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DCEG Linkage

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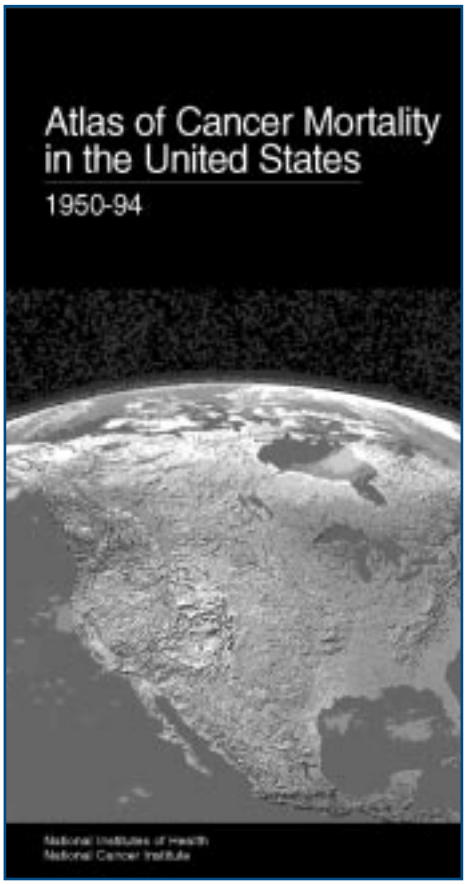
Mapping at the Millennium

In the 1970's, our NCI epidemiology group made a systematic effort to identify cancer clustering in the United States by analyzing patterns of mortality at the county level, where the population was small enough to be relatively homogeneous, yet large enough to provide reliable data and stable rates. When the mortality rates for 1950–1969 were plotted in a series of computer-generated color-coded maps, there arose a surprising number and variety of geographic patterns, including clusters of high-rate areas, or so-called hot spots, which stimulated not only scientific interest but also public and political concerns.



After publishing cancer atlases for the white and nonwhite populations, we undertook a series of descriptive and correlation studies to characterize tumor patterns in more detail and to generate etiologic hypotheses. Next, in collaboration with other research groups, we embarked on case-control studies of selected cancers in high-risk areas in efforts to determine reasons for the elevated rates. For example, the high lung cancer rates among men in some coastal areas were found to be related to asbestos exposures in shipyard work, especially during World War II, and the elevated oral cancer rates among women in the rural South were found to be linked to the use of smokeless tobacco.

As the new millennium approaches, we have sent to the printer an updated atlas of cancer mortality. (Devesa SS, Grauman DJ, Blot WJ, Pennello GA, Hoover RN, Fraumeni JF Jr. *Atlas of Cancer Mortality in the United States: 1950–94*. NIH Publ. No. 99-4564. Bethesda, MD: National Cancer Institute, 1999) For the first time, maps are shown for the black population and white population in the same atlas. The maps cover two periods, 1950–1969 and 1970–1994, and show counties and state economic areas. Also for the first time, the patterns of liver cancer and biliary tract cancer are presented, since previous disease classification schemes did not allow separate analyses of these conditions. In addition, two interactive versions of the atlas will be

DCEG Linkage is a quarterly publication of the Division of Cancer Epidemiology and Genetics, National Cancer Institute

Managing Editor
Michelle Renehan (renehanm@mail.nih.gov)

Photographer
Sam Nhan (nhans@mail.nih.gov)

DCEG Linkage Reporters

Office of the Director, DCEG
Cathy McClave (mcclavec@mail.nih.gov)

Office of Division Operations and Analysis, OD, DCEG
Marianne Henderson (hendersm@mail.nih.gov)

Biostatistics Branch, EBP, DCEG
B.J. Stone (stoneb@mail.nih.gov)

Environmental Epidemiology Branch, EBP, DCEG
Patricia Madigan (madiganp@mail.nih.gov)

Genetic Epidemiology Branch, HGP, DCEG
Mary Fraser (fraserm@mail.nih.gov)

Laboratory of Population Genetics, HGP, DCEG
Jenny Kelley (kelleyj@mail.nih.gov)

Nutritional Epidemiology Branch, EBP, DCEG
Stephanie Weinstein (weinstes@mail.nih.gov)

Occupational Epidemiology Branch, EBP, DCEG
Ifetayo White (whitei@mail.nih.gov)

Radiation Epidemiology Branch, EBP, DCEG
Ruth Kleinerman (kleinerr@mail.nih.gov)

Viral Epidemiology Branch, EBP, DCEG
Beth Maloney (maloneyb@mail.nih.gov)

DCEG Committee of Scientists
Tom O'Brien (obrient@mail.nih.gov)

DCEG Representative to the NIH Women Scientists Advisory Group
Martha Linet (linetm@mail.nih.gov)

DCEG Representative to the NIH Fellows Committee
Frank Groves (grovesf@mail.nih.gov)

DCEG Representative to the NIH pre-IRTA Committee
Tammy Shields (shieldst@mail.nih.gov)

Administrative Resource Center, OM, NCI
Mary Jude Jacobs (jacobsm@mail.nih.gov)

Research Contracts & Acquisition Branch, OM, NCI
Sharon Miller (millersh@mail.nih.gov)

Contractor Support
Technical Editor
Jim Sontag (sontagj@hotmail.com)

Production Staff
Palladian Partners, Inc.
(mbarker@palladianpartners.com)

available on the internet, as described below by Dan Grauman.

Many of the geographic variations seen in the more recent period resemble the previous ones, but some changes and new patterns have emerged that should help target high-risk populations for further research into cancer etiology and control. I hope all staff members will look through the atlas and browse the web sites for "smoke signals" that might point the way to further investigations. Since our first atlas, the strategy of cancer mapping on a small-area scale has been pursued as a surveillance mechanism in virtually all nations with cancer statistics, and the 254 maps in the new atlas illustrate the power of computerized color-coded mapping to bring seemingly dormant statistics to life. ■

Joseph F. Fraumeni, Jr., M.D.

ATLAS WEB SITES: THE SKY'S THE LIMIT

When the idea to create a web site for the new *Atlas of Cancer Mortality* was conceived 5 years ago, internet technology was in its infancy. Few people believed it could work, and funds were limited. Two years and one proposal later, funding became available from the Information Technology Innovation Fund (ITIF) committee of the National Partnership for Reinventing Government, and work on the Static Web Site associated with the atlas began. The ITIF subsequently funded the creation of a second web site, the Dynamic Web Site.

The Static and Dynamic Web Sites are extensions of the new atlas and make the book's contents available to anyone with access to the internet. These sites also allow users to go beyond reading someone else's interpretation of the data.

Foremost of the benefits of the Static Web Site, also called *The Atlas Online*, is the ability to download the data used in creating the maps as a text file or as .dbf. Maps may be downloaded as .gif or .pdf, in color or in shades of gray. For .pdf maps, users can pan around or zoom in on the image. Text, figures, tables, and geographic boundary files used in the creation of the maps can be downloaded from the web site as well.

Susan Devesa, Ph.D., and Dan Grauman

In the Static Web Site, the table of contents of the atlas consists entirely of hypertext, which enables users to "jump" from any section of the book to another. Users can go directly to the discussion of a cancer of interest, view the maps and International Classification of Diseases definition, and download the data associated with the maps for that cancer. In addition, all references appearing in the text are linked to the full citation.

The Dynamic Web Site, also called *Customizable Maps*, allows users to control the number of categories (defined by percentiles) to be displayed on the map, percentage of observations in each category, method used for calculating percentile values, map colors, and other variables. In addition to a map and legend, a table shows the U.S. mortality rate and number of deaths for the cancer being mapped. Users can display a state, state economic area, or county map; the accompanying table shows the relative rank of that geographic unit (and any unit within which it is contained) and indicates whether the mortality rate is significantly different from that of the total United States.

When selecting a particular cancer, time period (1950–1969 or 1970–1994), gender, race, or geographic unit, users can also choose the period for calculating percentile values — the same period as the one for which the map is being created (for spatial comparisons), or the entire period covered by the atlas (1950–1994, for temporal comparisons).

In the next 6 months, a rate-generating program will become part of the Dynamic Web Site, enabling users to generate 5- to 45-year maps (in increments of 5 years). Users will also be able to generate multiple thumbnail maps, which can be animated as full-screen maps to show temporal trends. Planning is under way for displaying smoothed maps based on Bayesian methods and to allow calculated rates to be downloaded. On the Static Web Site, future NCI publications associated with the atlas will be posted, as perhaps will outside publications associated with the book.

The possibilities for future enhancements are truly endless. Mortality mapping for noncancer outcomes and cancer incidence mapping could be readily done with some minor modifications to the Dynamic Web Site. Environmental, occupational, and other factors could be incorporated into the maps as layers. And the current emphasis on geographic information systems will provide some interesting and exciting possibilities for web site enhancements.

These web sites will serve as useful tools to researchers as well as to public health officials, health care administrators, and policy makers at the national, state, and local levels. ■

Dan Grauman

MARK GREENE, CHIEF OF THE CLINICAL GENETICS BRANCH

Who says you can't come home again? Dr. Mark Greene has returned to NCI to head the newly formed Clinical Genetics Branch after nearly 15 years in private practice as a medical oncologist. The move is a homecoming for Dr. Greene, who started his career as an epidemiologist.

Dr. Greene discovered public health during his years at Tufts University Medical School, from which he graduated in 1970. He completed his medical internship and residency at the Massachusetts General Hospital in 1972, then joined the Center for Disease Control's (CDC) Epidemic Intelligence Service, where he applied standard infectious disease techniques to the problem of drug abuse. In 1975, Dr. Greene joined NCI as a staff fellow in the Epidemiology Branch, and completed an oncology fellowship in 1977 in the Medicine Branch. For nearly 10 years, he explored the epidemiology of familial cancer, finding a genetic link for melanoma and describing the dysplastic nevus syndrome.

Mark Greene, M.D.

In 1985, the lure of clinical medicine led Dr. Greene to work as a medical oncologist in Sun City, Arizona. But the escalating difficulties of private practice in a dramatically changing health care environment convinced Dr. Greene to seek a more academic life again, and for 8 years he served as a consultant in the Hematology / Oncology Division of the Arizona branch of the Mayo Clinic. It was there that he reactivated his interest in familial cancer, becoming the principal investigator for the Mayo Cancer Center's Familial Cancer Program. His interest and involvement in clinical cancer genetics ultimately led him to return to NCI this September to head the new DCEG branch. Following are questions and Dr. Greene's responses during an interview with *DCEG Linkage.*

What is the role of the new Clinical Genetics Branch in DCEG?

This new component in DCEG's Human Genetics Program will complement existing activities in cancer genetics research. We already have the Genetic Epidemiology Branch (GEB) and the Laboratory of Population Genetics (LPG). The Clinical Genetics Branch is the third leg of the program.

How is your Branch different?

The GEB focuses on gene finding and linkage analysis to identify genes responsible for genetic syndromes that result in cancer, and the LPG focuses on genetic mapping, evaluation of penetrance, and experimental organism genetics. The Branch I'm directing is clinical — more translational — in its focus. Our work begins when a gene is known to exist; the question becomes how to apply the available information about the gene to the management and evaluation of high-risk family members in the real world.

The creation of the Clinical Genetics Branch is an attempt to go beyond molecular research and to make it meaningful for a member of a cancer-prone family. What data do we need to answer the questions that patients ask when they are being evaluated and counseled? How do people decide to get genetic testing in the first place? What are the consequences of finding a mutation in a certain individual? What can a person do to manage or reduce his or her risk?

How did you become interested in cancer epidemiology?

While I was working for the CDC Epidemic Intelligence Service, I longed to reconnect with my clinical roots. At that point I'd completed my internal medicine training, and I missed patient contact. I had always intended to do subspecialty training in medical oncology, but I had thoroughly enjoyed my epidemiology experiences as well. As I looked for a way to combine my interests in oncology and epidemiology, I learned of NCI's cancer epidemiology program. With encouragement and support from Dr. Robert Miller and Dr. Joseph Fraumeni, I transferred from CDC to NCI in 1975. I was able to complete my medical oncology training

at NCI's Medicine Branch while beginning a career in cancer epidemiology. Because of my clinical interests, the study of familial cancer was a natural for me.

I headed the Family Studies Section, which grew into Dr. Margaret Tucker's Genetic Epidemiology Branch. In fact, Dr. Tucker was a key member of the Family Studies Section at the time. When I left after about 10 years, she took over the Section and built it into the terrific program it is today.

What cancers did you study at NCI?

I began with a familial melanoma project. Dr. Miller had attended a conference where he had learned of a striking familial cluster of melanoma. At his suggestion, I contacted the family's oncologist, and was told that the family was anxious to learn the basis of their predisposition. In the course of designing the familial melanoma study, I contacted Dr. Wallace Clark, an internationally renowned melanoma specialist at Temple University. I needed help with this project, as I knew very little about the disease. Dr. Clark joined with great enthusiasm, and over the years he became a vital collaborator and mentor.

While working with that first family, Dr. Clark and I realized they had a lot of funny-looking moles on their skin — we even found a new melanoma on one member. It was clear that something was going on. The project characterized the hereditary form of melanoma and led to the recognition of the dysplastic nevus syndrome. It's an ongoing project, and that family (plus many more) is still under observation by Dr. Tucker and Dr. Alisa Goldstein, who have identified several of the genes responsible for the hereditary melanoma syndrome.

I also was involved in the study of families with ovarian cancer, malignant lymphoma, hairy cell leukemia, Hodgkin's disease, and the nevoid basal cell carcinoma syndrome.

Why did you leave NCI for private clinical practice? Did you ever envision returning?

In 1985, my yearning to pursue clinical interests got the better of me. I was concerned that if I didn't have more direct patient contact, I would lose my skills and credibility. Also, I was being urged to assume a more senior administrative role within the epidemiology program, which at that point in my career I didn't want to do. So, I left NCI and moved to Arizona, where I joined a small, multispecialty medical group.

When I did that, I honestly thought I had left my research career behind. I felt that I had had a very productive research career but that it was time to move on and do something different. Once you leave the academic world, it's nearly impossible to come back.

I was in private practice for 6 years. I enjoyed the patient contact, but did not like the entrepreneurial side of medicine. The Mayo Clinic recruited me to join its branch in Scottsdale, Arizona. Mayo-Scottsdale was more academic, more collegial, and less stressful than private practice had been. Unexpectedly, I had the opportunity to re-enter the familial cancer arena, when I led the Mayo effort to create a familial cancer program. As I began to see patients in our high-risk Cancer Genetics Clinic, I realized how much more I enjoyed working with these cancer families than I did treating patients with end-stage malignancy.

At this point, I heard from Dr. Fraumeni, who was leading the search for a chief to head the new Clinical Genetics Branch. My initial reaction was "This is nuts! I can't go back to NCI. I haven't done anything original in years. I haven't been doing the things that one would ordinarily do to head a program like this."

But, I came up to interview and to say "hi" to old friends and colleagues, and it became clear that this was a tremendous opportunity. The surprise to me was that they were genuinely interested in my coming back. As it turns out, it's a perfect fit because I've done the epidemiology and the familial cancer research work, and for the last 5 years I've run a clinical genetics program and worked with patients as they struggle with the decision on whether to get tested. I know what the issues are, and I know what the problems are.

I can't believe how fortunate I am to get to do this. It feels like a new lease on life for me.

Now that you've returned to NCI, what will you study?

It's not certain yet which cancers the new Branch will study, but I expect it will be hereditary breast and ovarian cancers.

In part, what the Branch does will depend on the interests of the folks I recruit into the program. The first person who will be part of the Branch is Dr. Ruthann Giusti. She has been a special assistant to Dr. Fraumeni for cancer genetics, and will be expanding her role to include activities as a clinical investigator. She is interested in familial breast cancer, and has a number of projects under development in this area. Dr. Miller, who was my boss when I first came here and my mentor and teacher for many years, will work with the Branch as a scientist emeritus.

What is your number one priority with the new Branch?

Recruiting. I want to hire a medical oncologist with an interest in cancer genetics. I am also looking for a clinical geneticist, a genetic counselor, and a research nurse. This will make up the first round of recruits.

What's the most exciting part about heading this Branch?

If this program is successful, we could have a truly beneficial effect on the lives of a lot of people. If we can take maximum advantage of new molecular information and use it to benefit patients to the greatest extent possible while minimizing their risk of harm, that will have been a wonderful thing to accomplish. I'm optimistic that we will get the job done. ■

Lisa Seachrist

ARTHUR SCHATZKIN, CHIEF OF THE NUTRITIONAL EPIDEMIOLOGY BRANCH

Sometimes by following the road less traveled, one can end up in a rewarding place. Dr. Arthur Schatzkin, DCEG's new chief of the Nutritional Epidemiology Branch, chose to follow his interests rather than fashion, and as a result, he finds himself in one of the hottest areas of cancer epidemiology — looking to diet as a factor in understanding and preventing cancer.

Armed with a bachelor's degree in sociology (with a minor in economics) from Yale University, Dr. Schatzkin entered medical school at the State University of New York Downstate in Brooklyn, from which he graduated in 1976. While pursuing his medical degree, he obtained a master's degree in public health from the Columbia University School of Public Health. Dr. Schatzkin did an internal medicine residency at Montefiore Medical Center in the Bronx, and he completed a second residency in preventive medicine at Mount Sinai Medical Center in New York. During his first residency, he began doctoral studies in sociomedical science at Columbia's School of Public Health (with a concentration in epidemiology), which he completed in 1982.

In 1981, Dr. Schatzkin joined the faculty of Boston University as an assistant professor of epidemiology. He worked with the Framingham Heart Study, examining patients and studying risk factors for sudden death and other cardiovascular disease outcomes. Dr. Schatzkin also worked with the Slone Epidemiology Unit, where he carried out a study of breast cancer risk factors among black women. In 1984, Dr. Schatzkin joined NCI as a senior staff fellow in the old Division of Cancer Prevention and Control, in the Cancer Prevention Studies Branch. Following are questions and Dr. Schatzkin's responses during an interview with *DCEG Linkage*.

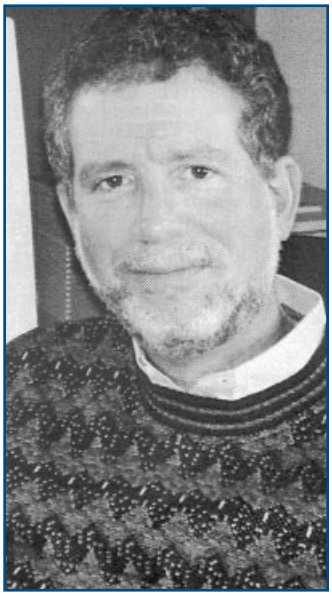
You have an extensive and diverse educational background. How did you find the time to pursue all your interests?

I was pretty lucky. All of the clinical training programs I was in were very flexible.

When you went to medical school, public health wasn't the most popular field to pursue. What sparked your interest?

In medical schools, public health — or social or environmental medicine as it's called in some schools — tends to be a neglected area. It certainly doesn't command students' attention or curricular time as much as, say, biochemistry or pathology or pharmacology. I was struck by something I heard in my infectious disease course, namely, that public health measures are far more important than medical interventions in reducing mortality. I still remember one of those graphs showing the decline in mortality over the decades, with little arrows indicating such events as sanitary reforms, the introduction of vaccination, the discovery of antibiotics — with the biggest drops in mortality clearly coinciding with the public health measures.

I went to college and medical school in the 1960's and early 1970's. The intellectual climate reflected the idea that many social problems — poverty, poor education, ill health — have some important component of environmental causation. If that's the case, then we could solve the problems, at least in part, by changing our physical and social environment. That's one of the driving themes that underlies epidemiology at its best.



Arthur Schatzkin, M.D., Dr.P.H.

How did an interest in infectious disease epidemiology lead to a career in cancer epidemiology?

Cancer runs in my family. My father died of multiple myeloma when I was 10 years old. So I suppose it's not entirely an accident that I ended up in cancer research. And when I learned of fellowship openings at NCI, the opportunity seemed too good to pass up.

What was the most important work you did then at NCI?

One of the first things I did was to look at alcohol and breast cancer. Alcohol exposure is an eminently modifiable risk factor. We found a link between breast cancer and fairly moderate alcohol consumption. Alcohol consumption is pretty much now considered a moderate risk factor for breast cancer, though the etiology of breast cancer is still somewhat elusive.

Is it important for researchers to know how such an effect occurs?

Yes, because unraveling the underlying biology can put our epidemiologic observations on more solid ground and help us refine our understanding of the "exposure."

You seem to be interested in both the etiology and prevention of cancer.

To me, etiology and prevention go hand in hand. If you are interested in how a disease works, and don't have an eye toward prevention, you can get lost in the vast complexity of biologic processes. By the same token, you can't develop practical and effective prevention strategies without rigorous research, grounded in good biology, into the causes of cancer.

Part of the allure of studying dietary cancer is that it's entirely possible to change what we eat, how we prepare our food, and even what agricultural products come to market.

So how do we move ahead?

To begin with, we have opportunities to broaden and refine what we mean by "diet." When it comes to what we eat, the exposure is a lot more complicated than, say, a particular medication or workplace chemical. And we measure dietary intake rather poorly — there's undoubtedly a great deal of measurement error entering the data we collect from our dietary questionnaires. We have not adequately characterized or accounted for this error, and perhaps that's why even well-designed epidemiologic studies

sometimes fail to detect associations between certain dietary factors and cancer. New studies of dietary measurement error, involving good intake biomarkers and some new statistical modeling approaches, may help with this problem.

Do we have any good biomarkers for diet?

Only for a couple of things, like total energy expenditure, dietary protein, and potassium. Many other blood, tissue, and stool markers have been looked at, but these have variable and imperfect correlations with dietary factors. It's interesting to speculate whether the molecular revolution might be of some help here — whether, for example, we can link certain dietary factors to particular patterns of gene expression in metabolic-feeding studies.

What is your opinion about the "micro" vs. "macro" perspective on diet?

Researchers tend to focus on the "parts" of diet (individual nutrients) and, more recently, on individual nonnutritive constituents like phytochemicals or heterocyclic amines. It's possible we'll hit paydirt; maybe heterocyclic amines or folic acid deficiency will turn out to be causal players for colon and other cancers. This "micro" approach requires that we develop databases reflecting the composition of these substances in a wide variety of foods. That's a formidable task.

Is there an alternative research approach?

Alternative, but complementary: namely, food groups and dietary patterns. In some ways this approach is not as neat as focusing on micrograms of a single carcinogenic chemical constituent. On the other hand, the food group / dietary pattern approach has the potential to integrate the myriad components of diet (some simply unknown to us) and their many potential biologic interactions. Another synthesizing, nutrition-related area is that of energy balance, body composition, and physical activity. For example, obesity, at least partly a function of dietary habits, is clearly related to some cancers. We have more to learn about how body size and composition relate to cancer, as well as the underlying biology, but it seems reasonable that energy balance and its physical consequences have important implications for cancer prevention.

Would you incorporate this approach into epidemiologic studies?

That's the plan, but it requires that we have a reasonable range of intake within our study populations. Whether we're looking at nutrients or dietary patterns, if our populations are relatively homogeneous, we won't be able to make particularly meaningful comparisons. Our study of members of the American Association of Retired Persons has a wide range of intakes for such factors as dietary fat, red meat, fiber, and fruits and vegetables. We are exploring other opportunities around the world to conduct large-scale studies among populations with a wide intake range or those undergoing rapid change in dietary habits. The ability to "think globally" and initiate wide-ranging, productive collaborations is one of the great advantages of NCI intramural research.

How does the molecular revolution pertain to the nutritional epidemiology of cancer?

We would like to look at diet-gene interactions to identify individuals with a genetically determined capacity level for metabolizing certain dietary factors. Then, when we look at the relationship between diet and cancer and take this differential susceptibility into account, we may be able to sharpen our observed relative risks — that is, see stronger associations that we wouldn't normally see when everyone is lumped together. But this research can be problematic. We could deal with many different enzymes (some not yet identified) and many different dietary factors, and therefore an almost limitless number of potential interactions. We may find the greatest success by looking at certain single dietary constituents with fairly simple metabolic profiles. Moreover, it's plausible that dietary factors influence the activity of oncogenic viruses. Another area of interest is whether even so-called "major" cancer gene effects are modifiable by diet. An intervention approach to diet-gene interaction is one we could explore, perhaps, in genetically altered animal models.

Do intervention studies have an important role in diet and cancer research?

Trials are not a panacea; they have their own limitations, but they can provide very persuasive data and complement observational epidemiology. When you get a positive result from such a study, you have to take notice.

Are you optimistic about the prospects for diet and cancer research?

I am optimistic, but I admit it's a tough area. Part of that optimism is the "gestalt" from the evidence that's accumulated — it does seem that diet has to influence carcinogenesis at several anatomic sites. But another reason for my optimism is the extraordinary research opportunities in this area available to NCI and NIH researchers. We can do things here that probably can't or won't be done by anybody else on the planet. ■

Lisa Seachrist

BIOREPOSITORIES FOR THE FUTURE

The explosive growth of biochemical and molecular epidemiology has dramatically increased demands for specimen processing and storage within DCEG and throughout NCI. DCEG alone currently stores more than 4,000,000 biospecimens at contract repositories in Rockville, Gaithersburg, and Frederick; up to 1,000,000 new samples are expected to be added in each of the next 5 years. As a result, several initiatives have been undertaken to develop the means for maintaining the high quality of ongoing biorepository activities while exploring new ways to collect and store samples and control growth through their more effective use. Dr. Jim Vaught has been recruited as a full-time staff member to oversee the Division's repositories, participate in the planning and implementation of new facilities, and facilitate the biochemical and molecular components of epidemiology studies.

In 1998, the NCI Repository Board, chaired by Dr. Neil Caporaso and composed of members from each of the intramural divisions, was created to address the issues of biorepository space and to make recommendations to Dr. Richard Klausner and Dr. Joseph Fraumeni, the directors of NCI and DCEG, respectively. Earlier in 1999, the Board recommended constructing a new facility for specimen storage at the Frederick Cancer Research and Development Center (FCRDR), which already houses a significant specimen collection. The Board also recommended technical improvements at FCRDC biorepositories, including adoption of the Biospecimen Inventory II system. With a mandate from Dr. Klausner, the Board is considering the timing and source of funding for the new facility, as well as how to meet ongoing needs for bioprocessing and storage at FCRDC.

Preparation of multiple aliquots of a study subject's biospecimen consumes much of existing repository space. Many of these specimens will be sent to NCI's Advanced Technology Center (ATC) for genotyping. A survey of DCEG investigators found that up to 60,000 specimens of study subjects will be sent to the ATC during the next 4 years for typing of up to 36 candidate loci for each sample.

The chapter on "Genes and the Environment" in the NCI *ByPass Budget Report for FY 2001* recommends the creation of "regional biospecimen repositories to ensure high quality, cost-efficient handling of biologic samples from molecular epidemiology studies." To explore the feasibility of implementing this recommendation, DCEG and other NCI divisions will host a workshop in spring 2000 to discuss such regional biorepositories and the issues relevant to their successful operation. Workshop topics will include biorepository design; specimen stability, procurement, processing, storage, and biohazards; ethics; and regulation. Experts from NIH, the Centers for Disease Control and Prevention, and elsewhere will be invited to participate at the workshop, and commercial vendors will demonstrate innovations in specimen processing and storage. ■

Jim Vaught

NCI AWARDS RECIPIENTS

Several members of the DCEG and Administrative Resource Center staff were honored at the 1999 NCI Awards Ceremony, which was held on October 25th in Wilson Hall. Congratulations to all the recipients for their exceptional achievements during the past year.

NIH Merit Awards

Ms. Ruth A. Arnold and Dr. Richard Klausner

Ruth A. Arnold, for her dedication to the success and further development of the NIH IntraMall.

Wong-Ho Chow, Ph.D., in recognition of scientific contributions to the understanding of the etiology of adenocarcinomas of the esophagus and gastric cardia.

Joanne Colt, M.S., in recognition of the development of improved procedures and resources for the DCEG fellowship programs.

Betsy Duane, B.S., for exceptional insight, dedication, advice, and service to NCI during the 1998 investigation of the Institute's radiation studies.

Barry I. Graubard, Ph.D., for fundamental contributions to statistical methods for survey studies, and for exemplary collaborations in the analysis and interpretation of survey data.

Patricia Hartge, Sc.D., for contributions to the understanding of the etiology and prognosis of ovarian cancer.

Marianne K. Henderson, M.S., for extraordinary efforts in organizing the NCI Intramural Principal Investigator Retreat.

Jay H. Lubin, Ph.D., for leadership in defining the risk of lung cancer from radon, and for contributing statistical methods for epidemiologic studies.

Rashmi Sinha, Ph.D., for developing innovative methods to study the role of meat-cooking practices and heterocyclic amine exposure in cancer etiology.

EEO Special Achievement

Patricia Hartge, Sc.D., for unselfishly making exceptional efforts in recruiting, mentoring, and training to foster opportunities for minority scientists.

Special Awards

Roberto P. Minutillo, B.S., for exceptional performance during his Administrative Career Development Internship with NCI.

Myra Anita Thomas, B.S., for exceptional performance during her Administrative Career Development Internship with NCI. ■

NANCY WEISSMAN TALKS ABOUT PSYCHOSOCIAL ISSUES

A diagnosis of cancer produces stress and anxiety not only for an individual battling cancer, but for the entire family. That stress is compounded when the cancer results from a germline genetic alteration. Family members must then face the possibility that each could develop cancer and that the propensity for disease may be passed on from one generation to the next. Clinical social worker Ms. Nancy Weissman, Genetic Epidemiology Branch (GEB), tries to understand and help families facing such challenges.

Nancy Weissman, M.S.W.

"I originally became interested in cancer for personal reasons — my mother had cancer several years ago," Ms. Weissman said. "But gradually I became interested in the field professionally, which led me to accept a position in the Social Work department at the NIH Clinical Center, helping patients battling breast cancer. Now, I'm learning about genetics and trying to understand what professionals can do to help families at high risk for cancer."

Formally, Ms. Weissman's job is to facilitate and support the research objectives of the GEB. In practice, that means performing a wide range of roles, from direct service to patients, to outreach to community agencies, to developing or collaborating on psychosocial research studies. To complete these objectives, Ms. Weissman relies on over 20 years of experience as a licensed clinical social worker and psychotherapist. She obtained an M.S.S.W. from Columbia University in 1975, and advanced training in psychotherapy from the Washington School of Psychiatry in 1990.

GEB investigators and study families meet at GEB's clinics, held at the NIH Clinical Center. While the scientific investigators conduct clinical examinations of affected and nonaffected family members, obtain DNA samples, and offer information to families about their disease, Ms. Weissman addresses the psychosocial issues these families face. She meets with as many family members as possible, and briefly assesses each person and his or her coping mechanisms to determine whether each is receiving the support needed. While meeting with the families, Ms. Weissman provides any necessary counseling, information, or referrals.

"Typically, the participants have known for some time that they are in a high-risk family, so they're not in crisis," Ms. Weissman said. "Still, some have needed extra consideration and support because they were anxious as they received a new diagnosis, or watched the progression of disease in themselves or a family member. And a few have experienced complicated grief reactions with feelings of guilt and anger following a family member's death. Sometimes I'm the first person they have ever talked to about the pain that they feel. It's very rewarding to help them to look at their experience from a different, more compassionate perspective, and to see the relief in their faces."

Ms. Weissman also studies the effect that hereditary cancer has on both affected and unaffected family members. Do they feel anxious or depressed? Have they changed their goals for the future? Do they follow recommendations about their health care? She asks whether family relationships have changed, and if spiritual beliefs have been strengthened or challenged.

Ms. Weissman's work with the Chronic Lymphocytic Leukemia (CLL) team is addressing those questions and more. Ms. Weissman is developing a research tool to collect information about the level of anxiety that CLL creates for families at high risk for the disease. Largely because some patients have disease that remains indolent for a very long time, while others suffer a quick and fatal decline, patients may become anxious and not fully understand their prognosis. To follow up on that possibility, Ms. Weissman interviews patients and asks what they understand about their disease. To explore further the problem of patients' misinterpretations of their diagnosis and prognosis, she is initiating a pilot

study to investigate the effectiveness of the way that medical information is communicated to CLL patients. To provide ongoing education and support to CLL patients and family members, she is also helping to develop a CLL support group, in collaboration with a social worker from the NCI Medicine Branch.

The CLL team is also considering how early in the discovery process research findings about possible early indicators of CLL should be communicated to patients and families, since such preliminary information has unknown meaning at this time, and could result in unfounded stress. These research findings, however preliminary, may raise questions about possible treatment, and therefore presents an ethical issue as well for the research team. "I think it's an issue that will only become more important as genetic links to disease are uncovered, and as our research tools become more sophisticated," Ms. Weissman said. "We're organizing a discussion meeting on this topic that will include a religious educator, an ethicist, and a social worker who is a leader in the genetics field." In addition, Ms. Weissman is assisting the CLL team to collaborate with the National Leukemia Society in an effort to recruit new patients and families.

In the future, Ms. Weissman hopes to team with a genetic counselor, following a model that has been pioneered in other cancer research settings, in studies that will include genetic testing and counseling.

Outside the GEB, Ms. Weissman has worked with the Human Genome Education Model Project in conjunction with Georgetown University and the Alliance of Genetic Support Groups to provide education for health care professionals on the Human Genome Project and related ethical, legal, and social issues. "As our understanding grows about genetic diseases, these professionals are going to be working with more and more people who are dealing with genetic issues," Ms. Weissman said. "This core curriculum introduces the fundamentals of the issues they will be facing." ■

Lisa Seachrist

ACTIVITIES OF NIH FELLOWS COMMITTEE

A major activity of the NIH Fellows Committee is the annual Fellows Award for Research Excellence (FARE) Competition. All NIH fellows who have less than 5 years' total postdoctoral experience in the NIH intramural research program, as well as predoctoral fellows doing dissertation research at the NIH, are eligible to compete by entering an abstract of their unpublished research. Of the 673 entries for the FARE 2000 competition, there were 168 winners, each of whom received a $1,000 domestic travel award to present the work at a scientific meeting. The winners also display their research at a poster session following a Wednesday Afternoon Lecture Series presentation at Masur Auditorium. **Dr. Stephanie Weinstein**, a member of the Nutritional Epidemiology Branch, was a FARE 2000 recipient (see *People in the News*).

The NIH Fellows Committee also sponsors seminars on topics of particular interest to fellows. For example, a career planning seminar discusses skills such as scientific writing, public speaking, interviewing, negotiating, time management, laboratory management, and grant writing. A seminar on alternative careers covers opportunities in such diverse fields as patent law, publishing, securities analysis, pharmaceutical research, and marketing. The teaching subcommittee maintains a database of teaching opportunities for postdoctoral scientists, which NIH fellows can use when seeking professional growth and enrichment.

Dr. Frank Groves, DCEG's representative to the NIH Fellows Committee, will be leaving NCI in January, and **Dr. Sandra Petralia**, the Division's other representative to the NIH Fellows Committee, has recently left NCI (see *Comings...Goings...*). Thus, the Division is seeking two stalwart delegates willing to represent DCEG fellows on these important committees. Candidates should express their interest to Dr. Shelia Zahm. ■

Frank Groves

A NEW BOOK: ANALYSIS OF HEALTH SURVEYS

Data from large health surveys are becoming increasingly available to address scientific and public policy questions. *Analysis of Health Surveys*, coauthored by **Dr. Barry I. Graubard** of DCEG's Biostatistics Branch and **Dr. Edward L. Korn** of the Biometrics Research Branch in the Division of Cancer Treatment and Diagnosis, provides a practical introduction to sampling theory and application for persons with little experience in this field of research. The book covers statistical techniques, such as t-tests, linear and logistic regression, and survival analysis of survey data. Particular attention is given to the proper use of sample weights and methods of variance estimation for these statistical techniques. In addition, novel topics on analysis of survey data, which are not found in other texts in this area, include graphical display, smoothing methods, analysis of rare attributes, regression diagnostics, and estimation of standardized statistics using regression models. The book's usefulness is enhanced by the many examples of real-world applications drawn from cancer epidemiology and risk factor surveillance, hypertension, physical growth in children, and disability in the aged population. *Analysis of Health Surveys* is part of a series in probability and statistics published by John Wiley & Sons.

RECENT SCIENTIFIC HIGHLIGHTS

Biostatistics Branch

Validating Models to Project the Risk of Invasive and Total Breast Cancer Incidence

Data from the placebo arm of the Breast Cancer Prevention Trial were used to validate models to project the risk of all breast cancer (model 1) and of invasive breast cancer only (model 2). Over 5 years, the ratio of expected to observed numbers of breast cancers was 0.84 for model 1 and 1.03 for model 2. Within the age groups of 49 years or less, 50 to 59 years, and 60 years or more, the ratio for model 1 was 0.91, 0.96, and 0.66, respectively. For model 2, which is being used in the "NCI risk disk," the ratio was 0.93, 1.13, and 1.05, respectively. Despite some limitations, these models provide useful information on the risk of breast cancer for women who have annual mammography. (Costantino JP, Gail MH, Pee D, Anderson S, Redmond CK, Benichou J, Wieand HS. Validation studies for models projecting the risk of invasive and total breast cancer incidence. *J Natl Cancer Inst* 1999;91:1541-1548)

Modeling Risks Related to Tamoxifen among Women

In response to findings from the Breast Cancer Prevention Trial that tamoxifen reduced the risk of invasive breast cancer by 49 percent in a population of women at elevated risk, NCI sponsored a workshop to develop information to assist in counseling and in weighing the risks and benefits of tamoxifen. A study was undertaken to develop tools to identify women for whom the benefits outweigh the risks. The risks and benefits of tamoxifen depend on a woman's age, race, and specific risk factors for breast cancer. In particular, the absolute risks from tamoxifen of endometrial cancer, stroke, pulmonary embolism, and deep vein thrombosis increase with age, and these absolute risks differ between white and black women, as does the protective effect of tamoxifen on fractures. Tamoxifen appears most beneficial for younger women with an elevated risk of breast cancer. (Gail MH, Costantino JP, Bryant J, Croyle R, Freedman L, Helzlsouer K, Vogel V. Weighing the risks and benefits of tamoxifen for preventing breast cancer. *J Natl Cancer Inst* 1999;91:1829-1846)

Vaccinations and Risk of Childhood Acute Lymphoblastic Leukemia

A case-control study evaluated risk of acute lymphoblastic leukemia (ALL) in relation to history of vaccination among children aged 0 to 14 years. Among matched pairs, similar proportions of cases and controls received at least one dose of oral poliovirus (98 percent), diphtheria-tetanus-pertussis (97 percent), and measles-mumps-rubella (90 percent) vaccines. Although similar proportions of cases (12 percent) and controls (11 percent) received the polysaccharide *Haemophilus influenzae* type B (Hib) vaccine, more controls (41 percent) than cases (35 percent) were given the conjugate Hib vaccine. Although no relation was found between most infant vaccinations and subsequent risk of childhood ALL, these findings suggest that infants receiving the conjugate Hib vaccine may be at reduced risk. (Groves FD, Gridley G, Wacholder S, Shu XO, Robison LL, Neglia JP, Linet MS. Infant vaccinations and risk of childhood acute lymphoblastic leukaemia in the USA. *Br J Cancer* 1999;81:175-178)

Cancer Incidence Trends in Urban Shanghai, 1972–1994

Population-based data from the Shanghai Cancer Registry in China showed that in 1993–1994, the five leading cancers among men were lung (age-adjusted [world standard] incidence rate=51 per 100,000 person-years), stomach (39), liver (27), colon (12), and esophagus (10). Among women, the most common cancers were breast (28), stomach (19), lung (18), colon (11) and liver (9). From 1972 to 1994, overall cancer incidence rate decreased from 248 to 215 among men and from 174 to 154 among women. The rates doubled for cancers of the colon and biliary tract in both sexes, and increased substantially as well for non-Hodgkin's lymphoma and for cancers of the brain, kidney, pancreas, prostate, corpus uteri, female breast, and ovary. The rates declined substantially for cancers of the esophagus, stomach, liver, and cervix. Changes in diagnostic and screening practices and in environmental exposures may have influenced the cancer trends. (Jin F, Devesa SS, Chow WH, Zheng W, Ji BT, Fraumeni JF Jr, Gao YT. Cancer incidence trends in urban Shanghai, 1972–1994: An update. *Int J Cancer* 1999;83:435-440) ■

Environmental Epidemiology Branch

Risks of Breast and Endometrial Cancer after Hormone Replacement Therapy

Through record-linkage to the National Swedish Cancer Registry, a collaborative study was undertaken to evaluate the risks of breast and endometrial cancer in a large cohort of women prescribed different hormone replacement regimens. For breast cancer, women who used estrogens combined with progestins had an increased risk relative to nonusers and users for less than 1 year (relative risk [RR]=1.4 after 1 to 6 years of use; RR=1.7 after more than 6 years of use), with the excess confined to recent exposure. No increase in risk was found with use of estrogens alone. For invasive endometrial cancer, risk was significantly increased among women who used medium-potency estrogens alone for more than 6 years (RR=4.2) and nonsignificantly increased among women who used the combined regimen for a similar length of time (RR=1.4). Thus, long-term, recent use of estrogen-progestin combined therapy may increase risk of breast cancer, and use of estrogen alone substantially elevates risk of endometrial cancer, which may be ameliorated by adding progestin to the hormone replacement regimen. (Persson I, Weiderpass E, Bergkvist L, Bergstrom R, Schairer C. Risks of breast and endometrial cancer after estrogen and estrogen-progestin replacement. *Cancer Causes Control* 1999;10:253-260)

Cigarette Smoke and Alcohol as Risk Factors for Nasopharyngeal Carcinoma

A collaborative case-control study of nasopharyngeal carcinoma was conducted in Taiwan, an area with a high rate of this disease, to evaluate risk associated with cigarette smoke exposure and alcohol consumption. An increased risk (odds ratio=1.7) was found for smokers of 25 years or more, but no excess was associated with passive smoking exposure during childhood or adult life. Alcohol consumption also was not related to risk. These results suggest that long-term cigarette smoking is related to increased risk of nasopharyngeal carcinoma, but that passive exposure to cigarette smoke and alcohol consumption

are not risk factors. (Cheng Y-J, Hildesheim A, Hsu M-M, Chen I-H, Brinton LA, Levine PH, Chen C-J, Yang C-S. Cigarette smoking, alcohol consumption and risk of nasopharyngeal carcinoma in Taiwan. *Cancer Causes Control* 1999;10:201-207) ■

Genetic Epidemiology Branch

Alcohol Dehydrogenase 3 Genotype, Alcohol Intake, and Risk of Breast Cancer

A collaborative case-control study of breast cancer was undertaken among white women to examine risk associated with alcohol dehydrogenase 3 (ADH-3) genotype in relation to alcohol intake. An increased risk was found among premenopausal women with the 1-1 genotype of ADH-3 (odds ratio [OR]=2.3) compared with the 1-2 and 2-2 genotypes. Risk was also increased for premenopausal women with the 1-1 genotype and alcohol intake above the median (OR=3.6) compared with lighter drinkers with the 1-2 and 2-2 genotypes. ORs were close to null for premenopausal women in other drinking and genotype groups and for postmenopausal women categorized by genotype and alcohol consumption. These results suggest that among premenopausal women, there may be a group genetically susceptible to the risk of alcohol-related breast cancer. (Freudenheim JL, Ambrosone CB, Moysich KB, Vena JE, Graham S, Marshall JR, Muti P, Laughlin R, Nemoto T, Harty LC, Crits GA, Chan AWK, Shields PG. Alcohol dehydrogenase 3 genotype modification of the association of alcohol consumption with breast cancer risk. *Cancer Causes Control* 1999;10:369-377)

A Review: U.S. Smoking-related Patterns, Disease, and Research Directions

Dramatic changes in the prevalence of cigarette smoking in the second half of this century in the United States (i.e., a reduction among men and an increase among women) have reduced current smoking to approximately one fourth of the adult population and have narrowed differences in smoking prevalence and smoking-attributable diseases between the sexes. Current patterns are associated with younger age, lower income, lower educational level, and a disadvantaged neighborhood environment. Regular smokers exhibit higher levels of stress, impulsiveness, and neuroticism and lower levels of arousal than nonsmokers do. Substance abuse, major depression, and anxiety disorders are the most prevalent psychiatric comorbid conditions associated with nicotine dependence. Studies with twins have implicated genetic factors that explain most of the variability in smoking vulnerability. Future research into the causes of smoking must consider demographics, social factors, comorbid psychiatric conditions, and genetic factors. (Bergen AW, Caporaso N. Cigarette smoking. *J Natl Cancer Inst* 1999;91:1365-1375)

Method to Increase the Power of Linkage Analysis

With the use of simulation methods for three map densities, a study was undertaken to evaluate criteria based on multiple single-locus analyses (i.e., regional test criteria) for testing linkage in a genomic screen. The study considered tests based on single loci, multiple consecutive single loci, and moving averages of consecutive single loci, with appropriate critical values determined based on results from simulations under the null hypothesis of no linkage. The power of each "regional test" was compared with the power of a single-locus test. The study results suggest that the best power occurred when *p* values were averaged over an interval size of 9 to 15 cM, and that testing the average of *p* values from two consecutive single loci is superior to testing each single locus separately. The increase in power ranged from 7 percent to 29 percent over the simulations. (Goldin LR, Chase GA, Wilson AF. Regional inference with averaged p-values increases the power to detect linkage. *Genet Epidemiol* 1999;17:157-164) ■

Nutritional Epidemiology Branch

Oral Contraceptive Use and Risk of Breast Cancer among Asian-American Women

Interview data from a population-based case-control study were evaluated to assess oral contraceptive use in relation to risk of breast cancer among Chinese, Filipino, and Japanese American women living in the San Francisco-Oakland, Los Angeles, and Oahu areas. Use of oral contraceptives increased with time since migration, but duration of use was not associated with increased risk of breast cancer. Moreover, neither oral contraceptive use before age 25 years nor use before first full-term birth was associated with

risk. After adjustment for duration of oral contraceptive use, women who had lived in the United States for 8 years or more had almost twice the risk of breast cancer compared with women who had migrated within 2 to 7 years. These findings suggest that oral contraceptive use does not contribute to the increased risk of breast cancer experienced by Asian women after migration to the United States. (Ursin G, Wu AH, Hoover RN, West DW, Nomura AMY, Kolonel LN, Pike MC, Ziegler RG. Breast cancer and oral contraceptive use in Asian-American women. *Am J Epidemiol* 1999;150:561-567)

Risk of Breast Cancer in Relation to Body Size and Weight Gain

A population-based case-control study of breast cancer among women under age 45 years examined risk in relation to adolescent body size and adult weight gain. Women who were much heavier or much lighter than average weight during adolescence or at age 20 were at reduced risk. Weight gain after age 20 was also associated with reduced risk, but the effect was confined to early-stage and lower grade tumors. Neither the risk reduction nor the variation by breast cancer stage or grade was explained by the method of cancer detection or by mammography history. These findings suggest that the relationship between breast cancer risk among young women and body weight at different ages is complex, and that risk reduction with adult weight gain is confined to less aggressive cancers. (Coates RJ, Uhler RJ, Hall HI, Potischman N, Brinton LA, Ballard-Barbash R, Gammon MD, Brogan DR, Daling JR, Malone KE, Schoenberg JB, Swanson CA. Risk of breast cancer in young women in relation to body size and weight gain in adolescence and early adulthood. *Br J Cancer* 1999;81:167-174)

Consumption of and Cooking Practices for Red Meat and Risk of Colorectal Adenomas

With use of a specially designed food-frequency questionnaire, a case-control study of colorectal adenomas was carried out to evaluate risk associated with consumption of red meat and with methods to cook it. Risk of colorectal adenoma increased 11 percent per 10 g/day of red meat consumption (odds ratio [OR]=1.11). The increase was due mainly to well-done or very well-done meat (OR=1.29) and somewhat to rare or medium-done meat (OR=1.10). High-temperature cooking methods of grilled meat (OR=1.26) and pan-fried meat (OR=1.15) were also related to increased risk. These findings support the hypothesis that carcinogenic compounds (i.e., heterocyclic amines and polycyclic aromatic hydrocarbons) in high-temperature cooking of red meat may contribute to the risk of developing colorectal tumors. (Sinha R, Chow WH, Kulldorff M, Denobile J, Butler J, Garcia-Closas M, Weil R, Hoover RN, Rothman N. Well-done, grilled red meat increases the risk of colorectal adenomas. *Cancer Res* 1999;59:4320-4324) ■

Occupational Epidemiology Branch

Risk Factors for Pancreatic Cancer

A population-based case-control study of pancreatic cancer evaluated risk associated with various medical conditions, medical interventions, and family history. Diabetes was significantly associated with risk, especially when it was diagnosed at least 10 years prior to pancreatic cancer (odds ratio [OR]=1.5). Cholecystectomy at least 20 years prior to diagnosis of pancreatic cancer also appeared to increase risk (OR=1.7), but little or no elevated risk was associated with a history of duodenal or gastric ulcer (OR=1.2). Significantly increased risks were observed for subjects reporting a first-degree relative with cancer of the pancreas (OR=3.2), colon (OR=1.7), or ovary (OR=5.3), and nonsignificantly increased risks were found for subjects reporting first-degree relatives with cancer of the endometrium (OR=1.5) or breast (OR=1.3). These findings are consistent with previous studies indicating that diabetes and family history of pancreatic cancer are risk factors for pancreatic cancer. (Silverman DT, Schiffman M, Everhart J, Goldstein A, Lillemoe KD, Swanson GM, Schwartz AG, Brown LM, Greenberg RS, Schoenberg JB, Pottern LM, Hoover RN, Fraumeni JF. Diabetes mellitus, other medical conditions and familial history of cancer as risk factors for pancreatic cancer. *Br J Cancer* 1999;80:1830-1837)

Benzene and Polycyclic Aromatic Hydrocarbon Exposure and Risk of Breast Cancer

A case-control study was undertaken to examine the relation between risk of premenopausal breast cancer

and occupational exposure to benzene and polycyclic aromatic hydrocarbons (PAH), and to test whether the hypothesized relation between PAH and breast cancer differed by tumor estrogen receptor (ER) status. Risk increased with duration of exposure to benzene but not to PAH, and neither compound displayed a dose-response relation for intensity of exposure. When analyses were stratified by tumor ER status, PAH exposure was related to a greater increase in the risk of ER-positive breast cancer (odds ratio=2.27) than ER-negative breast cancer (odds ratio=1.12). Although these findings suggest an association between risk and occupational exposure to benzene, as well as an association between PAH exposure and ER-positive tumors, they should be interpreted cautiously because of the limitations of the study. (Petralia SA, Vena JE, Freudenheim JL, Dosemeci M, Michalek A, Goldberg MS, Brasure J, Graham S. Risk of premenopausal breast cancer in association with occupational exposure to polycyclic aromatic hydrocarbons and benzene. *Scand J Work Environ Health* 1999;25:215-221)

Parental Occupational Exposure to Hydrocarbons and Risk of Acute Lymphocytic Leukemia

With the use of data from a large-scale case-control study of childhood acute lymphocytic leukemia (ALL), carried out in collaboration with the Children's Cancer Group, risk of ALL associated with parental occupational exposure to various hydrocarbons was evaluated. Increased risks were associated with maternal exposure to solvents and to paints or thinners during the preconception period (odds ratio [OR]=1.8 and 1.6, respectively) and during pregnancy (OR=1.6 and 1.7, respectively), and to plastic materials during the postnatal period (OR=2.2). These results suggest that risk of childhood ALL related to parental occupational exposure to hydrocarbons may depend on the type of hydrocarbon and the timing of the exposure. (Shu XO, Stewart P, Wen WQ, Han D, Potter JD, Buckley JD, Heineman E, Robison LL. Parental occupational exposure to hydrocarbons and risk of acute lymphocytic leukemia in offspring. *Cancer Epidemiol Biomarkers Prev* 1999;8:783-791)

Drinking Water Source and Risk of Brain Cancer

A population-based case-control study of brain cancer was conducted to assess risk associated with drinking water source and chlorination by-products in Iowa. Analyses were carried out with information on lifetime residential history, drinking water sources, beverage intake, and other potential risk factors collected by mail questionnaire from 291 cases and 1,983 controls. Exposure to chlorination by-products in drinking water was estimated by combining questionnaire data with historical information from water utilities and trihalomethane levels. After multivariate adjustment, odds ratios for brain cancer were 1.0, 1.1, 1.6, and 1.3 for exposure to chlorinated surface water for 0, 1 to 19, 20 to 39, and 40 or more years, respectively (p trend = 0.1). Similar results were found with estimates of average lifetime levels of trihalomethanes, with a stronger association among men with above-median consumption of tap water. These findings suggest a possible excess risk of brain cancer related to intake of chlorination by-products. (Cantor KP, Lynch CF, Hildesheim ME, Dosemeci M, Lubin J, Alavanja M, Craun G. Drinking water source and chlorination byproducts in Iowa. III. Risk of brain cancer. *Am J Epidemiol* 1999;150:552-560) ■

Radiation Epidemiology Branch

Lymphoproliferative Disorders and Hodgkin's Disease following Bone Marrow Transplantation

A multi-institutional collaborative study was conducted to examine the incidence and risk factors of posttransplant lymphoproliferative disease (PTLD) among 18,014 patients who underwent allogeneic bone marrow transplantation. Incidence was highest 1 to 5 months posttransplant, followed by a steep decline among survivors of 1 or more years. Risk of early-onset PTLD was strongly associated with unrelated or human leukocyte antigen (HLA)-mismatched related donor, T cell depletion of donor marrow, and use of antithymocyte globulin or anti-CD3 monoclonal antibody for prophylaxis or treatment of acute graft-versus-host disease. Late-onset PTLD was associated only with extensive chronic graft-versus-host disease. These findings indicate that altered immunity and T cell regulatory mechanisms are predictors of both early-onset and late-onset PTLD. (Curtis RE, Travis LB, Rowlings PA, Socié G, Kingma DW, Banks PM, Jaffe ES, Sale GE, Horowitz MM, Witherspoon RP, Shriner DA, Weisdorf DJ, Kolb HJ, Sullivan KM, Sobocinski KA, Gale RP, Hoover RN, Fraumeni JF, Deeg HJ. Risk

of lymphoproliferative disorders after bone marrow transplantation: A multi-institutional study. *Blood* 1999;94:2208-2216) Another component of the study evaluated risk of Hodgkin's disease following transplantation. Risk was increased in the posttransplantation group compared with the general population, with an observed-to-expected incidence ratio of 6.2. Five of six assessable cases contained Epstein-Barr virus (EBV) genome. Posttransplant Hodgkin's disease differed from PTLD by later onset (more than 2.5 years) and lack of association with risk factors such as T cell depletion and HLA disparity. These findings add support to theories linking overstimulation of cell-mediated immunity and exposure to EBV with increased risk of Hodgkin's disease. (Rowlings PA, Curtis RE, Passweg JR, Deeg HJ, Socié G, Travis LB, Kingma DW, Jaffe ES, Sobocinski KA, Horowitz MM. Increased incidence of Hodgkin's disease after allogeneic bone marrow transplantation. *J Clin Oncol* 1999;17:3122-3127)

Cancer Incidence among Women Receiving Radiotherapy for Infertility

A cohort of Israeli women given radiotherapy for infertility was followed for cancer incidence. The majority of women were irradiated to both the ovaries and pituitary gland, with mean doses of 1.0 Gy to the ovary, 0.8 to the brain, 0.6 to the colon, and 0.4 to the bone marrow. Among the 968 women followed for more than 10 years, 60 cancers were observed; 74.5 were expected on the basis of national cancer incidence rates. No statistically significant excess or deficit was seen for any individual type of cancer. Age at exposure and attained age did not modify subsequent cancer risk. In addition, no clear excess of any cancer was observed for organ doses above the median compared with those below the median. (Ron E, Auvinen A, Alfandary E, Stovall M, Modan B, Werner A. Cancer risk following radiotherapy for infertility or menstrual disorders. *Int J Cancer* 1999;82:795-798) ■

Viral Epidemiology Branch

Human Herpesvirus 8 Infection in Homosexual Men and Risk of Kaposi's Sarcoma

To investigate whether human herpesvirus 8 (HHV-8) infection contributes to the risk of Kaposi's sarcoma (KS), HHV-8 antibodies were measured in a cohort of U.S. homosexual men, beginning in 1982. In 1982, the HHV-8 seroprevalence in the cohort was 20 percent. HHV-8 seroprevalence was 6.73 per 100 person-years from 1982 to 1986, and 1.10 per 100 person-years from 1987 to 1990. HHV-8 frequency was strongly associated with the number of male sex partners before enrollment into the cohort. Among HIV-1-infected men, the relative hazard of developing KS was 3.58 in HHV-8-seropositive men compared with HHV-8-seronegative men. These findings indicate that an epidemic of HHV-8 infection was present among U.S. homosexual men in the early 1980's, and that those who were infected with both HHV-8 and HIV-1 had an increased risk of developing KS. (O'Brien TR, Kedes D, Ganem D, Macrae DR, Rosenberg PS, Molden J, Goedert JJ. Evidence for concurrent epidemics of human herpesvirus 8 and human immunodeficiency virus type 1 in US homosexual men: Rates, risk factors, and relationship to Kaposi's sarcoma. *J Infect Dis* 1999;180:1010-1017)

Risk of Human Herpesvirus 8 Transmission by Blood Transfusion

A study was carried out to determine transmission risk of human herpesvirus 8 (HHV-8) through blood transfusion. Among 1,010 blood donors, 27 (2.7 percent) were HHV-8-seropositive. Of 19 blood recipients, who together received 26 transfusions from HHV-8-seropositive donors, only 1 was HHV-8-seropositive posttransfusion, but this person was also found to be infected prior to transfusion. These results suggest that HHV-8 transmission from seropositive blood donors is low. (Engels EA, Eastman H, Ablashi DV, Wilks RJ, Braham J, Manns A. Risk of transfusion-associated transmission of human herpesvirus 8. *J Natl Cancer Inst* 1999;91:1773-1775)

Incidence Trends of Kaposi's Sarcoma and Non-Hodgkin's Lymphoma among Patients with AIDS

An analysis was carried out to examine incidence trends of Kaposi's sarcoma and non-Hodgkin's lymphoma in patients with advanced HIV infection in nine AIDS Clinical Trial Group studies of antiviral therapies for HIV and cytomegalovirus infections. Among 6,587 patients, there were 280 cases of Kaposi's sarcoma and 68 cases of non-Hodgkin's

lymphoma. Incidence rates per 100 person-years of both malignancies declined in concert with decreases in mortality, but the decline for Kaposi's sarcoma was much greater than that for non-Hodgkin's lymphoma. These data suggest that current therapies have ameliorated the incidence of Kaposi's sarcoma, but may not have had an equal effect on non-Hodgkin's lymphoma. (Rabkin CS, Testa MA, Huang J, Von Roenn JH. Kaposi's sarcoma and non-Hodgkin's lymphoma incidence trends in AIDS clinical trial group study participants. *J Acquir Immune Defic Syndr* 1999;21(Suppl 1):S31-S33)

The Role of the CCR5 Gene in AIDS-related Non-Hodgkin's Lymphoma

With the use of cases of non-Hodgkin's lymphoma from the multicenter AIDS cohort study, a matched case-control analysis was carried out to examine the role of the CCR5 chemokine receptor gene in AIDS-related lymphoma, a major cause of morbidity and mortality in HIV-infected persons. After time of infection and progression toward AIDS were controlled for, the CCR5-delta32 allele was associated with a threefold lower risk of non-Hodgkin's lymphoma. The gene was not associated with a difference in risk for Kaposi's sarcoma or opportunistic infections. Costimulation of normal phorbol 12-myristate 13-acetate-treated B cells with the CCR5 ligand RANTES induced a proliferative response, indicating that RANTES is a mitogen for B cells. These findings suggest that the CCR5 gene plays a role in risk of non-Hodgkin's lymphoma in HIV-infected patients. (Dean M, Jacobson LP, McFarlane G, Margolick JB, Jenkins FJ, Howard OM, Dong HF, Goedert JJ, Buchbinder S, Gomperts E, Vlahov D, Oppenheim JJ, O'Brien SJ, Carrington M. Reduced risk of AIDS lymphoma in individuals heterozygous for the CCR5-delta32 mutation. *Cancer Res* 1999;59:3561-3564)

Plasma HIV Load and Prognosis among Hemophilia Patients with Late-stage HIV Disease

A retrospective cohort study was carried out to evaluate the relation between plasma HIV load and disease progression in hemophilia patients with late-stage HIV disease. HIV load was found to strongly predict AIDS-related illness. For patients with viral loads less than 4.00 log(10) copies / mL, the 1-year actuarial risk was 0 percent and the 5-year risk was 25 percent. For patients with viral loads of at least 6.00 log(10) copies / mL, the 1-year actuarial risk was 42 percent and the 5-year risk was 78 percent. A linear relation existed between viral load and risk for AIDS-related illness. These results indicate that in patients with both hemophilia and late-stage HIV disease, viral load predicts disease progression independent of CD4 cell counts. (Engels EA, Rosenberg PS, O'Brien TR, Goedert JJ. Plasma HIV viral load in patients with hemophilia and late-stage HIV disease: A measure of current immune suppression. *Ann Intern Med* 1999;131:256-264)

HIV Transmission through Breast Feeding in Malawi

In a mother-infant cohort in Malawi, HIV-negative infants were followed through 24 months of age to assess risk of infection through breast feeding by mothers who were HIV-positive at delivery and had not received antiretroviral drugs during or after pregnancy. Of 672 infants, 47 became HIV-infected while breast feeding, but none afterward. Incidence per month was 0.7 percent during age 1 to 5 months, 0.6 percent during age 6 to 11 months, and 0.3 percent during age 12 to 17 months. These findings suggest that the risk of HIV infection is highest during the early months of breast feeding, which should be taken into account in formulating public health policy concerning breast feeding. (Miotti PG, Taha TET, Kumwenda NI, Broadhead R, Mtimavalye LAR, Van der Hoeven L, Chiphangwi JD, Liomba G, Biggar RJ. HIV transmission through breastfeeding: A study in Malawi. *J Am Med Assoc* 1999;282:744-749)

Virologic Correlates of Human T-cell Lymphotropic Virus Type I Infection

A study was conducted to prospectively evaluate virologic correlates of infection with human T-cell lymphotropic virus type I (HTLV-I) to gain insights into the pathogenesis of HTLV-I-related disease. HTLV-I proviral DNA levels and antibody titers in seroconverted blood transfusion recipients were compared with those in adult T-cell leukemia / lymphoma (ATL) patients and HTLV-I-associated myelopathy / tropical spastic paraparesis (HAM / TSP) patients. In early infection, proviral load was initially elevated, but decreased over time. Corresponding

antibody titers were initially low, then increased before stabilizing. The viral markers were significantly lower in asymptomatic carriers than in ATL or HAM/TSP patients. These findings indicate that proviral load and antibody titers may be useful as predictive markers of disease among carriers. (Manns A, Miley WJ, Wilks RJ, Morgan OSC, Hanchard B, Wharfe G, Cranston B, Maloney E, Welles SL, Blattner WA, Waters D. Quantitative proviral DNA and antibody levels in the natural history of HTLV-I infection. *J Infect Dis* 1999;180:1487-1493)

Human T-cell Lymphotropic Virus Type II Infection among Guaymi Indians

A case-control study was conducted among the Guaymi Indians of Panama to examine risk factors for human T-cell lymphotropic virus type II (HTLV-II) infection. In females, HTLV-II seropositivity was associated with early sexual intercourse (less than 14 years versus more than 15 years) and number of lifetime partners. Among males, intercourse with prostitutes was related to HTLV-II seropositivity. Seropositivity in males was also associated with primary residence in a traditional village and lack of formal education (0 years versus more than 6 years), which may reflect differences in sexual practices associated with acculturation. These results support a role for sexual transmission in HTLV-II infection. (Maloney EM, Armien B, Gracia F, Castillo L, Kruger H, Levin A, Levine PH, Kaplan JE, Blattner WA, Giusti RM. Risk factors for human T cell lymphotropic virus type II infection among the Guaymi Indians of Panama. *J Infect Dis* 1999;180:876-879)

Human Papillomavirus as a Common Etiologic Factor in Tonsillar and Anogenital Squamous Cell Carcinomas

A study was carried to evaluate whether patients with human papillomavirus (HPV)-associated anogenital squamous cell carcinoma (SCC) are at increased risk of tonsillar SCC, since the mucosal linings of the two sites are similar. On the basis of data from the Surveillance, Epidemiology, and End Results program for the studied invasive SCCs (i.e., tonsillar, other oral, cervical, vulvar/vaginal, and anal), patients with anogenital SCC (or cervical SCC *in situ*) had elevated risk of a SCC at other anogenital sites (relative risk [RR]=3.6). Risk of tonsillar SCC was also increased (RR=4.3), and higher than the risk associated with other oral cancers (RR=2.3). Among patients with HPV-unrelated cancers, RRs were close to 1.0. These findings suggest a link between tonsillar and anogenital SCC, with HPV possibly acting as a common etiologic factor. (Frisch M, Biggar RJ. Aetiological parallel between tonsillar and anogenital squamous-cell carcinoma. *Lancet* 1999;354:1442-1443) ■

DCEG PEOPLE IN THE NEWS

In October, **Dr. John Boice**, former chief of the Radiation Epidemiology Branch and currently a DCEG special volunteer, received the Alumni Award for Professional Excellence from the University of Texas at El Paso.

Dr. Ethel Gilbert has been appointed a member of the Biological Effects of Ionizing Radiation (BEIR) VII Phase 2 Committee of the National Research Council Committee on the Health Risks from Exposure to Low Levels of Ionizing Radiation. The committee will evaluate molecular, cellular, animal, and epidemiology studies concerning risks to humans of exposure to low levels of ionizing radiation.

In September, **Dr. Alfred Knudson** returned to Fox Chase Cancer Center as Distinguished Scientist and advisor to the Center's president, and received the 1999 Distinguished Career Award of the American Society of Pediatric Hematology/Oncology. The award is given in recognition of outstanding service and significant scientific contributions to the understanding and treatment of blood diseases and cancer in children.

Dr. Charles Rabkin, a member of the Viral Epidemiology Branch, has been awarded a tenured appointment by the NIH. Dr. Rabkin received Sc.B.

and M.D. degrees from Brown University and an M.Sc. degree in epidemiology from the London School of Hygiene and Tropical Medicine. With postgraduate training at the University of Colorado and the Centers for Disease Control and Prevention, he is board certified in internal medicine and preventive medicine. In 1989, Dr. Rabkin joined NCI, where his major research interests have involved viral-related cancers, especially those associated with HIV infection.

In October, **Dr. B.J. Stone** received the Hall of Fame Donor Award from the NIH Blood Bank for making her 100th blood donation. She is the fourth woman at the NIH to be honored for reaching this century mark.

Dr. Stephanie Weinstein received an NIH Fellows Award for Research Excellence (FARE) 2000. The FARE recognizes intramural postdoctoral fellows for their outstanding research, and winners receive a $1,000 stipend to attend a U.S. scientific meeting to present their work. FARE recipients also present their research to the NIH community at a poster session following a Wednesday Afternoon Lecture. The title of Dr. Weinstein's winning abstract was "One-carbon metabolism and invasive cervical cancer risk in a multicenter case-control study of U.S. women." ■

PROCEEDINGS: UNCERTAINTIES IN RADIATION DOSIMETRY AND THEIR IMPACT ON DOSE-RESPONSE ANALYSIS

This publication, edited by **Dr. Elaine Ron** of the Radiation Epidemiology Branch and **Dr. F. Owen Hoffman** of Senes Oak Ridge, Inc., is the proceedings of a 1997 workshop designed to examine approaches to handling various error structures in studies of irradiated populations.

Ionizing radiation is a relatively well-described carcinogen. A large and wide variety of epidemiologic studies have shown that radiation exposure increases the risk for both benign and malignant tumors in humans. In many of these investigations, whole-body and organ doses were estimated for individual study subjects, and the dose-response relationships were evaluated. However, large uncertainties in dose estimates can bias the estimated risk coefficient. Radiation epidemiology is currently moving in two directions that make understanding and accounting for these uncertainties considerably more important — evaluating low-dose exposures, and evaluating environmental exposures that occurred long ago and for which few physical measurements are available.

Workshop sessions were devoted to patients treated with radiation, atomic bomb survivors, nuclear workers, underground miners, and persons exposed to indoor radon, nuclear bomb testing, or nuclear accidents. Contributors include national and international experts in biostatistics and epidemiology, health physics, internal and external dosimetry, and exposure pathways modeling.

This publication can be obtained from Ms. Jennifer Donaldson in EPS/7090, or by requesting a copy by e-mail at donaldsj@mail.nih.gov.

NEWS FROM THE ADMINISTRATIVE RESOURCE CENTER

Ms. Virginia Kiesewetter began a 3-month leave of absence on November 1, resigning as the DCEG Administrative Resource Center (ARC) Manager, a position she held since March 1997. During her tenure in this job, she made significant contributions to the successful operation of the Division.

Ms. Donna Gellerson has been selected as the Acting ARC Manager, effective November 1. She began her NIH career as a budget analyst in 1991 in the Office of Research Services. Ms. Gellerson moved to NCI in 1993, and has since served as an administrative officer and ARC manager in intramural and extramural programs.

Ms. Myra Thomas, who holds a B.S. degree in marketing from Jackson State University, has joined the ARC as an administrative officer. For 6 of her 10 years at NCI, Ms. Thomas worked as a purchasing agent, and during the last 3 years she was an intern in the Administrative Career Development (ACD) program. For her exceptional performance in the ACD program, she received a Special Award at the NCI Awards Ceremony in October. As an intern, Ms. Thomas rotated through various administrative offices, including DCEG's ARC. At ARC, she will service the Environmental Epidemiology Branch and the DCEG Office of the Director, including administrative support for the Division's budget. She is located in EPS/8054, and can be reached at 594-7510.

Mr. Roberto Minutillo, B.S., who serves as an administrative officer, graduated from the ACD program in October. For his exceptional performance in the program, he received a Special Award at the NCI Awards Ceremony in October.

Ms. Ruth Arnold, DCEG's senior purchasing agent, received the NIH Merit Award for her dedication to the success and further development of the NIH IntraMall.

Mr. Tim Sakemiller, an ACD intern, completed his DCEG ARC rotation in October. He is continuing his training in the NCI ARC at the Frederick Cancer Research and Development Center.

Stipend Increases for Fellows

The NIH has approved a 5 percent stipend increase for fellows in the Intramural Research Training Award program and for visiting fellows, effective December 1. NCI fellows under the Cancer Research Training Award (CRTA) program will also receive a 5 percent increase, plus an additional amount undetermined at press time.

For CRTAs and visiting fellows, who are paid prospectively, payments will be made retroactive to December 1. Thus, January's check will include the retroactive, prorated increase for December and the new stipend amount for January. ■

Mary Jude Jacobs

NEWS FROM THE TRENCHES

Biostatistics Branch

Dr. Susan Devesa was an introductory speaker and moderator at the annual conference of the International Association of Cancer Registries in Lisbon, Portugal, in September.

Dr. Mitchell Gail participated in a workshop on communication about breast cancer risk, sponsored by the American Cancer Society and held at Hiltonhead, South Carolina, in October. Topics included methods for projecting risk and ways of discussing risk with women.

In August, **Dr. Joseph Gastwirth** presented a paper on the accuracy of art auction estimates at the meeting of the International Statistical Institute in Helsinki.

In October, **Mr. Dan Grauman** traveled to Israel to address the International Conference on Epidemiology in Occupational Health. He spoke about NCI's two new internet sites for accessing the latest update of the *Atlas of Cancer Mortality in the United States*: *1950–94*.

Dr. Sholom Wacholder spoke on population stratification at the June meeting of the Society for Epidemiologic Research in Baltimore.

In September, **Dr. Wei-Cheng You** took part in an international workshop on gastroduodenal pathology and *Helicobactor pylori* infection in Helsinki. He spoke about DCEG's study of *H. pylori* infection in relation to risk of precancerous lesions and gastric cancer in Shandong, China. ■

Environmental Epidemiology Branch

In August, **Dr. Louise Brinton** presented a paper on risk factors for breast and gynecologic cancers at the Gordon Research Conference on Hormonal Carcinogenesis in Tilton, New Hampshire. In September, she spoke about hormones, lifestyle, and their impact on the incidence of breast cancer at the annual meeting on "Perspectives in Breast Cancer" in Orlando. In October, Dr. Brinton gave a talk on breast cancer epidemiology and prevention as part of the Health Resources and Services Administration/Food and Drug Administration's "Breast Cancer Awareness Month" seminar series in Rockville. ■

Genetic Epidemiology Branch

Dr. Neil Caporaso is co-editor of *Metabolic Polymorphisms and Susceptibility to Cancer*, published this year by the International Agency for Research on Cancer (IARC Publ. No. 148). The book features articles on specific polymorphisms associated with cancer risk and on methodologic issues, such as study design, analysis, and ethical considerations. DCEG scientists who contributed chapters are **Drs. Maria Teresa Landi, Nat Rothman, Jay Lubin, Rashmi Sinha,** and **Monserrat Garcia-Closas.**

In October, **Dr. Caporaso** delivered a seminar at the Cold Spring Harbor Laboratory entitled "Causes of cancer: What we know…What we don't know." The talk was part of a series for the general public.

In October, **Ms. Mary Fraser** gave a presentation at the annual meeting of the International Society of Nurses in Genetics in San Francisco. Her talk was entitled "Genetics of cutaneous malignant melanoma: Clinical implications of susceptibility genes."

Also in October, **Drs. Naoko Ishibe, Maria Sgambati,** and **Neil Caporaso** attended the International Workshop on Chronic Lymphocytic Leukemia at the Institut Pasteur in Paris. They presented work on the demographic and clinical features of the familial leukemia kindreds, which have been identified by the Branch's family studies group over the last 20 years, and on the analyses describing genetic anticipation in kindreds.

At the American Society of Human Genetics October meeting in San Francisco, several Branch members participated in the presentation and poster sessions. **Dr. Maria Teresa Landi** presented results of a collaborative study on gene expression and activity associated with dioxin exposure in Seveso, Italy. **Dr. Dilys Parry** presented posters of collaborative studies on germ-line *NF2* mutation type, location, and phenotype in neurofibromatosis 2, and on spinal magnetic resonance imaging findings in neurofibromatosis 2 and correlations with *NF2* germline mutations. **Dr. Gladys Glenn** presented a poster on renal neoplasms in a familial multisystem syndrome with fibrofolliculomas as a cutaneous marker, and one entitled "Mosaicism in von Hippel-Lindau disease: Two kindreds each with an affected mosaic parent whose offspring carry germline mutations." **Dr. Alisa Goldstein** presented a poster on genotype-phenotype relationships in melanoma-prone families with *CDKN2A* and *CDK4* mutations.

In September, **Dr. Margaret Tucker** gave the inaugural Wallace H. Clark, Jr., Memorial Lecture at the Cutaneous Oncology and Melanoma Symposium at the University of Pennsylvania. Dr. Clark was a distinguished dermatopathologist, internationally recognized as an expert in pigmented lesion pathology and the biology of cancer. He was a long-time collaborator with investigators in the Genetic

Epidemiology Branch in studies of melanoma and dysplastic nevi. Dr. Tucker's presentation was entitled "Bright spots and burning issues: Melanoma etiology in retrospect and prospect."

In October, **Dr. Tucker** represented DCEG at an international cancer conference in Belfast, which was sponsored jointly by NCI, the Department of Health and Social Services in Northern Ireland, and the Department of Health and Children in Ireland. This conference followed the signing of a tripartite agreement to create the Ireland–Northern Ireland–NCI Cancer Consortium. This partnership agreement establishes an infrastructure for increased collaboration in cancer research, including clinical trials, research technology, interactions among scientists and physicians, and scientist exchange programs. Dr. Tucker was invited to be a member of a working group charged with implementing the agreement. At the conference, she presented papers on the use of tumor registries for genetic epidemiology studies and on melanoma epidemiology and genetics. ■

Laboratory of Population Genetics

At the October meeting of the American Society of Human Genetics, **Dr. Weiching Wang** and **Dr. Jeffery Struewing** reported that a single nucleotide polymorphism in the 5'UTR of *RAD51* gene is associated with risk of breast cancer among *BRCA1* and *2* carriers. The research that led to this finding was based on collaborations with investigators in the Genetic Epidemiology, Radiation Epidemiology, and Biostatistics Branches. At the meeting, **Dr. Struewing** and **Dr. Tzu-Ling Tseng** presented a poster on investigating the influence of sequence diversity in the *CDKN2A* gene on its expression and melanoma susceptibility. ■

Nutritional Epidemiology Branch

In October, **Dr. Arthur Schatzkin** gave the keynote presentation at the Karlsruhe Nutrition Symposium, which was sponsored by the Federal Research Centre for Nutrition in Germany. His talk was entitled "Diet and cancer prevention: Will eating more fruits and vegetables make a difference?"

At a November workshop in Heidelberg, Germany, **Dr. Rashmi Sinha** spoke about assessment in epidemiological studies of exposure to heterocyclic amines. The workshop was held by the European Prospective Investigation into Cancer and Nutrition (EPIC) group to develop questionnaires and strategies for incorporating meat-cooking methods into the EPIC cohort. ■

Occupational Epidemiology Branch

In September, **Dr. Michael Alavanja** was an invited speaker at the International Epidemiological Association meeting in Florence, Italy. He presented a paper on residential radon exposure and the risk of lung cancer in Missouri.

At the October meeting of the American College of Epidemiology in Bethesda, **Dr. Bu-Tian Ji** presented a poster on risk of pancreatic cancer in relation to occupational exposure to pesticides and other factors.

At a meeting of the Pancreatic Cancer Think Tank, held in September in Park City, Utah, **Dr. Debra Silverman** spoke about NCI epidemiology initiatives in pancreatic cancer. The meeting was sponsored by NCI, among other groups.

At a September workshop on assessing exposure among humans, **Dr. Patricia Stewart** discussed data needs and barriers of conducting occupational and environmental cancer epidemiology studies. The workshop was held in Rockville and was sponsored by the National Institute of Environmental Health Sciences and the National Institute for Occupational Safety and Health.

Several Branch members participated in the annual conference of the International Society for Environmental Epidemiology, which was held in September in Athens, Greece. **Dr. Mary Ward** presented a poster on the results of a feasibility study to estimate exposure to pesticides among migrant farm workers. **Dr. Kenneth Cantor** chaired a session on epidemiologic studies of arsenic in drinking water. At a workshop on molecular epidemiology, **Dr. Richard Hayes** presented a paper describing a study of biomarkers in workers exposed to 1,3-butadiene. ■

Radiation Epidemiology Branch

In September, **Dr. Peter Inskip** gave an invited talk on the risk for second cancer following radiotherapy for childhood cancer. The talk was given at the International Symposium of the Hiroshima Cancer Seminar, in Hiroshima.

Two new sections have been created within the Branch to better focus on important research areas in radiation carcinogenesis. The Population Studies Section, headed by **Dr. Martha Linet**, will address critical gaps in knowledge related to radiation-induced cancer. The focus will be on designing exposure assessment methods to measure external and internal radiation doses accurately and with a high degree of reproducibility. This Section will build on the special characteristics of radiation and the large populations already under study by the Branch. Particular emphasis will be placed on assessing irradiated populations with increased susceptibility to cancer due to environmental, genetic, or other risk factors. **Dr. Charles Land** heads the Risk Analysis Section, which is concerned primarily with clarifying risk of cancer following exposure to ionizing and non-ionizing radiation. For risk estimation, this Section will have an important advisory role to NCI, other government agencies, and the radiation protection community generally, and it will clearly communicate the levels of uncertainty associated with individual risk estimates.

In October, **Dr. Elaine Ron** attended the Middle East Cancer Consortium (MECC) meeting in Cyprus, where she presented a proposal for a study of breast cancer. She is a member of the MECC steering committee and is an advisor to the Consortium, whose members are Cyprus, Egypt, Israel, Jordan, and the Palestinian Authority. ■

COMINGS…GOINGS…

Ms. Jonnae Atkinson has begun working in the Viral Epidemiology Branch as a predoctoral research fellow. In 1997, she received her master's degree in epidemiology from the University of Washington School of Public Health, where she is a doctoral candidate in epidemiology. Her dissertation research involves U.S. seroprevalence of human herpesvirus 8 and the use of data and sera collected in NHANES. Ms. Atkinson is also currently enrolled part-time in her first year of medical school at George Washington University. She is located in EPS/8011, and can be reached at 435-4726.

Dr. Yan Bai has joined the Genetic Epidemiology Branch as a visiting fellow in the Cancer Genetics and Epidemiology Training Program. He received a medical degree from Beijing Medical University and a Ph.D. degree in epidemiology from Emory University, where his dissertation research was on the effects of selection bias and limitations of family history in the study of familial disease aggregation. Dr. Bai is working with Drs. Alisa Goldstein, Lynn Goldin, and Neil Caporaso on studies of esophageal cancer, lymphoproliferative malignancies, lung cancer, and brain tumors. His office is in EPS/7106, and he can be reached at 402-9847.

Dr. Alina Brenner has joined in the Radiation Epidemiology Branch as a postdoctoral fellow. She received M.D. and Ph.D. degrees from the Russian State Medical University in Moscow and, more recently, an M.P.H. degree from George Washington University. Dr. Brenner is collaborating on studies involving the Chornobyl project and on a case-control study of lung cancer among "cave-dwellers" in China who have high residential exposures to radon. Her office is in EPS/7049, and she can be called at 402-8680.

Dr. Honglei Chen has joined the Occupational Epidemiology Branch as a postdoctoral fellow. He has an M.D. degree from Tainjin Medical University and an M.P.H. degree from the Chinese Academy of Preventive Medicine. Dr. Chen is a Ph.D. candidate in nutritional epidemiology at the Tufts University School of Nutrition Science and Policy in Boston.

Working with Dr. Mary Ward and Dr. Barry Graubard, Dr. Chen is evaluating the role of dietary factors in a case-control study of brain cancer in Nebraska. His office is EPS/8109, and he can be reached at 435-2358.

Mr. Anand Chokkalingam has joined the Environmental Epidemiology Branch as a special guest researcher. He is a doctoral candidate in the Department of Epidemiology at the University of Maryland, and holds a bachelor's degree in molecular and cell biology from the University of California at Berkeley and a master's degree in preventive medicine from the University of Maryland. Mr. Chokkalingam is working with Dr. Ann Hsing and Dr. Katherine McGlynn on prostate cancer-related projects, including his doctoral research on the relation between polymorphisms of the vitamin D receptor and risk of prostate cancer. His office is located in EPS/7079, and he can be reached at 594-7905.

Mr. Joseph Coble has been appointed a staff scientist in the Occupational Epidemiology Branch. He received a master's degree in industrial hygiene from the University of Washington, and he is currently working toward a doctoral degree at the Johns Hopkins School of Hygiene and Public Health, where his dissertation research is on exposure assessment in the paper and pulp industry. Mr. Coble has 12 years of experience as a certified industrial hygienist. He is working with Dr. Patricia Stewart and Dr. Mustafa Dosemeci in assessing occupational exposures. Mr. Coble is located in EPS/8115, and he can be reached at 435-4702.

Dr. Joanne Dorgan, a tenure-track investigator in the Environmental Epidemiology Branch, has accepted a position as a member in the Population Science Division at the Fox Chase Cancer Center in Philadelphia. At Fox Chase, she will continue her research on interrelationships of diet, physical activity, and sex hormones in the etiology of breast and prostate cancers.

Dr. Larry Engel has joined the Occupational Epidemiology Branch as a postdoctoral fellow. He recently obtained a doctoral degree in epidemiology from the University of Washington, where his research focused on risk of Parkinson's disease, pesticide exposure, and genetic polymorphisms. Dr. Engel is working with other Branch members on the agricultural health study and on investigations of cancer risks among migrant and seasonal agricultural workers. His office is located in EPN/8111, and he can be reached at 402-7825.

Ms. Patti Gravitt has joined the Environmental Epidemiology Branch as a special volunteer. She has an M.S. degree in biology from the University of North Carolina at Charlotte, and is pursuing a doctorate in epidemiology at the Johns Hopkins School of Hygiene and Public Health. Ms. Gravitt is working with Dr. Mark Schiffman and Dr. Allan Hildesheim on studies of human papillomavirus viral load as a predictor of persistent infection. She is located in EPS/7059, and she can be reached at 594-7660.

Ms. Sarah Keim, a Presidential Management Intern (PMI) at the NIH, has started a 3-month rotation in the Occupational Epidemiology Branch. The PMI program is to designed to interest young professionals in public service. Ms. Keim received a M.A. degree in public affairs and administration from the University of Wisconsin. During her stay in the Branch, she will be involved with the agricultural health project and with a study of women and occupational causes of cancer. Ms. Keim is located in EPS/8110, and she can be called at 435-4710.

Dr. Pamela Mink has joined the Hormonal Studies Section of the Environmental Epidemiology Branch for a preceptorship under the Cancer Prevention Fellowship Program of the Division of Cancer Prevention. She recently completed a Ph.D. in epidemiology at the University of Minnesota, where her dissertation research focused on the roles of plasma lipids, endogenous insulin, and CYP17 genotype in the etiology of breast cancer. Dr. Mink is working with Dr. Louise Brinton and Dr. Catherine Schairer on studies to assess risk factors for ovarian and other cancers among women. Her office is in EPS/7078, and she can be reached at 435-3978.

Dr. Sandra Petralia, a fellow in the Cancer Epidemiology and Biostatistics Training Program in the Occupational Epidemiology Branch, has accepted

a position as an epidemiologist in the Medical Science Department at Hoffman-LaRoche pharmaceutical company in New York City.

Dr. Alice Sigurdson has been appointed a tenure-track investigator in the Radiation Epidemiology Branch. She received a Ph.D. degree in epidemiology from the School of Public Health at the University of Texas, where her dissertation research was on hormonal risk factors associated with testicular cancer. Dr. Sigurdson completed postdoctoral training in epidemiology at M.D. Anderson Cancer Center, focusing on studies of biomarkers and survival in patients with glioma, cancer risks among a cohort of patients with neurofibromatosis type 1, and interactions of environmental, hormonal, and genetic factors in the etiology of breast and ovarian cancers. Her office is in EPS/7092, and she can be reached at 594-7911.

Mr. Pratheev Sreetharan has joined DCEG as an intern in the Biostatistics Branch. He is a sophomore at Walt Whitman High School in Bethesda, where last year he completed the advanced placement course in statistics. Mr. Sreetharan is a member of the math team and plays the saxophone. He is working with Drs. Sholom Wacholder, Martha Linet, and Charles Land on data analysis and computing projects. Mr. Sreetharan is located in EPS/7091, and he can be called at 594-7517.

Dr. Susan Sturgeon, a senior staff fellow in the Environmental Epidemiology Branch, has accepted a position as an associate professor in the Department of Epidemiology and Biostatistics at the University of Massachusetts School of Public Health in Amherst.

Dr. Terry Thomas has joined the Chornobyl Unit of the Radiation Epidemiology Branch as a staff scientist epidemiologist. She worked at NCI for 16 years in the predecessor group to the Occupational Epidemiology Branch, leaving in 1987 to join the Environmental Epidemiology Service at the Department of Veterans Affairs. She later served as Director of the Health Communication and Coordination Division and as Director of International Health Programs in the Office of Health at the U.S. Department of Energy. In 1994, Dr. Thomas joined the faculty of the Uniformed Services University of the Health Sciences, where she was Director of the Division of Epidemiology and Biostatistics. Dr. Thomas' office is located in EPS/7100, and she can be called at 594-7658.

After working as a DCEG summer intern in 1998, **Ms. Lilian Tsao** has returned for 7 months in the Environmental Epidemiology Branch as a research fellow. In June, she received a bachelor's degree in psychology with honors from the University of Virginia, and she plans to start medical school in 2000. Ms. Tsao is working with Drs. Ann Hsing, Katherine McGlynn, and Susan Devesa on international trends in liver and biliary tract cancers. Her office is in EPS/7057, and she can be reached at 402-7482.

Ms. Rosalinde van de Vooren has joined the Occupational Epidemiology Branch for 10 weeks as a special volunteer. She is in her final year of medical school at the University of Utrecht in the Netherlands. Ms. van de Vooren is working with Dr. Richard Hayes on clinical and epidemiologic aspects of prostatic disease. She is located in EPS/8111, and can be reached at 594-7480.

Dr. Heng Xie has joined the Occupational Epidemiology Branch for a preceptorship under the Cancer Prevention Fellowship Program of the Division of Cancer Prevention. He is a physician who recently completed a Ph.D. in molecular and cellular pathology at the University of Alabama and an M.P.H. at the Johns Hopkins School of Hygiene and Public Health. Working with Dr. Wong-Ho Chow and Dr. Richard Hayes, Dr. Xie is participating in several projects that combine his interests in pathology, molecular biology, and epidemiology. He is located in EPS/8111, and can be called at 594-7480. ■

CALENDAR OF EVENTS

Date	Event
December 16	DCEG Seminar: Human Herpesvirus 8 in Populations and Disease Dr. D. Whitby 10:30 am–12:00 pm, EPN / J
December 20	Women Scientists Advisory Group Lunch 12:00 pm–1:00 pm, EPS / 7107
January 6–7	NCI Intramural Retreat Westfields Conference Center, Chantilly, VA
January 13	DCEG Seminar: Cost-effective Methods for Enhancing Follow-up, Participation, and Cause of Death Ascertainment in Large Cohort Studies Ms. M. Doody 10:30 am–12:00 pm, EPN / G
January 13	Senior Advisory Group Meeting 1:00 pm–4:00 pm, EPN / G
January 20	DCEG Seminar: Weighing the Risks and Benefits of Tamoxifen for Preventing Breast Cancer Dr. M. Gail 10:30 am–12:00 pm, EPN / J
January 24	Women Scientists Advisory Group Lunch 12:00 pm–1:00 pm, EPS / 7107
February 3	Senior Advisory Group Meeting 1:00 pm–4:00 pm, EPN / G
February 10	DCEG Seminar: REB Program of Second Cancer Studies Ms. R. Curtis, Ms. R. Kleinerman, Dr. C. Metayer, Dr. L. Travis 10:30 am–12:00 pm, EPN / J
February 14–16	National Cancer Advisory Board Meeting Conference Rm. 6, Bldg. 31
March 2	Senior Advisory Group Meeting 1:00 pm–4:00 pm, EPN / G
March 6	Women Scientists Advisory Group Lunch 12:00 pm–1:00 pm, EPS / 7107
March 6–7	American Society for Preventive Oncology Meeting Hyatt Regency Bethesda
March 8	Genetic Epidemiology Branch Site Visit
March 23–24	NCI Board of Scientific Counselors Meeting Conference Rm. 6, Bldg. 31
April 2–5	American Association for Cancer Research Meeting Moscone Convention Center, San Francisco, CA
April 6	Senior Advisory Group Meeting 1:00 pm–4:00 pm, EPN / H
April 24	Women Scientists Advisory Group Lunch 12:00 pm–1:00 pm, EPS / 7107