THE CANCER LETTER

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Practice Of Oncology Must Incorporate Clinical Research, NCI Director Tells ASCO

DENVER—As economic forces threaten the traditional means of support for medical research, cancer researchers will not be able to test new treatments unless oncologists begin to view themselves as clinical scientists and incorporate research into the routine care of their patients, NCI Director Richard Klausner said last week.

In remarks to the annual meeting of the American Society of Clinical Oncology, Klausner called for a massive expansion of NCI's clinical trials system to include more oncologists and cancer patients. He also

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In Brief

Spitz Elected President, ASPO; Karmanos Receives $6 Million From Chrysler, Ford

MARGARET SPITZ has been elected president of the American Society of Preventive Oncology. Spitz is chairman of the department of epidemiology at M.D. Anderson Cancer Center, and holds the Mesa Petroleum Company Professorship in Cancer Prevention at M.D. Anderson. . . . **BARBARA ANN KARMANOS CANCER INSTITUTE** has received gifts of $3 million from the Chrysler Corporation Fund and $3 million from the Ford Motor Company Fund. Last year, General Motors Foundation pledged $5 million to the institute. The combined $11 million supports the Karmanos Institute's Cancer Care and Cure Campaign, a five-year, $100 million effort to establish new programs and facilities. . . . **SCOTT LIPPMAN** has been named chair of the Cancer Control Research Committee of the Southwest Oncology Group. Lippman is chairman of the department of clinical cancer prevention at M.D. Anderson Cancer Center, and a core faculty member of the NIH Cancer Prevention and Control Academic Course. . . . **JEAN DE KERNION** has recieved the Ramon Guiteras Lecture, awarded by the American Urological Association. DeKernion is chair of the department of urology at UCLA Medical Center, and a physician at the UCLA Jonsson Cancer Center. The lectureship is awarded annually to an outstanding speaker to augment the educational content of the scientific sessions of the AUA's annual meeting. . . . A Texas jury found **STANISLAW BURZYNSKI** not guilty of fraud and unauthorized drug sales this week. Burzynski was charged with illegally selling antineoplaston, a drug Burzynski derived from human and animal urine, without FDA approval. Burzynski uses the drug to treat cancer patients.

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"Create The Expectation That Research, Care Are Synonymous"

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advocated the development of an electronic information network to compile and analyze the data that would be generated by the expansion.

"Progress towards reducing the burden of cancer must be a national priority, and this requires a renewed commitment to clinical research," Klausner said. "The practice of oncology must move from the delivery of the best available care…to include progress toward the delivery of better care—not as a separate add-on of the research community, but as an integrated aspect of practice."

In the May 19 speech, Klausner called for:

- national policies that encourage and pay for participation in clinical research,
- increased federal and private funding for medical research,
- the development of a "National Cancer Informatics Infrastructure,"
- more research into methods of clinical research.

Klausner acknowledged that it seemed a paradox to call for an expansion of clinical research at a time when academic health centers are struggling for survival: "I'm getting up here as if I'm spitting against the wind. We are all struggling to maintain the survival of our research-based academic institutions, and here I am saying that, no, we have to go beyond just saving them. We have to rethink the idea of practice as itself being part of research."

Yet, if oncologists and patients begin to expect medical care that is based on and contributes to research, improved research funding and policies that encourage patient and physician participation in research will follow, Klausner said.

"We must create the expectation that care and research are synonymous," Klausner said. "With that, I believe, we will gather public momentum to change the research investment and the infrastructure of how we pay for health care to make sure that research is supported."

In the current public discussion of healthcare economics in the U.S., Klausner's talk was not revolutionary, nor did it contain any indication of shifts in NCI policies, observers said. Since becoming NCI director two years ago, Klausner has advocated the expansion of clinical trials on several occasions.

Klausner has frequently invoked informatics—the use of computers to store and analyze information—as the tool clinical science can use to respond to the demands of healthcare payers for definitive outcomes and cost data.

Earlier this year, NCI launched two large projects, the Cancer Genome Anatomy Project and the Cancer Genetics Network, to begin the development of an informatics network.

Though its concepts were not new, Klausner's speech was significant for its vision of a strong and healthy future for clinical cancer research, working to overcome the potentially destructive economic changes. NCI alone cannot combat these changes, but Klausner, increasingly, is using his position to advocate for federal and private healthcare policies and funding that will enhance clinical research.

The text of Klausner's speech follows:

An interesting article I recently saw by Walter Russell Mead [President's Fellow at the World Policy Institute of The New School for Social Research, New York City] compares the current global economic changes to the transformation of an agrarian to a manufacturing-based society seen over the previous 100 to 150 years. The current transformation from a manufacturing to a service-based economy centered around information and its technical acquisition and application is well-documented and not a new observation. Mead points out that there was manufacturing before the Industrial

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Revolution, but it was in the hands of tightly auto-controlled guilds—exclusive clubs of highly skilled and highly valued and well-paid artisans. It was their work that was replaced by the new manufacturing techniques. These techniques provided a flood of goods whose mass-produced, impersonal efficiency and reduced costs left laments about the loss of the unique value of products of real masters. These laments became quaint discussions of a passing time that must have seemed unimaginable to those artisans of quality.

What was striking in Mead's article was his description of medicine as one of guilds whose time, if not passing, is certainly transforming in ways whose analogies to the guilds of yore are easy to see. I quote from him: "Computers and software will create a revolution in the production of services analogous to the revolution that powered machinery and assembly lines in the world of goods. The hospital of the future will be a fairly representative workplace. Many of the healthcare providers in the hospitals will be paid like one of today's orderlies, rather than like a skilled and respected M.D. Orderlies with doc-in-the-box complex computers that use artificial intelligence and extensive databases will monitor patients through blood samples and sensors."

Strengthen The Marriage Of Science, Medicine

Whether this is accurate or not, I do not know. But the fact that there are fast and massive changes in the practice of medicine is undeniable. What does Mead's somewhat apocalyptic vision have to do with NCI and ASCO and the relationship between the two?

There is, I believe, a central task that we must embark upon together. I submit that to preserve the real values of medicine, not to protect the guilds of yesteryear, but to preserve the mission of conquering disease, the marriage between the practice of medicine and science must be dramatically strengthened.

The culture of science is a culture of innovation and of change. Science can serve and perhaps even save medicine, not just by giving it new tools, but by integrating the process of inquiry and innovation into practice.

Oncology is well poised to lead this. We are entering a period of rapid and remarkable change in oncology driven by previously unimagined advances in our understanding of cancer biology.

Our motivation is clear: we are responsible for diseases that are by and large treated far from optimally, diseases that need to be diagnosed with molecular precision, diseases that are currently detected with inadequate sensitivity, and inadequate predictive specificity.

We are only beginning to think about preventing cancer with targeted and intelligent preventive interventions. Explosive new technologies will require evaluation, validation and standardization. We are going to be increasingly confronted with an entirely new genetic paradigm of risk of cancer, a genetic paradigm of the sensitivity to carcinogens, of response to behavior, and of response to therapy. With this new paradigm will come the pressing need to answer questions we previously couldn't even frame.

With all of these questions to answer, we need to present ourselves as engaged, along with our patients, in the process of asking and answering questions that have currently no adequate answer.

The solution in part is to have a clinical research system that extends far beyond how it is now defined, a research system that extends from healthy and well-supported academic health centers to physician research networks, to a more inclusive and extensive clinical research and clinical trials system that can involve, actively, much more of the oncology community, and that must incorporate a much higher percentage of all of our patients onto protocols, clinical research, epidemiologic and intervention trials.

Such a goal and only such a goal will allow us to test the growing number of intervention ideas in the shortest period to time possible and with the loss of the least amount of valuable and informative information.

As interventions move toward those tailored to highly specified and stratified diagnoses and targeted to the molecular machinery of the tumor, of the host response, or the host environment, there will be a need for a greatly expanded approach to clinical trials. Optimization of therapy for better short and long-term outcomes and for minimizing side effects will further fuel this need for research.

A much more informative and rich surveillance system than we currently have that looks at detection, diagnosis, treatment choices and outcomes in the context of genetic and other risk factors will require the active and informed participation of practitioners in the generation of knowledge as well as in the delivery of care.

A User-Friendly Informatics System

We need to achieve this by developing a truly useful, user-friendly and transparent informatics system. Indeed, a system that we can refer to as the National Cancer Informatics Infrastructure, a system which the NCI needs to attempt to build, developing and testing it with those who will use it. A system built to improve the acquisition of data as well as the dissemination of knowledge. We have the technology to do that. We need to do it.

The practitioners of medicine must master the rapidly evolving scientific and medical information age as assemblers, analyzers, interpreters and communicators of information, and be at the vanguard of a culture that expects the practice of oncology to be engaged in both the generation as well as the application of new knowledge.

We must work together and work with consumers and advocates and policy-makers to accept this premise and to expect it—to expect that the culture of medicine is a culture of innovation, in order to deal with policy-makers and others with the clear economic and structural demands of such an expanded view of oncology.

My own discussions with all of these stakeholders, especially recently, strongly suggest to me that the argument I'm making can be made, can be understood, and can be heard.

The concept of a National Cancer Informatics Infrastructure to enable a dramatically enhanced research participation of physicians, patients and the population-at-large resonates with a growing and increasingly vocal demand that progress towards reducing the burden of cancer must both accelerate and be a national priority, and that this requires a renewed commitment to clinical research.

It is on the radar screen in Washington, believe me. We see it in multiple manifestations, such as the recent suggestion, gathering steam, that the research budget of NIH be doubled within five years.

Integrate Research Into Practice

The goal of the practice of oncology must move from the delivery of the best available care. It must move beyond that to include progress toward the delivery of better care—not as a separate add-on of the research community, but as an integrated aspect of practice.

To do this will require efforts in four areas:

First, we need policies that both allow and encourage participation of patients, populations, and physicians in research. We need all providers to make sure that they allow and encourage that, and indeed, expect it, for that should be the standard of care. And payers must pay for it. As you know, we have been engaged in discussions with both federal and private payers, and they are willing to discuss the parameters by which clinical costs associated with clinical research are paid for.

Secondly, we need to deal with investment, especially federal, but also on the part of the whole health system, into R&D, for dollars will clearly be required.

Now, I'm getting up here as if I'm spitting against the wind. It's a paradox. We are all struggling to maintain the survival of our research-based academic institutions, and here I am saying that, no, we have to go beyond just saving them.

We have to rethink the idea of practice as itself being part of research. We need to stop thinking about research as something someone else will pay for, that is an add-on, that is research and training, and recognize that when we have medical care that does not adequately prevent, diagnose, detect or treat a disease, then that medical care must be in a culture of innovation; therefore, a culture of research. We must create the expectation that care and research are synonymous. With that, I believe, we will gather public momentum to change the research investment and the infrastructure of how we pay for health care to make sure that research is supported.

The third thing we need is infrastructure. We can't do what I'm saying unless we create an infrastructure that allows it, an infrastructure that only now is conceivable due to the new economically and accessible electronic communications technologies.

A recent report from the National Academy of Sciences, called "Bits of Power," addresses this issue for the dissemination of information and the acquisition of information internationally, including into developing countries. If we can conceive of this for the entire world and for developing countries, we can certainly conceive of such an infrastructure for the United States.

The infrastructure must enable the research, must reduce the disincentives to participate, and include incentives to sign on to it.

The fourth thing is that we need research into research. We need research into new and more effective ways to ask questions and to collect and analyze data, that will allow a great expansion in

clinical research, that will allow us to fill what will be an enormously growing gap between ideas and the ability to test those ideas. How to better study and monitor behavior and psychosocial issues, epidemiology, intervention, and survivorship. We will need research into how it is that we best close the gap, while we watch now a potentially expanding gap between basic discoveries about cancer and their application.

We must all participate in making oncology more scientific. Not just in the application of science, but in the generation of knowledge.

Creators Of New Information

This is an enormous challenge. But I think with it, we can capture the public discussion about what we want this society to do in terms of reducing the burden of disease. It is an enormous challenge that will involve both expansion and new approaches to data acquisition and hypothesis testing.

In the information age, we must all be more than craftsmen of information, and become what will always be irreplaceable: creators of new information.

Funding Opportunities

New Program Offers 4 Years At NCI, 2 Years Elsewhere

NCI is seeking applicants for a new training program designed to help post-doctoral researchers begin careers as independent investigators.

The program is intended to support researchers who will work for a maximum of four years at NCI designing and conducting their own research projects. The investigators will be affiliated with NCI laboratories or branches, and provided facilities, an operating budget, salary and personnel. The program will provide up to $600,000 for each scientist over the four-year period, NCI said.

At the end of the four years, the investigators will be eligible to receive up to $125,000 per year for up to two years at an academic institution through a non-competing career transition award.

"The goal is to help scientists become established as independent investigators by providing protected time for new scientists to establish their research programs without the pressures of writing grants, teaching, and other academic obligations," NCI Director Richard Klausner said.

About 10 researchers will be accepted for the program, NCI said. The Institute plans to set aside a total of $6 million over the next four years to fund the intramural phase of the awards, and another $1.25 million in years five and six for the extramural phase.

NCI advisory groups approved the program in concept last March (**The Cancer Letter**, March 7).

The excerpted text of the RFA follows:

RFA CA-97-007 P1O1

Title: **The NCI Scholars Program**

Letter of Intent Receipt Date: June 27

Application Receipt Date: July 30

The purpose of the NCI Scholars Program is to provide outstanding new research investigators who are ready to initiate their first independent program in cancer research with an opportunity to develop their program in the supportive and uniquely interactive intramural environment of the NCI. The overall goal is to facilitate their successful transition to an extramural environment as independent researchers.

This program is also intended to continually enhance and invigorate the NCI intramural community by providing a cadre of new, creative scientists who will interact with and expand the collaborative research opportunities of NCI intramural scientists. This program will uniquely address the need of the NCI intramural laboratories to attract outstanding scientists, and of the extramural cancer research community to identify for staff appointments new investigators capable of sustaining a successful research program.

Individuals with a research or health professional doctoral level degree or equivalent, with no more than five years of postdoctoral research training at the time of application, and with demonstrated outstanding abilities in basic, clinical or population-based (e.g., epidemiological) research, are eligible to apply. This includes individuals with postdoctoral research experience in any environment (e.g., academic, industry, government). Individuals who have had more than five years of postdoctoral research training or who have held research or other professorship positions or equivalent in academe or elsewhere are not eligible to apply. However, years of clinical training will not count against the five years of relevant research experience. Individuals who have been principal investigators on either PHS research grants (e.g. R29, R01, P01 or its subprojects) or non-PHS peer reviewed research grants are not eligible to apply for this award. Postdoctoral fellows at the NCI who meet other eligibility requirements are eligible to apply, but will not be considered for placement in Laboratories/ Branches where they have previously trained.

Minorities and women are encouraged to apply. Candidates must be U.S. citizens or noncitizen nationals, or must have been lawfully admitted for permanent residence and possess an Alien Registration Card (I-151

or I-152) or some other verification of legal admission as a permanent U.S. resident, at the time of award. Noncitizen nationals are defined as persons who owe permanent allegiance to the U.S., usually as a result of being born in areas under U.S. sovereignty, jurisdiction, or administration. Individuals on temporary or student visas are not eligible to apply. Applicants are encouraged to contact the NCI regarding their eligibility for this award.

The NCI Scholars Program will use the NIH Career Transition Award (K22). Responsibility for the planning, direction, and execution of the proposed project will be solely that of the applicant.

The NCI Scholars Program will consist of an intramural phase and an extramural phase. The maximum total period of combined intramural support at NCI and at the extramural institution for an NCI Scholar will be six years.

Initially, up to four years of the Scholar's research program will be an Intramural Support Phase in which the salary and the research costs of the successful Scholar will be derived entirely from intramural NCI resources. The budget cannot exceed $150,000 total costs per year or $600,000 total costs over a four-year period, which is the maximum duration of the Intramural Support Phase.

The final two years of the Scholar's research program will be an Extramural Support Phase funded through the NIH Career Transition Award (K03) mechanism. The budget cannot exceed $125,000 plus fringe benefits in direct costs per year or $250,000 plus fringe benefits in direct costs over a two-year period which is the maximum duration of the Extramural Support Phase. Transition from the intramural phase of support to the extramural phase is not automatic. Approval of the transition will be based upon the success of the Scholar's research program, as determined by a formal NCI scientific progress review which will take place no later than the end of the third year of the Intramural Support Phase. Scholars who are approved to proceed with this second phase of support will receive notification of approval in writing from the NCI. Once approved for the Extramural Support Phase, the NCI will process the change in organization in response to a request from the sponsoring institution that has recruited the Scholar for the final two years of the award.

It is anticipated that applications to the NCI Scholar's Program will be solicited annually through the reissuance of this RFA. Each annual solicitation will indicate the general areas of research and the number of positions that will be sponsored in that year. For the Intramural Support Phase, approximately $1,500,000 per year for up to four years will be set aside to fund about 10 applications submitted in response to this RFA. However, this funding level is dependent upon the receipt of a sufficient number of applications of outstanding scientific merit as evaluated by peer review.

The number of Scholars who can be supported is based upon the availability of resources and space in each sponsoring intramural Division. For the Extramural Support Phase, approximately $1,250,000 per year in direct costs will be available to fund about 10 awards, providing support for salaries and partial operating costs. It is important to note that a sponsoring extramural institution may submit a noncompeting continuation application only after the Scholar has been notified in writing that the NCI Progress Review Committee has recommended approval of the transition to the extramural support phase of the award.

The earliest feasible start date for the initial awards will be Dec. 31, 1997.

Research Training Objectives: For decades, the intramural scientists and facilities of NCI have provided a research environment for the training of new scientists who have subsequently entered the extramural biomedical research community and have become leaders in their fields of investigation. This has been accomplished primarily through staff fellow and senior staff fellow programs that, to varying degrees, have afforded independent research opportunities to new scientists. With the continuing effort of the NCI to develop an intramural research environment of the highest scientific quality, there is a new opportunity to use the unique intramural environment of the NCI to effectively foster the research careers of individuals who will pursue their careers as extramural scientists.

The NCI Scholars Program is designed for promising new investigators in basic, clinical or population-based biomedical research (e.g.,epidemiology) who have demonstrated outstanding scientific abilities during their training, to enable them to establish their first independent research program. The major objective of the program is to sustain and advance the early research careers of the most promising investigators while they consolidate and focus their independent research programs. NCI Scholars will independently design and pursue research projects in their area of interest for which they would be provided with facilities, operating budget, salary and personnel. NCI Scholars will be responsible for all aspects of their research program, including the progress of the research and the management of allocated resources.

The participating NCI intramural divisions invite applications for the support of Scholars who wish to develop independent research programs in the following scientific areas:

—The Division of Basic Sciences encourages applications from candidates with experience and interest in pursuing research in the general areas of cell biology, cancer genetics, and immunology. Specific areas of interest include: chromatin structure, gene regulation, signal transduction, cell transformation, cell cycle and apoptosis.

—The Division of Epidemiology and Genetics

encourages applications from candidates with experience and interest in pursuing epidemiologic or interdisciplinary research into the environmental and genetic determinants of cancer. Areas of specific research interest include: lifestyle and environmental risk factors, genetic susceptibility, occupational exposures, infectious agents, pharmacoepidemiology, radiation exposures, methodologic and statistical research, or interdisciplinary studies (molecular epidemiology).

—The Division of Clinical Sciences encourages applications from candidates engaged in cancer genetics and cancer biology research. Specific topics of interest include: exploratory technologies in interrogating the human genome, in genetic instability, and the molecular biology of angiogenesis, and of the cell cycle. Consonant with the goals of the division, applicants should be interested in participating in the translation of basic findings to the clinical setting.

Allowable Costs: Intramural Support Phase: The budget for the intramural support phase cannot exceed $150,000 per year in total costs excluding equipment. The final budget for this phase of the award will be negotiated with the sponsoring NCI intramural division and will depend upon the nature and scope of the research as recommended by the peer review process.

Salaries will be provided for the Scholar and no more than two additional positions (e.g. postdoctoral trainee and technician). Salaries of the Scholar and other personnel must be commensurate with the level of training and experience specified in the Federal pay schedule.

Up to $25,000 per person will be provided for annual operating expenses (e.g. supplies, disposables, copying, etc.). Up to $50,000 in the first year will be provided for laboratory equipment. Laboratory equipment purchased for the Scholar during the intramural phase will not be transferable to the extramural position.

Extramural Support Phase: The budget for the two year extramural transition phase may not exceed $125,000 plus fringe benefits per year in direct costs.

Scholars will be provided salary support of up to $75,000 plus applicable fringe benefits commensurate with the applicant institution's salary structure for persons of equivalent qualifications, experience, and rank. The total salary requested must be based on a full-time, 12 month staff appointment and there should be no less than 75 percent effort devoted by the Scholar specifically to the proposed research program. The institution may supplement the NCI contribution; however, supplementation may not be from Federal funds unless specifically authorized by the Federal program from which such funds are derived. In no case may PHS funds be used for salary supplementation. Institutional supplementation of salary may not require extra duties or responsibilities that would interfere with the purpose of this award. Under expanded authorities, institutions may carry-over unexpended funds into the next budget period and rebudget funds within the total costs awarded but may not rebudget funds involving the salary component of the budget. The total salary requested must be based on a full-time 12-month staff appointment.

Up to $50,000 per year in direct costs will be provided to partially support ancillary personnel, supplies, equipment, travel, tuition, and other costs which are deemed essential for the individual's research program.

Indirect costs will be reimbursed at eight percent of modified total direct costs, or at the actual indirect cost rate, whichever is less.

Special Restrictions: Acceptance into the NCI Scholar's Program does not convey any commitment or intent of the NCI to consider the Scholar for a tenure-track position within the NCI. The NCI Scholars Program is specifically intended to help develop scientists who will pursue their careers in the extramural biomedical research community.

However, NCI Scholars are not explicitly precluded from applying for available tenure track positions at the NIH. If a Scholar obtains an NIH position, the NCI Scholar's Career Transition Award (K22) will be terminated.

Prospective applicants are asked to submit, by June 27, 1997 a letter of intent that includes a descriptive title of the proposed research, the name, address, telephone and FAX numbers, E-mail address of the Principal Investigator, and the number and title of the RFA in response to which the application is being submitted.

The letter of intent is to be sent to: Dr. Vincent J. Cairoli, Division of Cancer Treatment, Diagnosis, and Centers, National Cancer Institute, Executive Plaza North, Room 520, Bethesda, MD 20892, tel: 301/ 496-8580, fax: 301/402-4472, email: vc14z@nih.gov.

Application Procedures: The research grant application form PHS 398 (rev. 5/95) is to be used in applying for these grants. These forms are available at most institutional offices of sponsored research and may be obtained from the Grants Information Office, Office of Extramural Outreach and Information Resources, NIH, 6701 Rockledge Drive, MSC 7910, Bethesda, MD 20892-7910, tel: 301/435-0714, email:asknih@odrockm1.od.nih.gov. Submit a signed, typewritten original of the application and three signed photocopies in one package to: Division of Research Grants, NIH, 6701 Rockledge Drive, Room 1040—MSC 7710, Bethesda, MD 20892-7710; or for express/courier service: Bethesda, MD 20817.

Two additional copies of the application must be sent to: Toby Friedberg, Division of Extramural Activities, NCI, 6130 Executive Blvd Rm 636, Bethesda, MD 20892-7407, or for express/courier service: Rockville, MD 20852.

Inquiries: Dr. Vincent J. Cairoli, Division of Cancer Treatment, Diagnosis, and Centers, NCI, Executive Plaza North, Room 520, Bethesda, MD 20892-7390, tel: 301/ 496-8580, fax: 301/402-4472, email: vc14z@nih.gov.

Cancer Meetings Listed From June To October

June

Critical Issues in Tumor Microcirculation, Angiogenesis and Metastasis—June 2-6, Boston, MA. Contact Carol Lyons, Massachusetts General Hospital, tel; 617-726-4083, fax: 617-726-4172.

National Race for the Cure—June 7, Washington, DC. Contact Race Information, tel: 703-848-9364.

Genetic Testing for Familial Cancer Conference—June 5-6, Houston, TX. Contact Office of Conference Services, M.D. Anderson, tel: 713/792-2222, fax: 713/794-1724, email: meetings@utmdacc.uth.tmc.edu.

AACR Special Conference: Cancer of the Central Nervous System—June 7-11, San Diego, CA. Contact American Association for Cancer Research, tel: 215-440-9300, fax: 215-440-9313.

Cutaneous Malignancies: GM Cancer Research Foundation Annual Scientific Conference—June 10-11, NIH, Jack Masur Auditorium. Contact General Motors Cancer Research Foundation, tel: 202/636-8745, fax: 202/636-8755.

4th World Conference on Melanoma—June 10-14, Sydney, Australia. Contact The Melanoma Foundation, PO Box M123, Camperdown, NSW 2050, Australia.

4th International Symposium: Bilological Therapy of Cancer - From Basic Research to Clinical Application—June 11-14, Munich, Germany. Contact V. Nuessler, Klinikum Grosshadern, Marchioninistr. 15, 81377 Munich, Germany, fax: ++49 89 7099-200, email: nuessler@GSF.de.

Recent Advances in the Treatment of Ovarian Cancer and Lung Cancer—June 13, Baltimore, MD. Contact Walt Landers, tel: 212/633-9209, or Amy Heaps, tel: 410/328-8607.

5th International Myeloma Workshop—June 14-18, Boston, MA. Contact Lori Gershaw, tel: 800/378-6857, fax: 617/279-9887, email: PMPMeeting@aol.com.

Multidisciplinary Approaches to Cancer Immunotherapies—June 23-24, Bethesda, MD. Contact NMHCC, tel: 888/44-NMHCC, fax: 617/270-6004, email: register@nmhcc.com.

UICC First International Meeting on Advances in the Knowledge of Cancer Management—June 28-July 1, Vienna, Austria. Contact A.J. Turnbull, 3 rue du Conseil General, 1205 Geneva, Switzerland, tel: +41/22/809 18 11, fax: +41/22/809 18 10, email: turnbull@uicc.ch.

July

Radiation Therapy Oncology Group Semi-Annual Meeting—July 17-20, Washington, DC. Contact Nancy Smith, tel: 215/574-3205, fax: 215/928-0153, email: nsmith@acr.org.

August

Fourth Anticancer Drug Discovery and Development Symposium—Aug. 4-6, Annapolis, MD. Contact Frederick Valeriote, Wayne State University, tel: 313/745-8252, fax: 313/745-8139.

World Conference on Lung Cancer—Aug. 10-15, Dublin, Ireland. Contact Secretariat, tel: 353-1-8306795, fax: 353-1-8309090.

Hematology/Oncology Reviews: A Practical Review of Common Disorders—Aug. 13-15, Ponte Vedra Beach, FL. Contact Mimi Macke, Mayo Clinic Jacksonville, tel: 800/462-9633, fax: 904/953-2954.

September

Living Fully with Cancer—Sept. 6-7, Houston, TX. Contact Office of Conference Services, M.D. Anderson Cancer Center, tel: 713/792-2222, fax: 713/794-1742, email: meetings@utmdacc. uth.tmc.edu.

Joint Conference of the American European Associations for Cancer Research: Molecular Genetics of Cancer—Sept. 9-12, Oxford, England. Contact AACR Special Conference Registration, tel: 215/440-9300, fax: 215/440-9313

Strategies for Cure: GI Malignancies—Sept. 12, Dearborn, MI. Contact Gayle Blakely, Providence Hospital, tel:810/424-3183, fax: 810/424-2919.

ECCO 9 European Cancer Conference—Sept. 14-18, Hamburg, Germany. Contact ECCO 9 Secretariat, FECS Conference Unit, Avenue E. Mounier 83, B-1200 Brussels, tel: +32 (2)7750202, fax: +32 (2)7750200.

Association of Community Cancer Centers National Oncology Economics Conference—Sept. 17-20, La Jolla, CA. Contact ACCC, David Walls, tel: 301/984-9496, fax: 301/770-1949.

Fifth Annual Progress in Hematologic Malignancies and Bone Marrow Transplantation—Sept. 19, Baltimore, MD. Contact Johns Hopkins Office of Continuing Medical Education, tel: 410/955-2959, fax: 410/955-0807, email: cmenet@som. adm.jhu.edu.

The Third Annual Oncology Patient Education Conference—Sept 26, Detroit. Contact Karmanos Cancer Institute, tel: 800/KARMANOS.

AACR/NCI of Canada Special Conference in Cancer Research: Tumor Suppressor Genes—Sept. 26-30, Victoria, Canada. Contact Special Conference Registration, tel: 215/440-9300, fax: 215/440-9313.

October

The Experts Speak Out on Breast Cancer—Oct. 22, Eatontown, NJ. Contact Monmouth Medical Center, tel: 908/870-5429, fax: 908/728-1305.

50th Annual symposium of Fundamental Cancer Research: Molecular Determinants of Cancer Metastasis—Oct. 28-31, Houston, TX. Contact Conference Services, M.D. Anderson, tel: 713/792-2222, email: meetings@utmdacc.uth.tmc.edu.