin lymphoma. In addition, the study will generate new data on site-specific age and temporal patterns of radiation-related second cancers and the possible influence of chemotherapy and other factors. The meeting was organized by Radiation Epidemiology Branch (REB) members **Martha S. Linet, M.D., M.P.H.,** Chief of REB, **Ruth A. Kleinerman, M.P.H., Lindsay M. Morton, Ph.D., Preetha Rajaraman, Ph.D.,** and **Abigail Ukwuani, M.P.A.** Dr. Lois Travis, formerly of REB, who initiated the study, also participated in the meeting.

The one-and-a-half-day meeting provided collaborators from the Danish Cancer Society, Karolinska Institute, Norwegian Cancer Registry, Finnish Cancer Registry, Netherlands Cancer Institute, and Iowa Cancer Registry the opportunity to report progress from the case-control studies that are under way at each cancer site. Radiation dosimetrists from the University of Texas M.D. Anderson Cancer Center discussed challenges in estimating organ doses for the study.

The study investigators also identified analyses to be conducted, discussed strategies for collaborative work, and encouraged junior investigators to participate in the project. Three NCI experts on molecular and genetic studies of gastrointestinal tumors provided insights on potential biomarkers that could be incorporated into the study. The collaborators will form a coordinating committee with a representative from each center to guide analyses and publications from this unique project.

—Ruth A. Kleinerman, M.P.H.

2007 INTRAMURAL RESEARCH AWARD WINNERS

The DCEG Intramural Research Awards (IRAs) are competitive funding opportunities designed to encourage innovative, interdisciplinary research by young scientists, including fellows and tenure-track investigators. The IRA program includes spring and fall cycles with awards up to $50,000 each.

2007 IRA Winners: Jill Koshiol, Farin Kamangar, Neal Freedman, Nicolas Wentzensen, and Jiyoung Ahn. (Not shown: Mia Gaudet, Mahboobeh Safaeian, and Jorge Toro.)

Competition was vigorous this past year. There were four awards in the spring competition: **Mia M. Gaudet, Ph.D.,** a research fellow in the Hormonal and Reproductive Epidemiology Branch (HREB), for her proposal on "Circulating adipokines, serum indices of other obesity-related pathways, and breast cancer risk among postmenopausal women in the PLCO trial"; **Farin Kamangar, M.D., Ph.D.,** a research fellow in the Nutritional Epidemiology Branch (NEB), for his project to "Search for *P53* mutation signatures of PAH exposure in esophageal tissues"; **Mahboobeh Safaeian, Ph.D.,** a research fellow in HREB, for "Why is HPV16 so carcinogenic? A molecular epidemiologic comparison of E7 viral oncogene function in infections of different HPV types leading to clearance, persistence, or neoplastic progression"; and **Jorge R. Toro, M.D.,** a tenure-track investigator in the Genetic Epidemiology Branch (GEB), for his proposal, "Investigations of ultraviolet exposure and human papillomavirus in the etiology of nonmelanoma skin cancer in the U.S. Radiologic Technologists cohort."

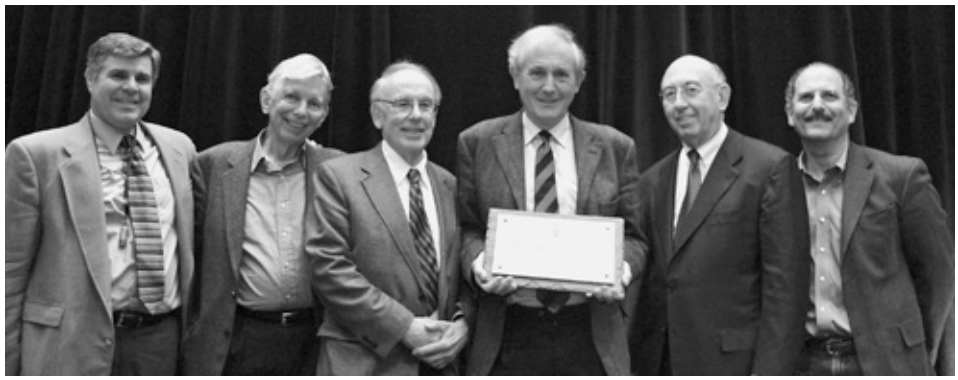
Five fellows received awards in the fall competition: **Jiyoung Ahn, Ph.D.,** a postdoctoral fellow in NEB, for her proposal on "Genetic variation in *KLK3* and *MSMB* genes and related serum proteins and prostate cancer in the PLCO Trial"; **Neal D. Freedman, Ph.D., M.P.H.,** a postdoctoral fellow in NEB, for his project on "Circulating estrogens and gastric cancer risk"; Dr. Kamangar for "Serum ghrelin and risk of upper gastrointestinal tract cancers in the ATBC Study"; **Jill Koshiol, Ph.D.,** a postdoctoral fellow in GEB, for her proposal on "Assessment of human papillomavirus among lung cancer cases from the EAGLE Study"; and **Nicolas Wentzensen, M.D., Ph.D.,** a postdoctoral fellow in HREB, for his project, "Micro-RNA (miRNA) profiling of cervical precancer and cancer in the SUCCEED Study."

The DCEG Intramural Research Awards are competitive funding opportunities designed to encourage innovative, interdisciplinary research by young scientists, including fellows and tenure-track investigators.

Proposals were reviewed by senior DCEG scientists and members of the NCI Board of Scientific Counselors or other extramural scientists with appropriate expertise. The proposals were judged on their potential for significant scientific and public health impact, innovation, interdisciplinary nature, ability to achieve the objectives within the proposed timeframe and resources, and relevance to the mission of the Division. ■

ANNUAL NCI INTRAMURAL SCIENTIFIC RETREAT

The 12th Annual NCI Intramural Scientific Retreat was held in January at the Bethesda North Marriott Hotel and Conference Center. More than 600 participants attended, including several members of the NCI Executive Committee, the NCI Board of Scientific Counselors, and other advisory boards. The retreat included award lectures and poster sessions and provided a forum for sharing research and fostering collaborations between intramural investigators across NCI, core facilities, and research support services organizations.



Bruce Ponder (fourth) with Robert Wiltrout (CCR Director), Alfred Knudson, Joseph Fraumeni, John Niederhuber, and Lee Helman (CCR Scientific Director for Clinical Research).

Innovation Award Recipients: Sam Mbulaiteye, Jill Koshiol, Ying Gao, and Michael Cook. (Not shown: Mark Roth.) *(Photograph Credit: Ernie Branson)*

Dr. Nancy Davidson, professor at Johns Hopkins School of Medicine and president of the American Society of Clinical Oncology, received the seventh Rosalind E. Franklin Award for Women in Science, given annually to a woman scientist for excellence in cancer research. She presented a lecture on "Epigenetics and breast cancer." Dr. Davidson has served as a fellow in medical oncology at NCI.

Sir Bruce Ponder, professor at the Cancer Research UK Cambridge Research Institute, received the 12th annual Alfred G. Knudson Award in cancer genetics. He spoke on "Polygenic susceptibility to cancer and its practical implications."

The NCI Women Scientist Advisors held a luncheon meeting that included a panel discussion with several members of the NCI Boards of Scientific Advisors and Counselors. The DCEG Women Scientist Advisors, **Ann W. Hsing, Ph.D.,** and **Montserrat García-Closas, M.D., Dr.P.H.,** both senior investigators in the Hormonal and Reproductive Epidemiology Branch (HREB), hosted a question-and-answer session following the presentations.

As an important part of the retreat, NCI Director John E. Niederhuber, M.D., presented the 2008 NCI Director's Innovation Awards. Designed to support the development of highly innovative approaches and technologies aimed at significant cancer-related problems, the awards offer one-time research funding at two levels: Principal Investigator (PI) Awards for tenure-track investigators or those tenured within the past five years and Career Development Awards to postdoctoral fellows, staff scientists, staff clinicians, or senior scientists. Funds are to be used during the current fiscal year. **Sam M. Mbulaiteye, M.D.,** of the Viral Epidemiology Branch, was the DCEG recipient of a PI award, and **Michael B. Cook, Ph.D.** (HREB), **Ying Gao, M.D., Ph.D., M.P.H.,** of the Genetic Epidemiology Branch (GEB), **Jill Koshiol, Ph.D.** (GEB), and **Mark J. Roth, M.D.,** of the Nutritional Epidemiology Branch, received Career Development Awards.

As the final award lecture at the retreat, Dr. Dinah Singer, Director of the Division of Cancer Biology and senior investigator in the Experimental Immunology Branch of the Center for Cancer Research, won the fourth annual Alan S. Rabson Award for excellence in intramural research and presented "New perspectives on transcription initiation." ■

—Elyse T. Wiszneauckas and Marianne K. Henderson, M.S.

NCI COHORT CONSORTIUM HOLDS ANNUAL MEETING

In November, DCEG and the Division of Cancer Control and Population Sciences (DCCPS) hosted the annual meeting of the NCI Cohort Consortium in Bethesda. Consortium membership now numbers 33 cohorts from 12 countries, with 4 million study subjects, approximately 2 million of whom are linked to prediagnostic biological specimens. A total of 111 scientists working on cohort studies attended the meeting, which featured a keynote address by **Joseph F. Fraumeni, Jr., M.D.,** DCEG Director, titled "Consortial power and GWAS in 2007" and an update on NCI perspectives by Dr. Robert Coyle, DCCPS Director.

The current chair of the consortium secretariat, **Patricia Hartge, Sc.D.,** Deputy Director of the Epidemiology and Biostatistics Program (EBP), outlined the goals of the workshop. The consortium has launched multi-cohort studies of more than 10 forms of cancer using questionnaires, DNA, and serum samples. Outgoing secretariat member Dr. Kathy J. Helzlsouer of Mercy Medical Center received an NCI Award for Outstanding Service in Recognition of Leadership and Scientific Vision. Consortium coordinator Chinonye Harvey (DCCPS) also received an NCI Award in Recognition of Outstanding Service to the Cohort Consortium Secretariat.

Secretariat member Dr. Michael Thun of the American Cancer Society moderated a lively session on recent advances in prostate cancer generated by the Breast and Prostate Cancer Cohort Consortium (BPC3) and the Cancer Genetic Markers of Susceptibility (CGEMS) project. **Stephen J. Chanock, M.D.,** Director of the NCI Core Genotyping Facility and Chief of the Laboratory of Translational Genomics, shared highlights

Kathy Helzlsouer receives award from Joseph Fraumeni and Robert Croyle. *(Photograph Credit: Keith Richardson)*

of discovering the association of genetic variation in 8q24 with prostate cancer. Other panelists, including **Richard B. Hayes, D.D.S., Ph.D.,** a senior investigator in the Occupational and Environmental Epidemiology Branch, Dr. Fredrick Schumacher of the Harvard School of Public Health, and Dr. Christopher Haiman from the University of Southern California, discussed the extraordinary year in prostate cancer genetics research and proposed future directions.

Robert N. Hoover, M.D., Sc.D., Director of the EBP, led a panel discussion on the numerous major advances in breast cancer to emerge from BPC3 and CGEMS during 2007. The panel featured presentations by Dr. Peter Kraft and Dr. David Cox of the Harvard School of Public Health, Dr. Heather Feigelson from the American Cancer Society, and Dr. Brian Henderson from the University of Southern California.

During the past year, the cohort consortium has launched a series of studies of less common cancers, presented in a discussion session moderated by Dr. Helzlsouer. **Rachael Stolzenberg-Solomon, M.P.H., Ph.D.,** an investigator in the Nutritional Epidemiology Branch (NEB), gave an update on the genome-wide association study in pancreatic cancer (PanScan), Dr. Graham Colditz of Washington University in St. Louis discussed multiple myeloma, and Dr. Virginia Hartmuller (DCCPS) and Dr. Lisa Gallicchio of Mercy Medical Center in Baltimore presented an update on the multi-cohort study, which measures prediagnostic serum vitamin D samples in relation to seven less common cancers.

Secretariat member Dr. Julie Palmer from Boston University chaired a panel discussion on methodologic topics, which included presentations on: study design, presented by Dr. Clarice Weinberg from the National Institute of Environmental Health Sciences; methods for assessing dietary intake in epidemiologic studies, presented by **Arthur Schatzkin, M.D., Dr.P.H.,** Chief of NEB, and Dr. Amy Subar (DCCPS); whole-genome amplification of buccal cell DNA, presented by **Montserrat García-Closas, M.D., Dr.P.H.,** an investigator in the Hormonal and Reproductive Epidemiology Branch; and the use of Medicare/Medicaid databases for ascertaining non-cancer outcomes, presented by secretariat member Dr. James Cerhan from the Mayo Clinic.

Looking ahead, secretariat members Dr. Anne Zeleniuch-Jacquotte of New York University and Dr. Deborah Winn (DCCPS) led a discussion of major challenges faced by cohorts in the consortium studies. Participants in the meeting's final session, moderated by Dr. Cerhan, evaluated 10 proposals for promising consortium studies and developed a strategic plan. ■

—Geoffrey S. Tobias

NEWSLETTERS SUPPORT PARTICIPANTS IN FAMILY STUDIES

The mission of DCEG's Clinical Genetics Branch (CGB) includes research on familial cancer syndromes, defining the role of susceptibility genes in cancer etiology, and translating molecular genetic advances into evidence-based management strategies. Among its methods of communicating with study subjects are targeted newsletters. Recently, the Branch published the third issue of the newsletter for its hereditary breast and ovarian cancer project, titled *Family Research Matters: Hereditary Breast/Ovarian Cancer (HBOC) Studies Newsletter,* and the first edition of *Family Research Matters: Familial Testicular Cancer (FTC) Study Newsletter.*

The HBOC publication was mailed to participants in three related projects: Multidisciplinary Studies of Hereditary Breast/Ovarian Cancer, the HBOC Breast Imaging Pilot Study, and the National Ovarian Cancer Prevention and Early Detection Study (GOG-199).

The multidisciplinary studies cohort of *BRCA1/2* mutation–positive HBOC families has been under study since the late 1960s. Members of these families have participated in and contributed to multiple research projects in clinical genetics over the years, including the Breast Cancer Linkage Consortium project, which led to the mapping and cloning of *BRCA1* and *BRCA2*. The extraordinary dedication of these families and their willingness to contribute their time to answer questionnaires and to provide blood and tumor samples in an effort to help find more effective ways to manage cancer risks remain an inspiration to all involved on these projects.

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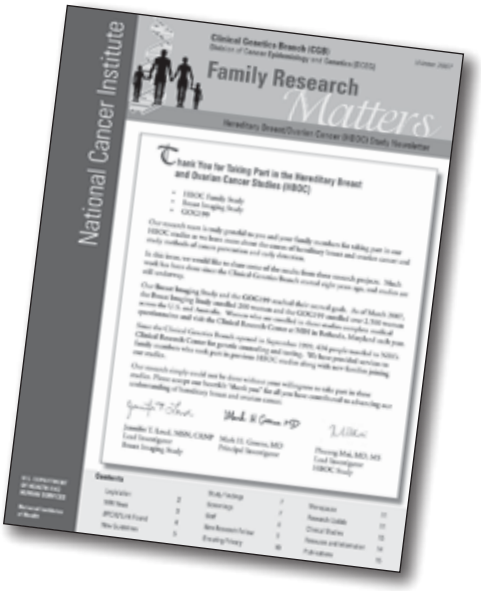
The latest issue of the HBOC newsletter includes updates on issues affecting study participants, such as the status of GINA (the Genetic Information Nondiscrimination Act); a description of the system implemented by the Division to protect the rights and confidentiality of study participants, with a focus on research uses of biological specimens; a summary of information related to managing symptoms associated with surgical menopause; and an overview of publications dealing with psychosocial and behavioral issues experienced by these families. It also covers research highlights such as recent developments in the use of MRI as a breast cancer screening modality in high-risk women; the unexpected, extraordinary, paradigm-altering discovery of the nexus between *BRCA2* and Fanconi anemia; and a report of the 60% reduction in breast cancer risk among *BRCA1* mutation carriers undergoing risk-reducing salpingo-oophorectomy. The newsletter also summarizes multiple HBOC project–related publications.



The FTC study newsletter was disseminated to approximately 2,000 family members who have been followed by Division researchers during the past five years. The topics include study findings to date; promising new developments in testicular cancer treatment; and informational resources, such as a glossary of cancer genetics, a list of advocacy groups and web sites, and a guide to testicular self-exam. The newsletter also features an in-depth description of the processes used by the Branch and Division investigators to ensure that the rights and confidentiality of participants are protected.

The newsletters were developed by **Mark H. Greene, M.D.,** Chief of CGB, and a team of CGB clinicians, including **Larissa A. Korde, M.D., M.P.H., Jennifer T. Loud, M.S.N., C.R.N.P., Phuong Mai, M.D., Christine M. Mueller, D.O., June A. Peters, M.S., C.G.C.,** and **Deliya Ryan, M.P.H.** ■

—Mark H. Greene, M.D., and Larissa A. Korde, M.D., M.P.H.

VISITING SCHOLAR MIMI YU

In November, DCEG was privileged to host Dr. Mimi Yu, the McKnight Presidential Professor in the Department of Medicine at the University of Minnesota School of Medicine, as a Visiting Scholar for a two-day visit. Dr. Yu has contributed immensely to DCEG and is a longtime friend and colleague, having served three terms on the NCI Board of Scientific Counselors and as an advisor for several high-profile DCEG projects since 1985.

Shortly after receiving her Ph.D. in biostatistics from the University of California, Los Angeles, Dr. Yu began studies of nasopharyngeal cancer (NPC) in high-risk Chinese populations and soon published a major study linking NPC to the intake of Cantonese-style salted fish, a common component of the southeastern Chinese diet. She then spent 27 years on the faculty of the Department of Preventive Medicine at the University of Southern California's Keck School of Medicine, conducting high-caliber, high-impact research on the epidemiology of NPC and cancers of the bladder and breast, the role of diet and nutrition in cancer etiology, and the effects of gene-environment interactions in cancer development.

As a recipient of the NIH Research Career Development Award and the NCI Outstanding Investigator Award, Dr. Yu has distinguished herself as an investigator committed to the advancement of cancer research and prevention. She has served on state and university review boards, participated in several advisory committees for the American Association for Cancer Research and the International Agency for Research on Cancer, and was a member of the board of directors of the American Cancer Society.

Mimi Yu speaks about breast cancer and ways to reduce its risk.

In her DCEG seminar, titled "Should women eat soy, drink green tea, and sleep more for the sake of breast cancer risk reduction," Dr. Yu discussed findings from two large epidemiologic studies in the United States and Singapore. The Singapore Chinese Health Study is a prospective cohort study that began in 1993 to examine dietary and other risk factors for cancer in a middle-aged Chinese population. The Los Angeles Asian Breast Cancer Study is a population-based case-control study including Chinese, Japanese, Filipino, and other Asian women. Using these resources, rich in dietary, anthropometric, biospecimen, and registry data, Dr. Yu and her colleagues have conducted numerous analyses of suspected associations between breast cancer and exposures to tea, soy, and endogenous melatonin, yielding novel and provocative findings.

Following the seminar, **Joseph F. Fraumeni, Jr., M.D.,** Division Director,

PUBLIC HEALTH GENOMICS COURSE CONCLUDES

From January to November, DCEG hosted the 2007 Public Health Genomics Lecture Series, "Closing the gap between human genome discoveries and population health." Organized by Dr. Muin Khoury, Director of CDC's National Office of Public Health Genomics, the course provided "a population framework for integrating genomics and related fields into multidisciplinary cancer control and prevention." The series was sponsored by DCEG with the Division of Cancer Control and Population Sciences, CDC's National Office of Public Health Genomics, the National Human Genome Research Institute, the National Institute of Child Health and Human Development, and the NIH Office of Behavioral and Social Sciences Research.

Robert Hoover presents award to Muin Khoury. *(Photograph Credit: Mindy Kaufman)*

Dr. Khoury structured the course to begin with discoveries of basic genetic risk factors, followed by promising applications, such as genetic testing, and continuing to the development of evidence-based guidelines and policies and eventually to clinical practice and control programs. At the final session, **Robert N. Hoover, M.D., Sc.D.,** Director of the Epidemiology and Biostatistics Program, presented Dr. Khoury with a Special Recognition Award.

The nine-session course was well attended by staff from across NIH and broadcast live to CDC in Atlanta and numerous other locations. Further information, including videocasts, presentations, and supplemental materials from the course, is available at http://dceg.cancer.gov/news/meetings-events-upcoming/genomicscourse.

—Kristin Kiser, M.H.A.

presented Dr. Yu with the DCEG Visiting Scholar Award in recognition of her leadership and vision in cancer epidemiology and public health.

DCEG fellows and tenure-track investigators continued to discuss Dr. Yu's presentation during a special luncheon session that immediately followed. In addition to answering scientific questions, Dr. Yu provided career advice, urging fellows to pursue opportunities for fieldwork at an early stage in their careers so that they gain experience beyond data analysis. "You need to get outside the classroom, try things yourself, and make mistakes," she said. "Because existing cohorts are aging, we absolutely must prepare our young investigators to develop new databases and launch new field studies."

Next, Dr. Yu discussed her experiences initiating large epidemiologic studies in Asia during a session moderated by **Wong-Ho Chow, Ph.D.,** a senior investigator in the Occupational and Environmental Epidemiology Branch (OEEB), and **Rashmi Sinha, Ph.D.,** a senior investigator in the Nutritional Epidemiology Branch. Dr. Yu stated that although Asia offers unique opportunities, conducting research there is labor-intensive and requires a serious commitment from both countries.

The next session, moderated by **Rose Yang, Ph.D., M.P.H.,** a tenure-track investigator in the Genetic Epidemiology Branch, was dedicated to the genetic epidemiology of NPC. DCEG scientists asked Dr. Yu for her perspective on pursuing leads in the study of genetic interactions with known risk factors for NPC, such as salted fish intake and Epstein-Barr virus.

The DCEG Women Scientist Advisors, **Ann W. Hsing, Ph.D.,** and **Montserrat García-Closas, M.D., Dr.P.H.,** senior investigators in the Hormonal and Reproductive Epidemiology Branch, hosted a breakfast for Dr. Yu and DCEG women scientists and asked for her insights on balancing life and work. She was quick to point out that it was not always easy, but that she tried, with the help of trusted friends and mentors. She also stressed the importance of being able to prioritize and making wise decisions based on one's circumstances and goals.

Debra T. Silverman, Sc.D., Chief of OEEB and Dr. Yu's DCEG host, led a session discussing prospects in bladder cancer research. **Lee E. Moore, Ph.D.,** a tenure-track investigator in OEEB, presented data from her work in the Spanish and New England studies of bladder cancer. Dr. García-Closas also discussed her work on the role of susceptibility genes involved in metabolism pathways and excision repair.

Dr. Yu spent the remainder of her time visiting with other DCEG investigators in one-on-one sessions, discussing topics of special concern. ■

—Alyssa Minutillo, M.P.H.

COLLOQUIUM SERIES UNITES FELLOWS

DCEG is committed to fostering the careers of young scientists in cancer epidemiology, genetics, and biostatistics. The Division's Fellowship Program grew in 2007 to a record 85 fellows, including 72 postdoctoral and 13 predoctoral members, who launched a monthly Fellows' Colloquium, providing an important venue for education, presentation, networking, and camaraderie.

2007 Fellows' Colloquium organizers

The colloquia, held at noon on the last Friday of each month, were well attended, bringing together a broad range of topics and speakers. The series kicked off with a stimulating dialogue with Division Director **Joseph F. Fraumeni, Jr., M.D.** Subsequent sessions focused on intramural research opportunities, epidemiological and biostatistical research methods, and career development. Senior investigators discussed the steps they took at the start of their careers in cancer epidemiology and pointed to the need for strategic planning during the transition from fellowships to a tenure-track position. Other sessions were devoted to the role of epidemiology in regulatory policies, steps necessary to launch international studies, and innovative methods for the design and analysis of large-scale genome-wide association studies.

The inaugural colloquium planning committee included **Elizabeth C. Bluhm, M.D., M.P.H.,** Radiation Epidemiology Branch, **Neal D. Freedman, Ph.D., M.P.H.,** Nutritional Epidemiology Branch, **Mia M. Gaudet, Ph.D.,** Hormonal and Reproductive Epidemiology Branch, **H. Dean Hosgood, M.P.H.,** Occupational and Environmental Epidemiology Branch, **Jill Koshiol, Ph.D.,** Genetic Epidemiology Branch, **Rayna Matsuno, M.S.,** Biostatistics Branch, **Christine M. Mueller, D.O.,** Clinical Genetics Branch, and **Hui-Lee Wong, Ph.D.,** Viral Epidemiology Branch. Members of the committee will rotate and include one fellow from each Branch. Under the guidance of DCEG's Office of Education, the committee will ensure that the 2008 series continues to meet the ongoing needs of fellows, building on its first successful season.

—H. Dean Hosgood, M.P.H., and Demetrius Albanes, M.D.

NCI COLLABORATES WITH CHINA ON ESOPHAGEAL CANCER RESEARCH

In October, approximately 80 investigators met in Beijing to celebrate the 25th anniversary of the esophageal cancer research collaboration between NCI and the Cancer Institute of the Chinese Academy of Medical Sciences (CICAMS). DCEG attendees included **Christian C. Abnet, Ph.D., M.P.H., Sanford M. Dawsey, M.D., Neal D. Freedman, Ph.D., M.P.H., Farin Kamangar, M.D., Ph.D.,** and **Mark J. Roth, M.D.,** of the Nutritional Epidemiology Branch; **Alisa M. Goldstein, Ph.D., Nan Hu, M.D., Ph.D., M.P.H.,** and **Philip R. Taylor, M.D., Sc.D.,** of the Genetic Epidemiology Branch; and **Wong-Ho Chow, Ph.D.,** of the Occupational and Environmental Epidemiology Branch.

The U.S.-China collaboration had its origins in President Richard Nixon's 1972 trip to China. The first delegation of American cancer specialists toured China in 1977, and they were taken to Linxian, a county in Henan Province where more than 20% of the population died of "hard-swallowing disease" or esophageal cancer. The major hypotheses for the excess risk of these cancers were the consumption of mold- and bacteria-covered pickles, *in vivo* production of nitrosamines, and the presence of vitamin and trace-element deficiencies caused by a nutrient-poor diet.

Between 1978 and 1982, several DCEG members, including former members Dr. William J. Blot and Dr. Fred Li, **Louise A. Brinton, Ph.D.,** Chief of the Hormonal and Reproductive Epidemiology Branch, and Division Director **Joseph F. Fraumeni, Jr., M.D.,** visited various centers in China, including Linxian. Multiple studies were established, including case-control studies of esophageal cancer, lung cancer, cervical cancer, penile cancer, and trophoblastic disease, as well as a large ecologic study of lifestyle and mortality.

The most ambitious collaborative project was the Linxian Nutrition Intervention Trials (NIT)—two randomized, placebo-controlled clinical trials designed to test the hypothesis that vitamin and mineral supplementation could reduce the incidence and mortality of esophageal cancer. These trials were initiated by Drs. Blot, Fraumeni, and Taylor of DCEG; Dr. Peter Greenwald, Director of the Division of Cancer Prevention; and Dr. Li Jun-Yao and Dr. Li Bing from CICAMS. The smaller Dysplasia Trial administered daily doses of 26 vitamins and minerals or a placebo to 3,318 adults with esophageal dysplasia. The larger General Population Trial tested four vitamin and mineral combinations in 29,584 adults. The Trial interventions began in 1985–1986 and ended in 1991. One of the vitamin and mineral combinations in the General Population Trial—selenium, vitamin E, and beta-carotene—significantly reduced both total mortality (by 9%) and gastric cancer mortality (by 21%). This was the first randomized clinical trial to show that taking vitamin and mineral supplements can reduce cancer mortality.

Since the end of the NIT, investigators have continued to follow participants as a cohort, which has led to many prospective studies of baseline characteristics and biosamples. In addition, investigators developed an esophageal cancer early detection and treatment program, and collaborative studies of esophageal and gastric cancer genetics are ongoing in a similar high-risk population in nearby Shanxi Province. Finally, the studies in Linxian inspired similar collaborative studies in other populations at high risk for esophageal cancer.

Following the celebration, the ECCS-2 (second Esophageal and Cardia Cancer Summit) meeting was held. The meeting welcomed about 100 scientists who currently work on studies of esophageal and esophago-gastric junctional cancers in high-risk populations around the world. Participants came from China, the United States, Europe, Iran, East and South Africa, and South America. Presentations focused on new results from field studies, including long-term follow-up of the NIT cohort, the investigation of exposures for esophageal cancer (e.g., polycyclic aromatic hydrocarbons, nitrosamines, and acetaldehyde), and new studies of early detection and molecular mechanisms of esophageal cancer. The third ECCS meeting is planned for 2009. ■

Participants in the 25th anniversary celebration in Beijing

—Sanford M. Dawsey, M.D.

SCIENTIFIC HIGHLIGHTS

ALL CANCERS

Red and Processed Meat Intake

Whether red or processed meat intake increases anatomic site–specific cancer risks was investigated using data from the NIH-AARP Diet and Health Study, a cohort study of approximately 500,000 people aged 50 to 71 years at baseline (1995–1996). Meat intake was estimated from a food frequency questionnaire administered at baseline. During up to 8.2 years of follow-up, 53,396 incident cancers were ascertained. Significantly elevated risks ranging from 20% to 60% were evident for esophageal, colorectal, liver, and lung cancer, comparing individuals in the highest quintile of red meat intake with those in the lowest. Furthermore, individuals in the highest quintile of processed meat intake had a 20% elevated risk for colorectal and a 16% elevated risk for lung cancer. **(Cross AJ, Leitzmann MF, Gail MH, Hollenbeck AR, Schatzkin A, Sinha R. A prospective study of red and processed meat intake in relation to cancer risk. *PLoS Med* 2007;4:e325)**

Vitamin D and Cancer Mortality

Data on 16,818 participants in the Third National Health and Nutrition Examination Survey, who were 17 years or older at enrollment and who were followed from 1988–1994 through 2000, were used to examine the relationship between serum 25-hydroxyvitamin D [25(OH)D] levels and cancer mortality. Among 536 cancer deaths in 146,578 person-years, total cancer mortality was unrelated to baseline vitamin D status in the entire population, men, women, non-Hispanic whites, non-Hispanic blacks, Mexican Americans, and persons younger than 70 or 70 years or older. No interaction between vitamin D and season or vitamin D and serum retinol was found. Colorectal cancer mortality was inversely related to serum 25(OH)D level, with levels of 80 nmol/L or higher associated with a 72% risk reduction (CI = 32%–89%) compared with levels lower than 50 nmol/L (p for trend = 0.02). **(Freedman DM, Looker AC, Chang SC, Graubard BI. Prospective study of serum vitamin D and cancer mortality in the United States. *J Natl Cancer Inst* 2007;99:1594–1602)**

BILIARY TRACT CANCER

Gallstones and Cancer Risk

A population-based study of 627 patients with biliary tract cancers (368 gallbladder, 191 bile duct, and 68 ampulla of Vater), 1,037 with biliary stones, and 959 healthy controls randomly selected from the Shanghai population was conducted. Odds ratios (ORs) associated with gallstones were 23.8 (CI = 17.0–33.4), 8.0 (CI = 5.6–11.4), and 4.2 (CI = 2.5–7.0) for cancers of the gallbladder, extrahepatic bile ducts, and ampulla of Vater, respectively, persisting when restricted to those with gallstones at least 10 years prior to cancer. Biliary cancer risks were higher among subjects with both gallstones and self-reported cholecystitis, particularly for gallbladder cancer (OR = 34.3; CI = 19.9–59.2). Subjects with bile duct cancer were more likely to have pigment stones, and subjects with gallbladder cancer were more likely to have cholesterol stones ($p < 0.001$). Gallstone weight in gallbladder cancer was significantly higher than in gallstone patients (4.9 vs. 2.8g; $p = 0.001$). In Shanghai, 80% (CI = 75%–84%), 59% (CI = 56%–61%), and 41% (CI = 29%–59%) of gallbladder, bile duct, and ampulla of Vater cancers, respectively, could be attributed to gallstones. **(Hsing AW, Gao YT, Han TQ, Rashid A, Sakoda LC, Wang BS, Shen MC, Zhang BH, Niwa S, Chen J, Fraumeni JF Jr. Gallstones and the risk of biliary tract cancer: A population-based study in China. *Br J Cancer* 2007;97:1577–1582)**

BLADDER CANCER

Double-strand Break Repair Pathway

Data for 39 single nucleotide polymorphisms (SNPs) in seven candidate genes whose products are involved in DNA break sensing (*NBS1, BRCA1* interacting genes *BRIP1* and *ZNF350*), non-homologous end-joining DNA repair (*XRCC4*), and homologous recombination repair (*RAD51, XRCC2,* and *XRCC3*) were evaluated in relation to bladder cancer risk among 1,150 cases with transitional cell carcinomas and

WORKSHOP AND PUBLICATION ON CHRONIC LYMPHOCYTIC LEUKEMIA

Last year, DCEG, CDC, and the U.S. Food and Drug Administration (FDA) organized an international workshop, "Monoclonal B-cell lymphocytosis and chronic lymphocytic leukemia: Environmental and genetic risk factors." Several DCEG scientists participated, including **Aaron E. Blair, Ph.D., M.P.H.,** Occupational and Environmental Epidemiology Branch, **Graça Dores, M.D., M.P.H.,** Radiation Epidemiology Branch (REB), **Lynn R. Goldin, Ph.D.,** Genetic Epidemiology Branch (GEB), **Ola Landgren M.D., Ph.D.** (GEB), **Martha S. Linet, M.D., M.P.H.** (Chief of REB), and **Mary Lou McMaster, M.D.** (GEB). Co-organizers **Neil E. Caporaso, M.D.** (GEB), and Dr. Gerald Marti (FDA) were invited to edit a special issue of the *British Journal of Haematology* that includes more than 20 papers from the workshop. The meeting was also recognized with a Special Award for excellence in collaborative success by CDC.

1,149 controls diagnosed in Spain from 1997 to 2001. Genetic variants evaluated significantly contributed to bladder cancer risk (global likelihood ratio test $p = 0.01$). Subjects with the *ZNF350* R501S (rs2278415) variant allele showed significantly reduced risk compared with common homozygote variants (OR = 0.76; CI = 0.62–0.93 per variant allele). Carriers of a putative functional SNP in intron 7 of *XRCC4* (rs1805377) had significantly increased bladder cancer risk compared with common homozygotes (OR = 1.33; CI = 1.08–1.64 per variant allele). Lastly, *XRCC2* homozygote variants for three promoter SNPs (rs1023479, rs6464268, and rs3218373) and one nonsynonymous SNP (rs3218536, R188H) were associated with reduced bladder cancer risk (ORs ranging from 0.36 to 0.50 compared with common homozygotes). Meta-analysis for *XRCC3* T241M (rs861539) showed a significant small increase in risk among homozygote variants (OR = 1.17; CI = 1.00–1.36). **(Figueroa JD, Malats N, Rothman N, Real FX, Silverman D, Kogevinas M, Chanock S, Yeager M, Welch R, Dosemeci M, Tardón A, Serra C, Carrato A, García-Closas R, Castaño-Vinyals G, García-Closas M. Evaluation of genetic variation in the double-strand break repair pathway and bladder cancer risk. *Carcinogenesis* 2007;28:1788–1793)**

BRAIN TUMORS

Apoptosis and Cell Cycle Control Genes

Using data from a hospital-based case-control study conducted between 1994 and 1998, risks of glioma ($n = 388$), meningioma ($n = 162$), and acoustic neuroma ($n = 73$) were evaluated with respect to 12 SNPs from 10 genes involved in apoptosis and cell cycle control: *CASP8, CCND1, CCNH, CDKN1A, CDKN2A, CHEK1, CHEK2, MDM2, PTEN,* and *TP53*. A significantly decreased risk of meningioma with the *CASP8* Ex14-271A→T variant ($OR_{AT} = 0.8$, CI = 0.5–1.2; $OR_{AA} = 0.5$, CI = 0.3–0.9; p for trend = 0.03) and increased risk of meningioma with the *CASP8* Ex13+51G→C variant ($OR_{GC} = 1.4$, CI = 0.9–2.1; $OR_{CC} = 3.6$, CI = 1.0–13.1; p for trend = 0.04) were observed. The CT haplotype of the two *CASP8* polymorphisms was associated with increased risk of meningioma (OR = 1.7; CI = 1.1–2.6) but was not associated with risk of glioma or acoustic neuroma. The *CCND1* Ex4-1G→A variant was associated with increased risk for glioma, and the Ex8+49T→C variant of *CCNH* was associated with increased risk of glioma and acoustic neuroma. The *MDM2* Ex12+162A→G variant was associated with reduced risk of glioma. Results suggest that common variants in the *CASP8, CCND1, CCNH,* and *MDM2* genes may influence brain tumor risk. Future research in this area should include more detailed coverage of genes in the apoptosis/cell cycle control pathways. **(Rajaraman P, Wang SS, Rothman N, Brown MM, Black PM, Fine HA, Loeffler JS, Selker RG, Shapiro WR, Chanock SJ, Inskip PD. Polymorphisms in apoptosis and cell cycle control genes and risk of brain tumors in adults. *Cancer Epidemiol Biomarkers Prev* 2007;16:1655–1661)**

BREAST CANCER

Absolute Risk in African Americans

The authors developed a model for projecting absolute risk of invasive breast cancer in African American women and compared its projections with those from NCI's Breast Cancer Risk Assessment Tool (BCRAT). Data from 1,607 African American women with invasive breast cancer and 1,647 African American controls in the Women's Contraceptive and Reproductive Experiences (CARE) Study were used to compute relative and attributable risks based on age at menarche, number of affected sisters or mother, and number of previous benign biopsy examinations. Absolute risks were obtained by combining this information with data on breast cancer incidence in African American women from NCI's Surveillance, Epidemiology, and End Results (SEER) Program and with national mortality data. Eligibility screening data from the Study of Tamoxifen and Raloxifene (STAR) were used to determine how the new model would affect eligibility, and Women's Health Initiative (WHI) data were used to assess how well numbers of invasive breast cancers predicted by the new model agreed with observed cancers. Relative risks (RRs) for family history and number of biopsies and attributable risks estimated from the CARE population were lower than those from the BCRAT, as was the discriminatory accuracy. The authors estimated that 30.3% of African American women would have had five-year invasive breast cancer risks of at least 1.66% by use of the CARE model, compared with 14.5% by use of the BCRAT. The numbers of cancers predicted by the CARE model agreed well with observed numbers in WHI data, except that it underestimated risk in African American women with breast biopsy examinations. The CARE model usually gave higher risk estimates for African American women than the BCRAT and is recommended for counseling African American women regarding their risk of breast cancer. **(Gail MH, Costantino JP, Pee D, Bondy M, Newman L, Selvan M, Anderson GL, Malone KE, Marchbanks PA, McCaskill-Stevens W, Norman SA, Simon MS, Spirtas R, Ursin G, Bernstein L. Projecting individualized absolute invasive breast cancer risk in African American women. *J Natl Cancer Inst* 2007;99:1782–1792)**

Adiposity and Weight Change

The relationships of adiposity and adult weight change to breast cancer risk were prospectively examined among 99,039 postmenopausal women in the NIH-AARP Diet and Health Study. Anthropometry was assessed by self-report in 1996. Through 2000, 2,111 incident breast cancer cases

were ascertained. Current body mass index (BMI), BMI at ages 50 and 35 years, and waist-hip ratio were associated with increased breast cancer risk, particularly in women not using menopausal hormone therapy (MHT). Weight gained between age 18 years and the current age, between ages 18 and 35 years, between ages 35 and 50 years, and between age 50 years and the current age was consistently associated with increased breast cancer risk in MHT nonusers (RR = 2.15; CI = 1.35–3.42 for a ≥ 50-kg weight gain between age 18 years and the current age vs. stable weight) but not in current MHT users. Risk associated with adult weight change was stronger in women with later vs. earlier age at menarche (RR = 4.20; CI = 2.05–8.64 for ≥ 15 years vs. RR = 1.51; CI = 1.11–2.06 for 11–12 years; *p* for interaction = 0.007). In MHT nonusers, the associations with current BMI and adult weight change were stronger for advanced disease than for nonadvanced disease (*p* for heterogeneity = 0.009 [current BMI] and 0.21 [weight gain]) and were stronger for hormone receptor–positive than hormone receptor–negative tumors (*p* for heterogeneity < 0.001). **(Ahn J, Schatzkin A, Lacey JV Jr, Albanes D, Ballard-Barbash R, Adams KF, Kipnis V, Mouw T, Hollenbeck AR, Leitzmann MF. Adiposity, adult weight change, and postmenopausal breast cancer risk. *Arch Intern Med* 2007;167:2091–2102)**

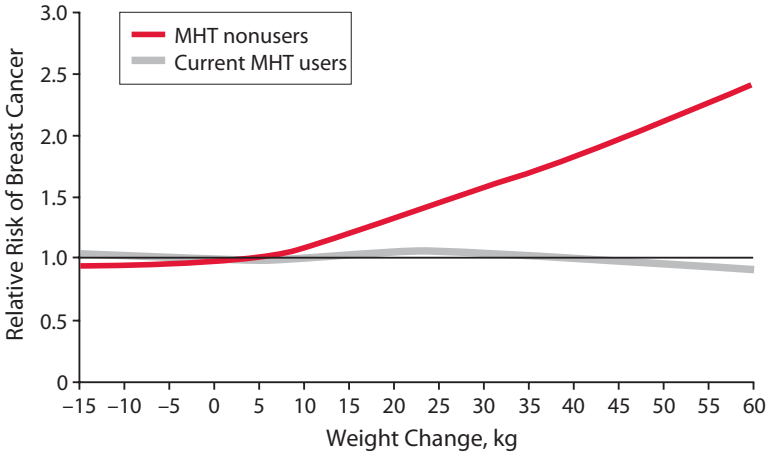


Figure 1. Nonparametric regression curve for the association between weight change since age 18 years and postmenopausal breast cancer by menopausal hormone therapy (MHT) status. (Ahn J, et al. 2007)

Genome-wide Association Study

A genome-wide association study (GWAS) of breast cancer was conducted by genotyping 528,173 SNPs in 1,145 postmenopausal women of European ancestry with invasive breast cancer and 1,142 controls. Four SNPs in intron 2 of *FGFR2* (which encodes a receptor tyrosine kinase and is amplified or overexpressed in some breast cancers) that were highly associated with breast cancer were identified, and this association was confirmed in 1,776 affected individuals and 2,072 controls from three additional studies. Across the four studies, the association with all four SNPs was highly statistically significant (*p* for trend for the most strongly associated SNP [rs1219648] = 1.1 x 10^{-10}; population attributable risk = 16%). Four SNPs at other loci most strongly associated with breast cancer in the initial GWAS were not associated in the replication studies. The summary results from the GWAS are available online at http://cgems.cancer.gov in a form that should speed the identification of additional risk loci. **(Hunter DJ, Kraft P, Jacobs KB, Cox DG, Yeager M, Hankinson SE, Wacholder S, Wang Z, Welch R, Hutchinson A, Wang J, Yu K, Chatterjee N, Orr N, Willett WC, Colditz GA, Ziegler RG, Berg CD, Buys SS, McCarty CA, Feigelson HS, Calle EE, Thun MJ, Hayes RB, Tucker M, Gerhard DS, Fraumeni JF Jr, Hoover RN, Thomas G, Chanock SJ. A genome-wide association study identifies alleles in *FGFR2* associated with risk of sporadic postmenopausal breast cancer. *Nat Genet* 2007;39:870–874)**

Hormone Receptor and HER2 Levels by Etiologic Factors

In a population-based case-control study of 2,386 breast cancer cases and 2,502 controls in Poland, estrogen receptor (ER)–α status and progesterone receptor (PR) status of tumors were assessed for 842 cancers according to etiologic exposure data. Receptor levels varied most significantly with BMI, a factor that was inversely related to risk among premenopausal women and directly related to risk among postmenopausal women with larger tumors. After adjustment for correlated markers, exposures, and pathologic characteristics, PR and HER2 levels were inversely related to BMI among premenopausal women (*p* for trend = 0.01, both comparisons), whereas among postmenopausal women, PR levels were associated directly with BMI (*p* for trend = 0.002). Among postmenopausal women, the BMI effect varied by combined expression levels of PR and HER2: OR = 0.86 (CI = 0.69–1.07) for low PR and HER2 expression vs. OR = 1.78 (CI = 1.25–2.55) for high expression (*p* for heterogeneity = 0.001). **(Sherman ME, Rimm DL, Yang XR, Chatterjee N, Brinton LA, Lissowska J, Peplonska B, Szeszenia-Dabrowska N, Zatonski W, Cartun R, Mandich D, Rymkiewicz G, Ligaj M, Lukaszek S, Kordek R, Kalaylioglu Z, Harigopal M, Charrette L, Falk RT, Richesson D, Anderson WF, Hewitt SM, García-Closas M. Variation in breast cancer hormone receptor and HER2 levels by etiologic factors: A population-based analysis. *Int J Cancer* 2007;121:1079–1085)**

COLORECTAL ADENOMAS

Serum Insulin and Glucose and Adenoma Recurrence

Fasting serum from 375 subjects with and without recurrent adenomas during the course of the Polyp Prevention Trial was assayed to determine baseline concentrations of insulin and glucose and changes in these measurements over the course of four years. For both insulin and glucose, the authors found higher risk of adenoma recurrence for subjects in the high quartile compared with the low quartile (OR = 1.56, CI = 1.00–2.43 for insulin; OR = 1.49, CI = 0.95–2.31 for glucose). The association for glucose was most apparent for advanced adenomas (OR = 2.43; CI = 1.23–4.79), but for insulin, this pattern was not observed. When analysis was restricted to those without a family history of colorectal cancer, an even stronger association between increased glucose at study entry and adenoma recurrence was observed (OR = 1.78, CI = 1.06–3.01 for all adenomas; OR = 3.52, CI = 1.47–8.42 for advanced adenoma). **(Flood A, Mai V, Pfeiffer R, Kahle L, Remaley AT, Lanza E, Schatzkin A. Elevated serum concentrations of insulin and glucose increase risk of recurrent colorectal adenomas. *Gastroenterology* 2007;133:1423–1429)**

Ruth Pfeiffer with John Niederhuber *(Photograph Credit: Bill Branson)*

Ruth M. Pfeiffer, Ph.D., and **Mitchell H. Gail, M.D., Ph.D.,** both of the Biostatistics Branch, along with Dr. Andrew Freedman and Dr. Rachael Ballard-Barbash of the NCI Division of Cancer Control and Population Sciences, received an NIH Group Award of Merit for "exemplary leadership in advancing NCI's commitment to understanding the science of cancer risk prediction and assessment and applying that understanding to cancer control efforts."

ENDOMETRIAL CANCER

Cancer Risk after Hyperplasia

This nested case-control study of endometrial hyperplasia (EH) progression included 138 cases, who were diagnosed with EH and then with carcinoma at least one year later, and 241 controls, who were individually matched on age, date, and follow-up duration and counter-matched on EH classification. With disordered proliferative endometrium (DPEM) as the referent, atypical hyperplasia (AH) significantly increased carcinoma risk (RR = 14; CI = 5–38). With an expanded referent group, risk was highest 1.0 to 4.9 years after AH (RR = 48; CI = 8–294) but remained elevated five or more years after AH (RR = 3.5; CI = 1.3–9.6). Progression risks for simple hyperplasia (RR = 2.0; CI = 0.9–4.5) and complex hyperplasia (RR = 2.8; CI = 1.0–7.9) were substantially lower using DPEM as the referent. The higher progression risks for AH could foster management guidelines based on markedly different progression risks for atypical vs. non-atypical EH. **(Lacey JV Jr, Ioffe OB, Ronnett BM, Rush BB, Richesson DA, Chatterjee N, Langholz B, Glass AG, Sherman ME. Endometrial carcinoma risk among women diagnosed with endometrial hyperplasia: The 34-year experience in a large health plan. *Br J Cancer* 2008;98:45–53)**

GENETICS

Short Telomere Length and Dyskeratosis Congenita

Dyskeratosis congenita (DC) is an inherited bone marrow failure syndrome in which the known susceptibility genes (*DKC1, TERC,* and *TERT*) belong to the telomere maintenance pathway; patients with DC have very short telomeres. In a study of patients with DC and other bone marrow failure syndromes, multicolor flow fluorescence *in situ* hybridization analysis of median telomere length was used to confirm the diagnosis of DC, distinguish patients with DC from unaffected family members, identify clinically silent DC carriers, and discriminate between patients with DC and those with other bone marrow failure disorders. Diagnostic sensitivity and specificity of very short telomeres for DC were more than 90% for total lymphocytes, CD45RA+/CD20– naive T cells, and CD20+ B cells. Granulocyte and total leukocyte assays were not specific; CD45RA– memory T cells and CD57+ NK/NKT were not sensitive. Very short telomeres were observed in a clinically normal family member who subsequently developed DC. Adding leukocyte subset flow fluorescence *in situ* hybridization telomere length measurement to the evaluation of patients and families suspected to have DC is proposed because making the correct diagnosis will substantially affect patient management. **(Alter BP, Baerlocher GM, Savage SA, Chanock SJ, Weksler BB, Willner JP, Peters JA, Giri N, Lansdorp PM. Very short telomere length by flow fluorescence *in situ* hybridization identifies patients with dyskeratosis congenita. *Blood* 2007;110:1439–1447)**

HIV-RELATED CANCERS

Germ Cell Tumors

Men with HIV/AIDS are reported to be at increased risk for germ cell tumors (GCT), particularly testicular seminoma. Correlates of this association were

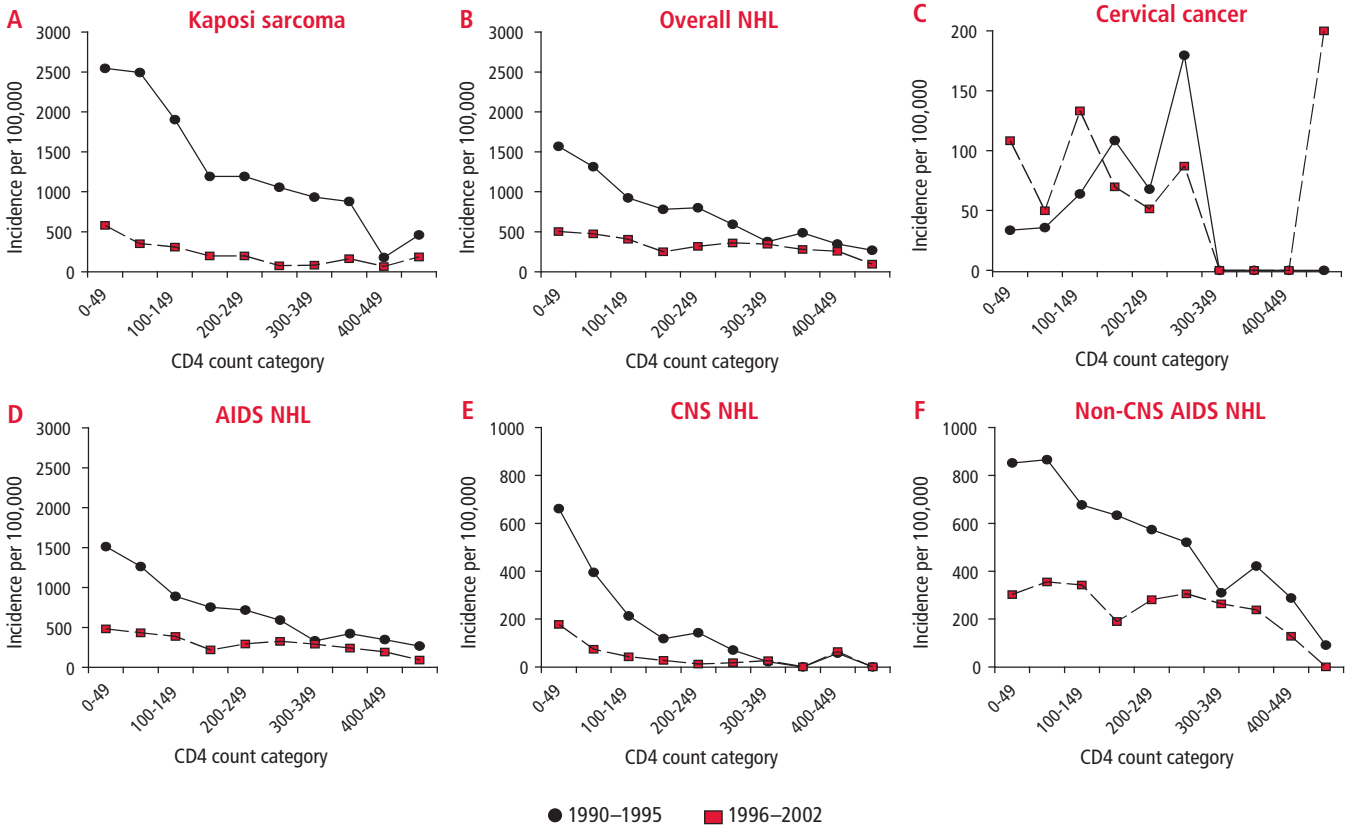


Figure 2. Incidence of major AIDS-associated cancers by CD4 count category in persons with AIDS, by calendar-year period. (Biggar RJ, et al. 2007)

investigated to improve understanding of GCTs. Testicular and extratesticular seminoma and nonseminoma cases were found by linking population-based cancer and HIV/AIDS registry data for 268,950 men who developed AIDS between 1980 and 2003. Compared with the general population, seminoma risk (161 cases: standardized incidence ratio [SIR] = 1.9; CI = 1.6–2.2) increased significantly with HIV/AIDS, whereas nonseminoma risk did not (56 cases: SIR = 1.3; CI = 0.96–1.7). Extratesticular GCT risk also increased (11 cases: SIR = 2.1; CI = 1.1–3.7). Seminoma risk was elevated regardless of age, race, or HIV/AIDS transmission group. It was highest for disseminated disease (SIR = 4.7; CI = 2.9–7.2) and within nine months of AIDS onset (SIR = 7.6; CI = 5.8–9.6), but it was unrelated to CD4 count and duration of HIV/AIDS. The excess risk of seminoma declined in more recent calendar periods, and it was no longer elevated (SIR = 1.4; CI = 0.9–1.9) in the highly active antiretroviral treatment era. **(Goedert JJ, Purdue MP, McNeel TS, McGlynn KA, Engels EA. Risk of germ cell tumors among men with HIV/acquired immunodeficiency syndrome. *Cancer Epidemiol Biomarkers Prev* 2007;16:1266–1269)**

Immunosuppression Severity and Cancer Risk

The association between cancer risk and CD4 cell count was studied using data from U.S. AIDS registries linked to local cancer registries. Cancer incidence was determined for the 4 to 27 months from the onset of AIDS between 1990 and 1995—before highly active antiretroviral therapy (HAART)—and between 1996 and 2002. Among 325,516 adults, the incidence per 100,000 person-years of Kaposi sarcoma (KS) was lower between 1996 and 2002 (334.6 cases) than between 1990 and 1995 (1838.9 cases), and the incidence of non-Hodgkin lymphoma (NHL) followed a similar pattern (390.1 cases and 1,066.2 cases, respectively). From 1996 to 2002, for each decline in CD4 cell count of 50 cells per microliter of blood, increased risks were found for KS (hazard ratio [HR] = 1.40; CI = 1.33–1.50), for central nervous system (CNS) NHL subtypes (HR = 1.85; CI = 1.58–2.16), and for non-CNS diffuse large B-cell lymphoma (HR = 1.12, CI = 1.04–1.20) but not for non-CNS Burkitt lymphoma (HR = 0.93; CI = 0.81–1.06). After adjustment for age, race, and sex or mode of HIV exposure, the risks for KS (RR = 0.22; CI = 0.20–0.24) and for NHL (RR = 0.40; CI = 0.36–0.44) were lower from 1996 to 2002 than from 1990 to 1995. Both before and after HAART was available, CD4 count was strongly associated with risks for KS and NHL

but not for cervical cancer or Burkitt lymphoma. The decreasing incidences of most AIDS-associated cancers in persons with AIDS during the 1990s are consistent with improving CD4 counts after HAART introduction in 1996. **(Biggar RJ, Chaturvedi AK, Goedert JJ, Engels EA. AIDS-related cancer and severity of immunosuppression in persons with AIDS. *J Natl Cancer Inst* 2007;99:962–972)**

Lung Cancer Risk

Data from the ALIVE (AIDS Link to the Intravenous Experience) Study of a cohort of injection drug users in Baltimore, Maryland, observed since 1988, were used to examine the effect of HIV infection on lung cancer risk, controlling for smoking status, drug use, and clinical variables. Among 2,086 participants observed for 19,835 person-years, 27 lung cancer deaths were identified; 14 of the deaths were among HIV-infected persons. All but one (96%) of the patients with lung cancer were smokers with a mean of 1.2 packs per day. Lung cancer mortality increased during the HAART era, compared with the pre-HAART period (mortality RR = 4.7; CI = 1.7–16). After adjusting for age, sex, smoking status, and calendar period, HIV infection was associated with increased lung cancer risk (HR = 3.6; CI = 1.6–7.9). Preexisting lung disease, particularly noninfectious diseases and asthma, was associated with increased lung cancer risk, whereas illicit drug use was not. Among HIV-infected persons, smoking remained the major risk factor; CD4 cell count and HIV load were not strongly associated with increased lung cancer risk, and trends for increased risk with use of HAART were not significant. **(Kirk GD, Merlo C, O'Driscoll P, Mehta SH, Galai N, Vlahov D, Samet J, Engels EA. HIV infection is associated with an increased risk for lung cancer, independent of smoking. *Clin Infect Dis* 2007;45:103–110)**

LIVER CANCER

Chemoprevention Trial

The effects of supplementation with four different combinations of vitamins and minerals on primary liver cancer mortality were examined among 29,450 initially healthy adults from Linxian, China. Participants were randomly assigned to take either a vitamin/mineral combination ("factor") or a placebo daily for 5.25 years. Four factors (at doses one to two times the U.S. Recommended Daily Allowance)—retinol and zinc (factor A); riboflavin and niacin (factor B); ascorbic acid and molybdenum (factor C); and beta-carotene, alpha-tocopherol, and selenium (factor D)—were tested in a partial factorial design. A total of 151 liver cancer deaths occurred during the analysis period. No significant differences in overall liver cancer mortality were found. However, both factors A and B reduced liver cancer mortality in individuals younger than 55 years at randomization (A: HR = 0.59, CI = 0.34–1.00; B: HR = 0.54, CI = 0.31–0.93) but not in older individuals (A: HR = 1.06, CI = 0.71–1.59; B: HR = 1.12, CI = 0.75–1.68). Factor C reduced liver cancer death with only borderline statistical significance in males (HR = 0.70; CI = 0.47–1.02) but not in females (HR = 1.30; CI = 0.72–2.37). Cumulative risks of liver cancer death were 6.0 per 1,000 in the placebo arm, 5.4 per 1,000 in the arms with two factors, and 2.4 per 1,000 in the arm with all four factors. **(Qu C-X, Kamangar F, Fan J-H, Yu B, Sun X-D, Taylor PR, Chen BE, Abnet CC, Qiao Y-L, Mark SD, Dawsey SM. Chemoprevention of primary liver cancer: A randomized, double-blind trial in Linxian, China. *J Natl Cancer Inst* 2007;99:1240–1247)**

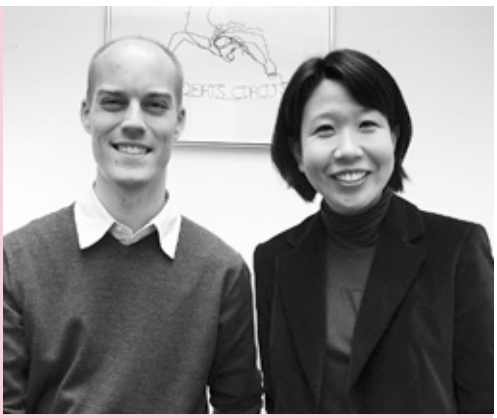
LYMPHOMA

Hair Dye Use, NAT Genes, and NHL Risk

The authors examined NHL risk in relation to reported hair dye use among 1,321 cases and 1,057 controls from a U.S. population-based multicenter study. DNA was extracted from blood or buccal cells to identify genetic variation in N-acetyltransferase 1 (NAT1) and 2 (NAT2), which encode enzymes that metabolize aromatic amine compounds found in hair dyes. Among women, 509 cases and 413 controls reported hair dye use (OR = 1.2; CI = 0.9–1.6). Risk estimates were higher for use before 1980 than for use in 1980 or later, particularly for use of permanent, intense-tone (black, dark brown, dark blonde) products (before 1980: OR = 1.6, CI = 0.9–2.7; during or after 1980: OR = 0.6, CI = 0.4–1.1). Risk estimates increased for women who

NEW FELCOM REPRESENTATIVES

Jiyoung Ahn, Ph.D., and **Steven C. Moore, Ph.D.,** both of the Nutritional Epidemiology Branch, have been appointed to represent DCEG on the NIH Fellows Committee, also known as FELCOM. They are replacing **Anil K. Chaturvedi, Ph.D.,** Viral Epidemiology Branch, and **Jocelyn M. Weiss, Ph.D., M.P.H.,** Occupational and Environmental Epidemiology. The role of FELCOM is to enhance communication among fellows and the NIH community, and serve as a liaison to leaders of programs that affect the training experience. Drs. Ahn and Moore were also elected cochairs of the FELCOM Mentoring Subcommittee.



New FELCOM Representatives: Steven Moore and Jiyoung Ahn.

used permanent, intense-tone products before 1980 if they had the rapid/intermediate NAT2 phenotype (OR = 3.3; CI = 1.3–8.6) or the NAT1 10 allele (OR = 2.5; CI = 0.9–7.6), but not significantly if they were slow NAT2 acetylators (OR = 1.5; CI = 0.6–3.6) or had no copies of the NAT1 10 allele (OR = 1.5; CI = 0.7–3.3). NHL risk did not increase among women who began hair dye use during or after 1980 or among men. **(Morton LM, Bernstein L, Wang SS, Hein DW, Rothman N, Colt JS, Davis S, Cerhan JR, Severson RK, Welch R, Hartge P, Zahm SH. Hair dye use, genetic variation in N-acetyltransferase 1 (NAT1) and 2 (NAT2), and risk of non-Hodgkin lymphoma. *Carcinogenesis* 2007;28:1759–1764)**

Sun Exposure, Vitamin D Receptor Genes, and NHL Risk

Data from a U.S. population-based case-control study of NHL were analyzed to investigate whether the previously reported inverse association with sun exposure was dependent upon variants in the vitamin D receptor gene (IVS10+283G→A [*BsmI*], Ex11+32T→C [*TaqI*]) and genes linked to UV-induced immune modulation (*IL4, IL10, IL12A, IL12B,* and *TNF*). UV exposure data were collected from in-person interviews with 551 cases and 462 controls. The association with NHL risk for time in the midday sun within the last decade was dependent upon Ex11+32T→C genotype. Compared with TT carriers who reported less than seven hours per week of sun exposure, CC subjects with less than seven hours per week of sun exposure had an increased risk of NHL (OR = 1.9; CI = 0.8–4.4; p for interaction = 0.16), whereas the RRs for other CC carriers approached unity with increasing level of sun exposure. This pattern of effects was especially apparent for follicular lymphoma (for CC genotype and < 7 hours/week of exposure: OR = 6.3; CI = 1.9–22; p for interaction = 0.004) and was consistently observed across measures of reported sun exposure for different periods of life. Because IVS10+283G→A is correlated with Ex11+32T→C in our population (r^2 = 0.95), results were equivalent for those with the IVS10+283 AA genotype. No evidence of interaction with cytokine gene variants was observed. Results suggest that the inverse association between UV exposure and NHL risk may be mediated by the vitamin D pathway. **(Purdue MP, Hartge P, Davis S, Cerhan JR, Colt JS, Cozen W, Severson RK, Li Y, Chanock SJ, Rothman N, Wang SS. Sun exposure, vitamin D receptor gene polymorphisms and risk of non-Hodgkin lymphoma. *Cancer Causes Control* 2007;18:989–999)**

SECOND CANCERS

Mortality following Second Cancers in Testicular Cancer Survivors

To compare outcomes of testicular cancer survivors with second cancers with outcomes of persons with comparable first cancers, data for 29,356 white testicular cancer patients reported to the SEER Program (1973–2002) were utilized. A total of 621 patients developed a second cancer with known stage and were matched to a random sample of 12,420 white male first cancer patients in the SEER Program by cancer site, stage, diagnosis year, and age at diagnosis. Mortality was ascertained through 2002. RRs for cancer-specific and all-cause mortality for second cancers compared with matched first cancers were 1.05 (CI = 0.90–1.23) and 1.09 (CI = 0.96–1.23), respectively. However, among testicular cancer patients who were diagnosed between 1973 and 1979, an era in which radiation therapy was given at high doses and to the chest area, all-cause mortality following second cancers at sites below the diaphragm (79 deaths) and second lung cancers (29 deaths) was statistically significantly higher than that following matched first cancers (RR = 1.44, CI = 1.13–1.83; and RR = 1.65, CI = 1.12–2.42, respectively). **(Schairer C, Hisada M, Chen BE, Brown LM, Howard R, Fosså SD, Gail M, Travis LB. Comparative mortality for 621 second cancers in 29356 testicular cancer survivors and 12420 matched first cancers. *J Natl Cancer Inst* 2007;99:1248–1256)**

VIRUSES

Hepatitis C Infection and Post-transplantation Lymphoproliferative Disorder

The authors investigated the association between hepatitis C virus (HCV) infection and posttransplantation lymphoproliferative disorder (PTLD) in a retrospective cohort study of all individuals in the United States who received their first solid organ transplant between 1994 and 2005 (n = 210,763), using Scientific Registry of Transplant Recipients data. During follow-up, 1,630 patients with PTLD were diagnosed. HCV prevalence at transplantation was 11.3%. HCV infection did not increase PTLD risk in the total cohort (HR = 0.84; CI = 0.68–1.05), even after adjustment for type of organ transplanted, indication for transplantation, degree of HLA mismatch, donor type, or use of immunosuppression medications. Additional analyses also revealed no association by PTLD subtype (defined by site, pathology, cell type, and tumor Epstein-Barr virus status). HCV infection did increase PTLD risk among the 2.8% of patients (n = 5,959) who were not reported to have received immunosuppression maintenance medications prior to hospital discharge (HR = 3.09; CI = 1.14–8.42; p for interaction = 0.007). **(Morton LM, Landgren O, Chatterjee N, Castenson D, Parsons R, Hoover RN, Engels EA. Hepatitis C virus infection and risk of post-transplantation lymphoproliferative disorder among solid organ transplant recipients. *Blood* 2007;110:4599–4605)**

DCEG PEOPLE IN THE NEWS

In November, **Christian C. Abnet, Ph.D., M.P.H.,** and **Sanford M. Dawsey, M.D.,** both of the Nutritional Epidemiology Branch (NEB), gave lectures on esophageal squamous cell carcinoma at the Tenwek Hospital, Bomet District, Kenya. Dr. Abnet's talk addressed the etiology of the disease, and Dr. Dawsey's focused on early detection.

In Atlanta at the first American Association for Cancer Research Conference on Science of Cancer Health Disparities in November, **William F. Anderson, M.D., M.P.H.,** Biostatistics Branch (BB), gave a presentation titled "Perspective on the descriptive epidemiology of breast cancer as a reflection of biological heterogeneity and racial disparity."

In September, **Louise A. Brinton, Ph.D.,** Chief of the Hormonal and Reproductive Epidemiology Branch (HREB), gave a talk on "Cancer risks of ovulation induction" at the Fifth World Congress on Ovulation Induction in Rome.

In November, **Anil K. Chaturvedi, Ph.D.,** Viral Epidemiology Branch (VEB), spoke on the "Incidence trends for HPV-related and -unrelated oral squamous cell carcinomas in the United States" at the 24th International Papillomavirus Conference and Clinical Workshop in Beijing.

Mitchell H. Gail, M.D., Ph.D. (BB), gave a speech titled "The probability of detecting disease-associated SNPs in case-control genome-wide association studies" at Georgetown University in October. He also delivered a lecture, "Absolute risk: Clinical applications and controversies," at the Biopharmaceutical Applied Statistics Symposium XIV in Savannah, Georgia in November.

In December, **Lynn R. Goldin, Ph.D.,** Genetic Epidemiology Branch (GEB), gave a talk titled "Familial chronic lymphocytic leukemia (CLL): Genes and environment" at the American Society of Hematology Annual Meeting in Atlanta.

Zhaoming Wang, Meredith Yeager, Xiang Deng, Amy Hutchinson, Marianne Rivera-Silva, and Robert Welch with SAIC-Frederick President Larry Arthur.

CORE GENOTYPING FACILITY TEAM WINS AWARD

On December 13, **Xiang Deng, M.S., Amy Hutchinson, Marianne Rivera-Silva, Zhaoming Wang, Robert Welch, M.S.,** and **Meredith Yeager, Ph.D.,** all of the Core Genotyping Facility, won an SAIC-Frederick Special Achievement Award for their advances in human genetic research, including the Cancer Genetic Markers of Susceptibility initiative, a three-year collaborative, genome-wide association project focused on prostate and breast cancers.

Richard B. Hayes, D.D.S., Ph.D., Occupational and Environmental Epidemiology Branch (OEEB), and the Prostate, Lung, Colorectal, and Ovarian (PLCO) Cancer Screening Trial team and participants were selected for the *Annual Bibliography of Significant Advances in Dietary Supplement Research 2006*. Their article, "Supplemental and dietary vitamin E, beta carotene, and vitamin C intakes and prostate cancer risk," was one of 25 chosen from the more than 300 peer-reviewed papers evaluated.

Ann W. Hsing, Ph.D. (HREB), gave a talk on inflammation and cancers of the prostate and biliary tract at the Lombardi Comprehensive Cancer Center at Georgetown University in September.

Deukwoo Kwon, M.B.A., Ph.D., Radiation Epidemiology Branch (REB), spoke on "Identifying protein biomarkers from mass spectrometry data with ordinal outcome" at the University of Minnesota School of Public Health in September and at the University of Arkansas in October.

This fall, **Ola Landgren, M.D., Ph.D.** (GEB), gave invited talks on CLL at the International Consortium for Familial CLL meeting and at the Young Investigators CLL meeting, both in London. He also gave two presentations on Hodgkin lymphoma at the Seventh International Symposium on Hodgkin Lymphoma in Cologne, Germany and a lecture on "Epidemiology of non-follicular indolent non-Hodgkin lymphoma (NHL)—Lessons from CLL" at the International NHL Workshop in Boston.

In October, **Sam M. Mbulaiteye, M.D.** (VEB), gave two talks, "Epidemiology of AIDS-related malignancies in Africa"

and "Epidemiology of endemic Burkitt lymphoma: Unanswered questions," at the Sixth International Conference of the African Organization for Research and Training in Cancer in Cape Town. He also cochaired the conference's first session on AIDS-related malignancies.

In November, **Katherine McGlynn, Ph.D., M.P.H.** (HREB), gave a seminar at Fox Chase Cancer Center in Philadelphia titled "Recent developments in understanding the epidemiology of testicular germ cell tumors."

Preetha Rajaraman, Ph.D. (REB), presented a poster on "Polymorphisms in apoptosis and cell-cycle control genes and risk of brain tumors in adults" at the American Association for Cancer Research meeting on Approaches to Complex Pathways in Molecular Epidemiology, which was held in New Mexico in June.

This fall, **Arthur Schatzkin, M.D., Dr.P.H.** (Chief of NEB), gave a talk on "Diet, physical activity, and cancer: Toward new horizons" as the First Annual Lecture at the Centre for Nutritional Epidemiology in Cancer Prevention and Survival at the University of Cambridge. He also gave an invited talk at the Washington, DC conference that launched the World Cancer Research Fund/American Institute for Cancer Research (WCRF/AICR) Second Expert Report, *Food, Nutrition, Physical Activity, and the Prevention of Cancer: A Global Perspective.* Dr. Schatzkin gave presentations at the AARP National Event in Boston and at the University of Bristol in England.

Rashmi Sinha, Ph.D. (NEB), gave three talks during September and November: "Dietary assessment methods for epidemiological studies in Asia" at the 10th Asian Congress of Nutrition in Taipei; "Current challenges in the understanding and management of colon cancer" at the International Symposium of the Princess Takamatsu Cancer Research Fund in Tokyo; and "Meat intake and cancer risk" at the WCRF/AICR conference in Washington, DC.

In November, **Rachael Stolzenberg-Solomon, M.P.H., Ph.D.** (NEB), spoke about the epidemiology of pancreatic cancer at Harvard Medical School in Boston.

In Buenos Aires at the 21st World Congress of Dermatology in October, **Jorge R. Toro, M.D.** (GEB), received a Best Poster Award for his work on pediatric dermatology. He gave three talks at the meeting: "Germline mutations in the fumarate hydratase gene confer a predisposition to development of uterine fibroids"; "Lung cyst, spontaneous pneumothorax, and genetic associations in 89 families with Birt-Hogg-Dubé (BHD) syndrome"; and "Novel mutations in BHD and expansion of the spectrum of phenotypes expressed in 50 new families with BHD syndrome."

In addition, he gave a plenary award lecture on "Familial kidney cancer" at the Association for Molecular Pathology Annual Meeting in Los Angeles in November.

In November, **Rebecca Troisi, Sc.D.,** Epidemiology and Biostatistics Program, convened the session on cancer at the Fifth International Congress on Developmental Origins of Health and Disease in Perth, Australia. At the same meeting, she gave two invited talks: "Does the human biological evidence support current hypotheses for prenatal breast cancer risk factors?" and "Cord serum estrogens, androgens, IGF-I, and IGFBP-3 in Chinese and U.S. Caucasian neonates." She also gave a presentation on *in utero* cancer risk factors and diethylstilbestrol at the University of Western Australia.

In January, **Shelia Hoar Zahm, Sc.D.,** DCEG Deputy Director, presented an overview and was a discussant at an American Cancer Society meeting in Atlanta on cancer and the environment.

ERIC ENGELS TENURED

In December, based on a recommendation by the NIH Central Tenure Committee, Dr. Michael Gottesman, NIH Deputy Director for Intramural Research, awarded scientific tenure to **Eric A. Engels, M.D., M.P.H.** (VEB). After receiving an M.D. from Harvard Medical School, Dr. Engels completed clinical training in internal medicine and infectious diseases and received an M.P.H. from Tufts University School of Medicine. He joined VEB in 1998 and became a tenure-track investigator in 2000. Dr. Engels's research spans the spectrum from registry-based linkage studies to molecular epidemiology studies designed to provide a better understanding of cancer etiology.


Eric Engels

Dr. Engels has been responsible for characterizing the spectrum of cancer arising in persons with severe immunosuppression, including patients with HIV infection and transplant recipients. His interests include research on the role of immunity, inflammation, and infection in the etiology of lung cancer and non-Hodgkin lymphoma. He leads a recently initiated study examining medical risk factors and treatment outcomes associated with hematopoietic malignancies in the elderly, using data from NCI's Surveillance, Epidemiology, and End Results–Medicare database.

COMINGS . . . GOINGS


Michael Abend

Michael Abend, M.D., joined the Radiation Epidemiology Branch (REB) for seven months as a special volunteer. He is a radiobiologist with a medical degree from the University of Cologne. He works for the Bundeswehr Institute of Radiobiology in Munich, where his research has focused on multiple mechanisms of cell death. He passed the exam for a professorship in radiobiology at the Technical University, Munich, where he teaches medical students. He is also working toward a master's degree in epidemiology at the Johannes Gutenberg University of Mainz and is completing his thesis project while in REB. He is working with **Alice J. Sigurdson, Ph.D.,** to quantify thyroid nodule and cancer risk associated with occupational and medical radiation exposure among the U.S. Radiologic Technologists cohort.

Amy Berrington, D.Phil., joined REB as a tenure-track investigator. She received a doctorate of philosophy from the University of Oxford in cancer epidemiology. She conducted postdoctoral research at Oxford and was appointed to the faculty in 2004. In 2005, she became assistant professor in the Department of Epidemiology at the Johns Hopkins University Bloomberg School of Public Health. Under mentor **Elaine Ron, Ph.D., M.P.H.,** her research is focused on studying the risks of cancer from medical radiation exposures, including screening x-rays, CT scans, and radiotherapy.


Amy Berrington

Lisa Chu, Ph.D., M.P.H., has returned to the Hormonal and Reproductive Epidemiology Branch (HREB) as an NCI Cancer Prevention Fellow. She is investigating prostate cancer epidemiology under the mentorship of **Ann W. Hsing, Ph.D.**


Jennifer Connor

Jennifer Connor joined the Administrative Resource Center as an administrative officer for HREB and the Nutritional Epidemiology Branch (NEB). She worked in HREB for 13 years as an epidemiology program assistant.


Leah Ferrucci

Leah Ferrucci, M.P.H., joined NEB as a predoctoral fellow through the Yale University/NCI Partnership Training Program in cancer epidemiology. She has a B.A. in anthropology from the University of Pennsylvania and an M.P.H. with a concentration in the social and behavioral aspects of chronic disease epidemiology from Yale University. She has also


Linda Morris Brown

In February, **CAPT Linda Morris Brown, Dr.P.H.,** retired from the U.S. Public Health Service (PHS) and from BB, following a wide-ranging career in cancer epidemiology, leadership in the PHS, and administration of the Branch. Her work on the epidemiology of esophageal, testicular, oral, lung, and hematopoietic cancers; *Helicobacter pylori* infection; and treatments to prevent precancerous gastric lesions has been widely cited. CAPT Brown received the Surgeon General's Exemplary Service Medal for her leadership as Health Services Chief Professional Officer; the PHS Distinguished Service Medal for scientific expertise, leadership, and service to NCI, NIH, and the PHS; and more than 30 additional awards and certificates of recognition.

CAPT Brown joined NCI in 1978 after completing an M.P.H. at the University of Michigan in 1976. Her early collaborative work included papers on lung cancer epidemiology and studies of T-cell subsets in healthy individuals, esophageal cancer in African American men in Washington, DC, and testicular cancer in young men. CAPT Brown became an expert in the epidemiology of esophageal cancer and explained disparities in the incidence of this disease in terms of smoking, alcohol, and other risk factors. Her interest in health disparities led to important papers on multiple myeloma. CAPT Brown played a key role in an intervention trial in Shandong Province, China, to reduce the progression of precancerous gastric lesions. One-time treatment of *H. pylori* had a favorable effect, even seven years later. During the course of this trial, CAPT Brown earned a Dr.P.H. in epidemiology for her studies on factors affecting transmission of *H. pylori.*

In addition to her scientific accomplishments, CAPT Brown served as Deputy Branch Chief of BB and in many capacities in the PHS, in which she was active in the area of emergency preparedness and as Chief Professional Officer for Health Services with responsibility for the well-being of more than 700 officers.

CAPT Brown has taken a position as a senior research epidemiologist with RTI International.

worked with the New Haven County Liver Study of the Connecticut Emerging Infections Program and the Nurse Oncology Education Program of the Texas Cancer Council. While at NEB, Ms. Ferrucci is working with **Amanda J. Cross, Ph.D.,** and **Rashmi Sinha, Ph.D.,** examining meat intake and heme iron in relation to colorectal adenomas and cancer as well as breast cancer.


Barbara Fuhrman

Barbara J. Fuhrman, Ph.D., has joined the Epidemiology and Biostatistics Program as a postdoctoral fellow. She received a bachelor's degree in Spanish from Yale University and a master's and doctoral degree in epidemiology and community health from the University at Buffalo, State University of New York. Her dissertation research focused on individual variation in isoflavone metabolism as an effect modifier of the association between soy intake and mammographic density in postmenopausal women. She also worked on genetic factors associated with nicotine dependence. With mentor **Regina G. Ziegler, Ph.D., M.P.H.,** she is studying endogenous steroid hormones, estrogen metabolism, soy intake, and vitamin D status as determinants of breast cancer risk.

Mia M. Gaudet, Ph.D., M.S.P.H., a former research fellow in HREB, has accepted a position as an Assistant Attending Epidemiologist at Memorial Sloan-Kettering Cancer Center in New York.


Todd Gibson

Todd M. Gibson, M.S., joined NEB through the Yale University/NCI Partnership Training Program. He is working toward a Ph.D. in epidemiology and public health with a focus on nutrition and cancer at Yale University. He has a B.S. in nutrition from Cornell University and an M.S. in molecular biology from Lehigh University in Bethlehem, Pennsylvania. For his dissertation research, he is working with **Rachael Stolzenberg-Solomon, M.P.H., Ph.D.,** and **Stephanie J. Weinstein, Ph.D.,** on associations between serum genetic markers of one-carbon metabolism and insulin/IGF in relation to renal cancer in the Alpha-tocopherol, Beta-carotene (ATBC) Cancer Prevention Study.


Huilin Li

Huilin Li, Ph.D., joined the Biostatistics Branch (BB) as a postdoctoral fellow. She received her doctoral degree in statistics from the University of Maryland, College Park, where she estimated components of variance in survey methods, including small area estimation. With mentor **Mitchell H. Gail, M.D., Ph.D.,** she is devising methods to adjust cancer mortality maps for such factors as smoking prevalence and methods for value-added studies based on genome-wide case-control association data.

NEW SALLIE ROSEN KAPLAN FELLOW

Linda Dong, Ph.D., joins OEEB as a Sallie Rosen Kaplan Fellow. The Sallie Rosen Kaplan Fellowship for Women Scientists in Cancer Research is the result of an annual competition for postdoctoral fellows who wish to train in any of NCI's intramural research settings. Fellows receive a supplement to their first-year stipend, made possible by a bequest from Ms. Kaplan to the Foundation for NIH (FNIH). NCI and FNIH have selected Dr. Dong to train in DCEG.

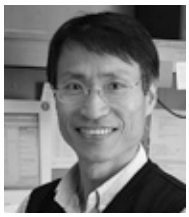

Linda Dong

Prior to receiving a Ph.D. in epidemiology at the University of Washington School of Public Health and Community Medicine, Dr. Dong earned an M.P.H. from the University of California, Berkeley, where she first experienced the merging of her interests in nutrition and physical activity with the field of epidemiology. Building on her background in nutritional epidemiology, she focused her doctoral training on gene-environment interactions in relation to understanding cancer etiology. Her dissertation explored the association between calcium and vitamin D–related genes and whether variants in these genes modified associations of calcium and vitamin D intake with colon cancer.

Dr. Dong will be working with **Wong-Ho Chow, Ph.D.,** and **Lee E. Moore, Ph.D.**, both investigators in OEEB, to evaluate genetic and lifestyle risk factors associated with the development of renal cell cancer and upper gastrointestinal cancers. "I am very excited about the opportunity to work with and learn from researchers with diverse expertise and to expand my knowledge of molecular and genetic epidemiology during my fellowship," Dr. Dong said. "Working with the extensive amount of data available from the large kidney cancer studies and the BEACON consortium will allow me to examine the relative role of genetic susceptibility versus environmental exposures as well as explore potential differences by race and gender in the etiology of these emerging cancers."


Keith Moore

Keith Moore has joined the Occupational and Environmental Epidemiology Branch (OEEB) as an epidemiology program specialist. He received a bachelor's degree in sociology from Clark Atlanta University in 1998. Since graduating, he has worked as an information specialist with CDC and as an administrative technician with the National Institute of Environmental Health Sciences and National Institute of Arthritis and Musculoskeletal and Skin Diseases.


Dong-uk Park

Dong-uk Park, Ph.D., has joined OEEB as a visiting researcher. He is a professor in the Department of Environmental Health at the Korea National Open University in Seoul. He received a doctoral degree in industrial hygiene from the Seoul National University in 1995. His research interests include the assessment of occupational exposure to metal-working fluids, lead, and asbestos. He is working on exposure assessments for several studies, including the New England Bladder Cancer Study and the Shanghai Women's Health Study.


Susan Privot

Susan Privot has joined the Office of the Director (OD) as secretary to the Deputy Division Director. She will continue as executive secretary for the NCI Special Studies Institutional Review Board, a position she has held since 2001. She worked as a secretary in BB in the 1980s and most recently in the Montgomery County Public School system.


Anjoeka Pronk

Anjoeka Pronk, Ph.D., has joined OEEB as a visiting fellow. She recently received her Ph.D. from the University of Utrecht in the Netherlands. Her research focused on an epidemiologic study of occupational exposure to isocyanates and related respiratory health effects. While in OEEB, she is investigating exposure to occupational carcinogens in the Shanghai Women's Health Study and to diesel exhaust and polycyclic aromatic hydrocarbons in the New England Bladder Cancer Study.


Scott Quinlan

Scott Quinlan, M.S., joined the Viral Epidemiology Branch (VEB) as a predoctoral fellow. Under the mentorship of **Eric A. Engels, M.D., M.P.H.,** he is investigating the effects of solid organ transplant on hematopoietic malignancy risk. Mr. Quinlan is a Ph.D. candidate in epidemiology at George Washington University (GWU). He received an M.S. in epidemiology from GWU and a B.S. in biochemistry from the University of Delaware.

After 16 years in VEB as a secretary and epidemiology program assistant, **Julie Russell** transferred to serve the NCI Divisions of Cancer Biology and Extramural Activities as an administrative officer.


Dana van Bemmel

Dana M. van Bemmel, Ph.D., M.P.H., joined OEEB as an NCI Cancer Prevention Fellow. She received a doctoral degree in biochemistry and molecular biology from the University of Nebraska Medical Center, where she focused on understanding the mechanism of epigenetic gene regulation. She also holds a master's degree in public health from the Johns Hopkins Bloomberg School of Public Health, where she examined the cancer risk of pesticide applicators enrolled in the Agricultural Health Study. Her current research interests include understanding the role of environmental exposures (including diet), chromatin stability and remodeling,


Sandra Rothschild

In January, **Sandra Rothschild** (OD) retired after 17 years of federal service and 11 years in the private sector. Her government career included 10 years at the Center for Scientific Review and 7 years in DCEG in the Office of Division Operations and Analysis and the OD. As an assistant to **Shelia Hoar Zahm, Sc.D.,** DCEG Deputy Director, Ms. Rothschild coordinated many Division-wide committees, including the DCEG Technical Evaluation of Protocols Committee, the Promotion and Tenure Review Panel, the U.S. Military Cancer Institute/NCI Collaborative Research Program review committee, numerous search committees, and other groups. She often served as a technical editor for *Linkage* and as the DCEG representative at the Division fellowship recruitment booth at scientific conferences around the country. Her care for others and limitless energy was evident in all she did at DCEG and will no doubt characterize her retirement years as well.

and folate metabolism as related to epigenetic changes that occur during tumor initiation and progression. In OEEB, she is working with **Lee E. Moore, Ph.D.,** to carry out molecular epidemiologic studies of renal and bladder cancer.


Joanne Watters

Joanne L. Watters, Ph.D., M.P.H., an NCI Cancer Prevention Fellow, has joined NEB. She received an M.P.H. from the Johns Hopkins Bloomberg School of Public Health and a Ph.D. in nutritional epidemiology from the University of North Carolina at Chapel Hill. Her research interests include the role of antioxidant nutrients and oxidative stress in carcinogenesis, prostate cancer, and health disparities. In NEB, she is working with **Demetrius Albanes, M.D.,** to explore dietary associations with prostate cancer in the ATBC Study and the NIH-AARP Diet and Health Study.


Sandhya Xirasagar

Sandhya Xirasagar, Ph.D., joined the Office of Division Operations and Analysis as a scientific program specialist. She received her doctoral degree in biological science from the University at Buffalo. Her responsibilities include leading the management of scientific data integration on the Division-wide computing support services contracts. Previously, she worked on NIH-funded genomics projects integrating gene expression, genetics, and/or proteomics data with clinical/preclinical data.


Lynn Hartmann receives award from HREB Chief Louise Brinton and sponsor Mark Sherman.

HREB DISTINGUISHED SCHOLAR LYNN HARTMANN PRESENTS SEMINAR

In September, the Hormonal and Reproductive Epidemiology Branch (HREB) hosted Dr. Lynn Hartmann, professor of oncology at the Mayo Clinic and associate director for education of the Mayo Clinic Cancer Center, as an HREB Distinguished Scholar.

Dr. Hartmann is currently working on studies designed to identify genetic alterations in ovarian cancer and translate these findings into molecular diagnostics, prognostics, and therapeutics as well as to identify and manage women at high risk for breast cancer.

During her visit, Dr. Hartmann presented a seminar titled "Risk prediction strategies for breast cancer." She discussed findings from a large retrospective cohort study focused on predicting subsequent risk of breast cancer among women with benign breast disease. She reported that after a median follow-up of 15 years, proliferative benign breast diseases were associated with elevated risks, particularly if atypical hyperplasia was present, and risk was further increased if a patient had multiple atypical foci. Dr. Hartmann has also investigated age-related lobular involution and breast cancer risk. An absence of involution or partial involution was related to subsequent breast cancer risk in all subgroups, including those with atypia, suggesting that it could become a useful surrogate endpoint in prevention research. She reported that risk discrimination was achieved by counting the number of acini per lobule and that this measure outperformed histology and family history as a breast cancer risk predictor. Finally, Dr. Hartmann presented data showing that cyclooxygenase-2 expression may further stratify breast cancer risk among women with atypia.

Dr. Hartmann concluded that differing risk strata can be identified by histology, involution, family history, and age; that molecular markers can further stratify risk; and that benign breast diseases represent one platform for the development of multivariate risk prediction models and for providing clues to the pathogenesis of breast cancer.

During the rest of her visit, Dr. Hartmann held informal discussions with DCEG scientists on identifying early markers of breast cancer risk prediction and ovarian cancer research at Mayo and in DCEG.

—Patricia Madigan

NEW DCEG SPECIAL ASSISTANT FOR BIOLOGICAL RESOURCES

Karen E. Pitt, Ph.D., is the new DCEG special assistant for biological resources, succeeding Dr. Jim Vaught, who is now Deputy Director of the NCI Office of Biorepositories and Biospecimen Research. Dr. Pitt came to NCI in 2006 from Invitrogen Bioservices and holds a Ph.D. from the Molecular Biology Institute at the University of California, Los Angeles. She also conducted postdoctoral research at the Institute of Molecular Biology at the University of Oregon. Dr. Pitt is active in the International Society for Biological and Environmental Repositories (ISBER), serving on its governing council, as chair of the Education and Training Committee, and as editor-in-chief of its publication, *Best Practices for Repositories: Collection, Storage, and Retrieval of Human Biological Materials for Research*.

Dr. Pitt chairs the DCEG Repository Committee and has oversight of the Division's more than 12 million biospecimens, approximately half of which are stored in the NCI Central Repository at SAIC-Frederick. As project officer on contracts with SAIC-Frederick and SeraCare BioServices, Dr. Pitt leads the Division's efforts on biospecimen handling and storage.

One of Dr. Pitt's current initiatives is to improve the flow of specimens to processing labs. This goal is especially important given the growth of high-volume genome-wide association studies (GWAS), including the Cancer Genetic Markers of Susceptibility initiative. Dr. Pitt plans to create a "staging" lab that will be part of the NCI-Frederick DNA Extraction Laboratory. Samples prepared there will be "run ready" for genotyping when they arrive at the NCI Core Genotyping Facility (CGF). In the past, CGF has spent a great deal of time and effort on sample handling (ensuring correct concentration), so the new staging facility is expected to significantly increase efficiency.

"High-quality specimens are central to the work of all biological research," Dr. Pitt said. "Biological assay data from verified specimens greatly increase the validity and value of other types of data, such as that obtained from questionnaires." The ability to answer whatever question is being asked—whether a search for biomarkers to enable early diagnosis or understanding the genetics of a rare cancer—is greatly enhanced by good specimens.

Her voice betrays her excitement when she discusses the future of repositories. "Storage technology is advancing rapidly and dramatically," Dr. Pitt explained. "Imagine the labor involved in retrieving specimens from large, -80°C chest freezers, and compare that to completely automated, robotic retrieval." New systems are smaller and much more energy efficient, and because of the speed at which robots can do the job, "specimens are not only made available much faster and

Karen Pitt

at reduced cost, but they also retain higher quality because their exposure to warm temperatures is so brief."

Dr. Pitt has formed a task force of DCEG researchers to study the issues involved in these new technologies. "These are the key stakeholders," she explained. "They want their specimens to be easily retrievable, at reduced cost, and their storage to be reliable over the long term. They have an enormous investment in planning for the future."

Dr. Pitt enjoys her role of helping investigators find their way through the maze of procedures involved in sample access. But making high-quality specimens available in an efficient manner is her chief goal. "NCI is very interested in improving specimen quality," she noted. "Not just in our own repositories, but everywhere." ■

—Terry Taylor, M.A.

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