THE CANCER LETTER

Vol. 30 No. 35
Sept. 17, 2004

Price $335 Per Year

PO Box 9905 Washington DC 20016 Telephone 202-362-1809

NCAB Subcommittee To Propose A "Human Cancer Genome Project"

By Kirsten Boyd Goldberg

A panel of advisors to NCI is developing a proposal to create a comprehensive chart of the genetic mutations that cause cancer.

The National Cancer Advisory Board's Ad Hoc Subcommittee on Biomedical Technology plans to deliver a report to NCI in December with recommendations that would include creating a "Human Cancer Genome Project," group co-chairman Eric Lander said to the board at its Sept. 14 meeting.

The project would aim to find all of the genetic mutations that cause

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In Brief:

White House Appoints Oil, Gas, Chemical Industry Executive David Koch To NCAB

DAVID KOCH, executive vice president and board member of Koch Industries Inc., based in Wichita, Kan., the second-largest privately-held company in the U.S., was appointed to a six-year term on the National Cancer Advisory Board by **President George Bush**. Koch is chairman of the board and chief executive officer of Koch Chemical Technology Group LLC, a wholly-owned subsidiary of Koch Industries. He serves on the boards of more than 20 non-profit organizations, including Memorial Sloan-Kettering Cancer Center, M.D. Anderson Cancer Center, the Whitehead Institute, Cold Spring Harbor Research Laboratory, Massachusetts Institute of Technology, Johns Hopkins University, Johns Hopkins Medical Center, the Prostate Cancer Foundation, New York University Medical Center, New York Presbyterian Hospital, and Rockefeller University. Koch, who ran for vice president on the Libertarian Party ticket in 1980, supports conservative and libertarian organizations including the Cato Institute, the Reason Foundation, the Republican Governor's Association, the Americans for a Republican Majority, and the Majority Leader's Fund. . . . **DAVID ELIZALDE** was appointed NCI deputy director for management and executive officer. He was deputy director of acquisition and grants at the Center for Medicare and Medicaid Services for the past five years. **Janice Mullaney**, who served as acting deputy director for management, announced her retirement from NCI. She will join the NIH Foundation. . . . **DAVID ALBERTS**, director of Cancer Prevention and Control for the Arizona Cancer Center and regents professor of medicine, pharmacology, and public health for the University of Arizona College of Medicine, received the third annual American Association for

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Tech Panel Planning Initiative In Molecular Diagnostics

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cancer, so researchers wouldn't have to do this work piecemeal, said Lander, an NCAB member, director of the Broad Institute and the Whitehead Institute Center for Genome Research, and professor of biology at Massachusetts Institute of Technology.

"The technologies to do this are here, or nearly ready, and would be advanced with such a project," Lander said. "In many ways, it has similarities to the Human Genome Project. It's not clear that we should be in a world where people are still using resources on an individual basis to discover oncogenes anymore."

The subcommittee also is developing recommendations for an initiative on molecular detection, a research emphasis previously discussed by the group's co-chairman Leland Hartwell, president and director of the Fred Hutchinson Cancer Research Center (**The Cancer Letter**, April 9).

In addition, the subcommittee is likely to recommend that NCI consider establishing a standing committee to advise the Institute on technology, Lander said.

Although the subcommittee only recently began to write its report, Lander provided the NCAB with what he described as "tentative recommendations."

"A Revolution in Biomedical Technology"

The NCAB established the subcommittee at Lander's urging last year (**The Cancer Letter**, Sept. 26, 2003).

"There is an extraordinary revolution going on in biomedical technology right now," Lander said to the board at its meeting earlier this week. "The charge to this group is to consider what specific ways we can take advantage of the potential power of technology to make transformative changes to undertake projects, initiatives, create structures that would propel the research of thousands of investigators. It really is how can we provide a technology infrastructure that that has an effect all across cancer."

NCI has some technology initiatives underway, including the Cancer Genome Anatomy Project, which is working on the characterization of the RNAs in human tumors, Lander said. CGAP also is funding work in the creation of inhibitory RNA libraries. Also, the NCI Division of Cancer Biology is convening "think tanks" to bring scientists together to identify new areas for research.

To define scientific opportunities, the technology subcommittee formed five working groups: Characterization of Cancer in the Cell, led by Lander; Characterization of Cancer in the Organism, led by Hartwell; Public Health, led by Margaret Spitz, of M.D. Anderson Cancer Center; Cancer Therapeutics and Clinical Trials, led by Brian Druker, of Oregon Health Sciences University; and Technology Access Development and Dissemination, led by Bennett Shapiro, a partner and board member of PureTech Ventures and recently retired from Merck, and Geoff Duyk, managing director, TPG Ventures, and formerly of Exelixis.

The working groups held separate meetings, involving more than 50 scientists. Several themes emerged from the discussions, Lander said.

--Characterization of Cancer in the Cell: "We stand at a real turning point with respect to the ability to characterize the genomic basis of cancer," Lander said. "With the acceleration of technology, it's now becoming possible to take a cancer cell and, whereas a decade ago you could spend a month characterizing whether a particular region of the genome was lost or amplified in this particular set of tumors, you can now do that for the entirety of the genome, on, say, a single chip or array, of at least three different kinds of technologies available to comprehensively characterize, all at once, all the losses and amplifications that point to important genomic regions.

"In addition, with the technologies available to amplify and re-sequence, it is possible to systematically

THE CANCER LETTER

Member, Newsletter and Electronic Publishers Association

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Letters to the Editor may be sent to the above address.

Customer Service: 800-513-7042
PO Box 40724, Nashville TN 37204-0724
Customer service FAQ: www.cancerletter.com

Subscription $335 per year worldwide. ISSN 0096-3917. Published 46 times a year by The Cancer Letter Inc.
Founded Dec. 21, 1973, by Jerry D. Boyd.

determine which genes are mutated in a cancer. A number of projects have begun around the world that demonstrate that our knowledge of human oncogenes is quite incomplete. There are many more mutated genes than are written about in the textbooks.

"There was a sense among the group that it is beginning to be possible to think about this not as an individual activity, but perhaps as a comprehensive activity to, once and for all, get a genomic characterization cancer.

"There is also a recognition that there are lots of technologies becoming available to functionally characterize tumors, not at the DNA level, but at the functional level, as well as RNA protein read-outs, and to begin to look at the responses in a systematic fashion of tumors to drugs, to inhibitory RNAs, and to begin to build databases of those responses such that when an investigator in California or Texas, or a drug company in Washington tries a new drug, they might be able to look up the cellular response that they observe to that drug against a database of all previously observed responses, and say, 'Golly, this drug has the same effect as an RNAi inhibiting gene number 997, isn't that interesting, it means the drug is probably doing something in this pathway.' You could discover that yourself, but it could take several years. Whereas, if you could aggregate this data, it could accelerate. So, some kind of a map of the functional responses of cells.

"There was also a lot of discussion about the difficulty of doing research on cell lines stemming from the fact that it's not easy to create cell lines for all cancers. We really don't know why, and that's not acceptable. We want to know what the problem is in creating cell lines."

--Cancer in the Organism: "I can summarize [this discussion] as 'detection, detection, detection," Lander said. "The key issue that would be transformative to basic scientists, translational scientists, and directly to clinical application, would be far better tools for detecting cancer. First, direct imaging in patients. We have seen an explosion in imaging technologies, but what we really need is an advance in functional imaging. We need to be able to image a tumor and understand what's going on in it with respect to the tumor and understand what's going on with respect to a drug's action on this tumor.

"You could figure out if your drug is having an effect many weeks later by looking for regression of the tumor, but you may be able to figure out what your drug is doing 24 hours later by being able to functionally image. This could make phase I trials very valuable for understanding efficacy. There's no law that says you can't learn a tremendous amount from phase I trials, and if we had the right kinds of imaging probes, functional imaging probes, combined with technology advances, and combined with informatics tools, to be able to process this information, we could have a pretty big effect. But, we do not have in place a substantial infrastructure in this country to develop that. We do have groups that are doing chemistry to develop these kinds of probes to connect them to imaging and connect them to the clinic, but the feeling of this meeting was that the size of the infrastructure was very small, compared to the importance and the opportunity."

Early detection in bodily fluids is another promising area the group identified. "We are all mindful of the fact that the best way to deal with cancer is to catch it very early, and we do know that some cases, PSA and a couple other cases where we have early serum marker that point us to an incipient cancer, this has been tremendously valuable, but this is a small minority of cases," Lander said. "Yet, there is a growing sense that these markers are out there, and that we have never taken a systematic look for these markers. In theory, it should be possible to take such systematic looks using proteomic technology to dig down into the proteome of serum or of a particular fluids, for example, nipple aspirate in breast cancer, and characterize the presence of markers in a much more systematic way, rather than a hypothesis-driven way. Nothing against hypotheses, but it's a big world out there, and it might be better if we do it systematically.

"The practical problem is that, proteomic technology, while it has made great advances, remains slow, expensive, and it can take a week to process one sample. That's no way to do this. The proteomic technology developers are pushing hard to develop their technology, but there is a certain sense that, in addition to that push from the developers, a much more focused pull from cancer to say, 'Let's take this out for a drive and let's try to advance this technology by forcing us to apply it in settings and collaborative projects,' could advance this technology.

--Public health: "The health group was focused on making sure that these technologies would get out to the broad application community," Lander said. He cited several areas of emphasis:

"The need to understand inheritable risk factors for cancer, the DNA polymorphisms, or SNPs that predispose to disease—there is a strong sense that that needed to be pushed.

"Much better tools for proteomics and metabolomics

to make them high-throughput.

"A recognition of the need not only to have these technologies available in big centers and big labs that can buy a big machine, but to have these available in smaller-scale research settings, for DNA and RNA protein, metabolic, and epigenetic analysis. Similarly, to have them available in a clinical setting. We do know DNA mutations, we do know expression profiles that are relevant to cancer diagnosis and prognosis, but it's not the case that they have been set up in a clinical setting. There's technology development that needs to be done to accomplish that.

"There is a need for data repositories and analytical tools, standardized methods for sample collection, standardized methods for data collection, laboratory information management systems, and, a word I haven't heard before, analytical information management systems, much more coherent frameworks for the analysis of these large data sets."

--Cancer Therapeutics and Clinical Trials: "Bottom line was the sense that we have to do a better job of translating discoveries into clinical trials much more efficiently," Lander said. "We are beginning to make a lot of very important discoveries about the fundamental nature of cancer, but the pipeline to translate fundamental discoveries into clinical trials is cumbersome. Four points emerged here:

"One, the need to standardize the collection of clinical samples to do systematic research on these samples from clinical trials.

"Two, the need for much better animal model systems for developing cancer therapeutics. Now that we are not just looking for animals that get cancer, but we are looking for animals that get cancer in a specific molecular way that matches the way a certain set of patients get cancer, we build those models, validated models."

NCI is funding an animal models consortium, but the group would like to talk with the Institute about whether that area is being fully addressed, Lander said.

"Third, the need to design better trials from a scientific point of view. The ability to characterize patients. To have a knowledge base of what to look for, what DNA mutations, what protein markers. Gleevec was approved with some 50 patients that had been treated, because the results were overwhelming. The Iressa trials in lung cancer—the drug almost didn't get approved. It was on a purely statistical basis, almost indistinguishable from control, based on a formal endpoint. Because, as we now know, Iressa is extraordinarily effective, but in a small percentage of patients. Now, of course, we recognize, because of the molecular characterization, that it's primarily those patients that have mutations in a specific gene, the EGFR receptor, that are those who respond to Iressa. This Iressa trial, involving a huge number of patients and almost being a failure, would have been a tiny experiment if only we knew in advance how to characterize those patients.

"We also need a scientific base to evaluate drugs better in vivo, namely, to look at drug action, and we need to do all of this early, in phase I. We need an organizational infrastructure to be able to make more efficient clinical trials. The group strongly felt that the mantra for the future is smaller, faster, cheaper, smarter trials. This has become extraordinarily important, because money is a limiting resource, and the number of patients in this country is a limiting resource. We can't take for granted the participation of patients, so we have to make sure each trial is as efficient as possible."

--Technology Access Development and Dissemination: This group "spoke more about the general conditions for technology development, the management of intellectual property, access to tools, models for cross-licensing, consortia, central information resources," Lander said. "Some of it falls outside technology development per se, but I think it really crucial, and we will pass along that information to NCI, because I think a lot of creating ideas are lurking there for ways to make sure that we have the broadest possible access to these tools, plus the respect for the need for incentives."

The group also called for standardization of the collection of samples, with appropriate consents to allow them to be used broadly. Team science was also a theme in the discussions, Lander said, focusing on "the need to be able to set up and sustain a lot of troops, but insist that they stay fleet-footed, that they stay edgy."

Tentative Recommendations

The subcommittee looked at themes that emerged from the discussions. "First, there are now some very important technology opportunities and will continue to be in the future," Lander said. "Therefore, we felt that the NCI should consider establishing a cancer technology working group on a standing basis, whose job it would be to identify the most important opportunities for creating projects that have a potential transforming impact across cancer."

This working group should take general recommendations and "turn them into an actionable program," Lander said. "What would be a real endpoint?

What would it cost? How long would it take?"

Having a standing committee to investigate those questions and round up experts "would be a good thing," Lander said.

"We also thought it would be derelict of our duty to toss off to some future working group the responsibility of making things into actionable programs," he said. "We thought we would take the list and ask how might we propose to structure them?"

Two items rose to the top of the list: Comprehensive characterization of the genomic basis of cancer, and molecular detection of cancer in patients and fluids.

"We hope to come back to you with specific recommendations as to how you might take this on," Lander said.

Lander described the rationale for the "Human Cancer Genome Project":

"There are only a finite number of mutations that cause cancer," Lander said. "It doesn't look like that today. Today, it looks like there is always a new oncogene to be discovered. But it's finite. There is a limited number of major types of cancer, 50 to 60 types. For each of those, one can ask a focused question, 'Which genes are mutated in at least 5 percent of those cancers?'

"There are only 20,000 genes in the human genome," Lander said. "That's not such a big number anymore. What would it take to simply enumerate the major types of cancer, collect enough samples, and characterize comprehensively, once and for all, a finite database, all the genomic alterations that are significantly associated with all major cancers?"

The anticancer agents Gleevec, Iressa, and Herceptin "have made really clear that when you know oncogenes, when you know specific genes, specific mechanisms, you don't always have a guarantee that you can have a therapy, but drug companies and academic researchers are increasingly figuring out strategies for translating a significant fraction, say a third, of these targets into therapeutics, and a larger fraction into diagnostics," Lander said.

"The thought was that, shouldn't we just kill the problem?" Lander said.

The project probably would involve the creation of tumor collection centers and tumor characterization centers. "There are many issues still to be worked out, but we are going to come back to you with provocative recommendations," Lander said.

The molecular detection initiative would require "a serious attitude that we are going to find the biomarkers for cancers, start some projects to get them," Lander said. "This is very different from the other project for characterization. For the first, the technology is ready or nearly ready. For the second, we have to push the technology."

The initiative would seek to develop the proteomic technologies "by actually taking them out for a drive," Lander said. "Set up groups to take on some of these biomarker identification challenges and in vivo detection. Set up groups that are able to do the chemistry, the detection, the informatics, and the connection with the clinic to be able to develop functional imaging probes."

The subcommittee's report is in early draft form, and the group will try to finalize it by the NCAB's meeting in December, Lander said.

"I think it's an extraordinary time," Lander said. "There is so much going on in technology and so much we could do, but I think it's going to take a very serious, focused attitude by the NCI, and it's going to take funds to do it. It's going to take new funds to do it. If I had to go defend the case for new funds for these opportunities, I think we have an extraordinarily strong case for the importance of investment right now."

"Can The NCI Elephant Dance Like A Ballerina?"

NCAB member David Koch, executive vice president of Koch Industries Inc., said he agreed with the subcommittee's recommendations, but wondered whether organizational changes at NCI would be required.

"I worry that a big organization like NCI has a lot of inertia and can't change very quickly to support breakthroughs, and is slow to kill or reduce support for research areas that are not very promising," Koch said. "So what I would like to ask Eric is, will your study focus on structural changes in the NCI that could perhaps more quickly follow these breakthrough discoveries in cancer research? In short, how can we make the NCI elephant dance like a ballerina?"

LANDER: "The charge of the working group was not elephant choreography, so there's a limit to what our recommendations can say. What we will attempt to do in our report is to lay out the structures that we think are needed to get these jobs done. What I think you will get out of this is two models of how to get two specific jobs done, and a proposal for a general structure to do that in the future.

"It's a sign that NCI is mindful of the need to constantly be reinventing itself that it has let us go off and think about how we would do this. I would suggest that in completely restructuring an elephant, it might be

good to work on a part first, and pilot it. This is a small part of the elephant, but I think it's very responsive to the edgy, aggressive, business-like approach you want to see happening."

KOCH: "You got everyone's attention, Eric, and I would just like to see you make the most of the opportunity, and if you have some great ideas for structural improvements, organizational improvements to make the NCI more efficient, I think you should go ahead and make them."

"Discovery, Wholesale. Characterization, Retail"

Anna Barker, NCI deputy director for advanced technologies and strategic partnerships, said she hoped the subcommittee could address the issue of the reward system for investigators.

"What we are talking about is moving toward a much more engineering culture for these two initiatives," Barker said. "That is a distinct change and one that has to occur."

"I think that's an important point," Lander said. "My guess is that by December, we cannot get back to you with really considered opinions on that question, but would take a longer look. This is a deep problem."

Barker also asked what would happen to researchers who are discovering oncogenes. "You mentioned that folks maybe should not be discovering cancer genes today, that it should be more systematic," Barker said. "If they are, how do we incorporate them in a way that either keeps them in the R01 pool or bring them to another pool that keeps them equally able to excel?"

Lander said the gene discoverers wouldn't go out of business. "My sense is that none of them are excited about the discovery of the gene," he said. "They are excited about characterization. Nobody would shed a tear if the mutations were laid out on the table and all of these bright minds would instead be writing R01s on what is that gene doing.

"Our experience with the Human Genome Project was that people were worried--would it put me out of business as a gene finder?" Lander said. "I think everybody is much happier being gene characterizers. I'm guessing it will unleash the creativity of our investigators."

BARKER: "We need to get that message out, Eric. The R01 community will be energized and empowered with these kinds of initiatives, otherwise they will spend inordinate amounts of time doing work that could be done much better, more efficiently."

LANDER: "Discovery can be done wholesale. Characterization, still retail."

Elephant Dancing, Reprise

To wrap up the discussion, NCI Director Andrew von Eschenbach said Lander's work with the subcommittee is the type of "engagement process that I'm really looking forward to on a broad front by the NCAB. It is an extraordinary example of how to provide guidance and advice, direction, and insight."

Continuing Koch's elephant metaphor, von Eschenbach said, "David, I think you are going to find that you have around this table a number of people like you, who I would describe as dance instructors. I think you will help this elephant learn how to dance.

"I think we always perhaps have an equal problem with the music, in terms of what we are dancing to," von Eschenbach said. "But dancing is what we must do. We must be more nimble, we must be more aggressive. That means learning how to do things differently, whether it's rewards or learning from other models.

"Complex business organizations that look like elephants, in order to survive, are going to have to move like cheetahs," von Eschenbach said. "We are going to have to learn from all of you who have that ability and experience."

Funding Opportunities:

Program Announcements

PAR-04-155: Quick-Trials for Novel Cancer Therapies: Exploratory Grants

Application Receipt Dates: Dec. 9, 2004; April 9, Aug. 9, Dec. 9, 2005; April 9, Aug. 9, Dec. 9, 2006; April 9, Aug. 9, Dec. 9, 2007.

The PA provides investigators with rapid access to support for pilot, phase I, and phase II cancer trials as well as support for patient monitoring and laboratory studies linked to a clinical trial. The focus is translational research in new agent development to ensure the timely exploitation of new cancer therapeutic approaches including the development of new cancer prevention agents

Novel approaches or agents for inhibiting tumor growth either directly or by impacting the tumor microenvironment are ready to be tested in the clinic with new tools and laboratory analyses that allow investigators to ascertain how specific targets are affected by therapy. The agents include new classes of cytotoxic agents, agents or approaches that act via immune-stimulatory effects, agents that stimulate apoptosis, inhibit angiogenesis and metastasis or alter tumor cell signaling pathways, and agents targeted specifically to novel cancer cell targets. New clinical therapeutic trials may employ drugs/agents, biologics, radiation, heat, or surgery used as single agents/modalities or in combination for the treatment of early and advanced disease. Investigators may apply for a maximum of two years of funding support using the exploratory or developmental R21 grant mechanism for

up to $250,000 direct costs per year. The PA will use the NIH exploratory/development R21 award mechanism. The PA is available at http://grants.nih.gov/grants/guide/pa-files/PAR-04-155.html.

Inquiries: Roy Wu, NCI, Clinical Grants & Contracts Branch, Cancer Therapy Evaluation Program, Division of Cancer Treatment and Diagnosis, phone 301-496-8866; fax 301-480-4663; e-mail: wur@ctep.nci.nih.gov .

PA-04-156: Bioengineering Approaches to Energy Balance and Obesity

Application Receipt Dates: standard application deadlines of April 1, Aug. 1, Dec. 1 through Aug.1, 2007.

The objective of the PA is to encourage and enable engineers and scientists at small businesses to develop and evaluate new technologies, instrumentation, and medical devices to better assess appropriate biomedical parameters and provide feedback and/or therapy to reduce the prevalence of obesity and overweight. Development of new technologies and application of existing technologies may be proposed. Studies may include use of animal models and/or human participants, but are not required to do so. If appropriate, plans for manufacturing and clinical evaluation of developed instrumentation and medical devices should be included in the application. Applications are encouraged that represent scientific and technical expertise and collaborations from fields such as biomedical engineering, computer sciences, physics, human and animal nutrition, aging, exercise sciences, behavioral sciences, medicine, biochemistry, and biotechnology. The PA uses the SBIR and STTR mechanisms, which are set-aside programs. The PA is available at http://grants.nih.gov/grants/guide/pa-files/PA-04-156.html.

Inquiries: For NCI--Sharon Ross, program director, Nutritional Sciences Research Program, Division of Cancer Prevention, phone 301-594-7547; fax 301-480-3925; e-mail sr75k@nih.gov.

PA-04-146: Pilot and Feasibility Program in Urology

Institutes and Divisions of invite exploratory/developmental R21 grant applications from investigators with research interests in urology and that serve the mission of NIH. The initiative would develop high-risk pilot and feasibility research by newly independent or established investigators developing a new line of research.

The PA is available at http://grants.nih.gov/grants/guide/pa-files/PA-04-146.html.

Inquiries: For NCI--Suresh Mohla, chief, Tumor Biology and Metastasis Branch, Division of Cancer Biology, phone 301-435-1878; fax 301-480-0864; e-mail mohlas@mail.nih.gov.

PA-04-145: School-Based Interventions to Prevent Obesity

The PA encourages the formation of partnerships between academic institutions and school systems to develop and implement controlled, school-based intervention strategies designed to reduce the prevalence of obesity in childhood. The initiative also encourages evaluative comparisons of different intervention strategies, as well as the use of methods to detect synergistic interactions between different types of interventions. The PA is available at http://grants.nih.gov/grants/guide/pa-files/PA-04-145.html.

Inquiries: For NCI--Amy Lazarus Yaroch, Health Promotion Research Branch, Behavioral Research Program, Division of Cancer Control and Population Sciences, phone 301-451-9530; fax 301-480-2087; e-mail yarocha@mail.nih.gov .

NIH Annual Student Loan Repayment Programs

Application Deadline: Dec. 15, 2005

NIH is accepting applications to five loan repayment programs. The programs are the Clinical Research LRP, Clinical Research for Individuals from Disadvantaged Backgrounds LRP, Contraception and Infertility Research LRP, Health Disparities LRP, and Pediatric Research LRP. The programs can repay up to $35,000 of qualified educational debt for health professionals pursuing careers in clinical, pediatric, contraception and infertility, or health disparities research. Participants must possess a doctoral-level degree, devote 50 percent or more of their time to research funded by a non-profit organization or government entity (federal, state, or local), and have educational loan debt equal to or exceeding 20 percent of their institutional base salary.

Inquiries: www.lrp.nih.gov.

RFA Available

RFA-ES-04-003: Obesity and the Built Environment

Letter of Intent Receipt Date: Nov. 17

Application Receipt Date: Dec. 17

The initiative will support R01 and R21 studies in two areas related to the built environment and obesity: First, understanding the role of the built environment in causing/exacerbating obesity and related co-morbidities; and second, developing, implementing, and evaluating prevention/intervention strategies that influence parameters of the built environment in order to reduce the prevalence of overweight, obesity and co-morbidities. The RFA will support projects that delineate the significance and impact of the built environment on overweight and obesity by enhancing our understanding of the roles played by city and regional planning, housing, transportation, media, access to healthy foods and availability of public and green spaces as determinants of physical activity and nutritious dietary practices. The RFA is available at http://grants.nih.gov/grants/guide/rfa-files/RFA-ES-04-003.html.

Inquiries: For NCI--Louise Masse, Health Promotion Research Branch, Behavioral Research Program, DCCPS, phone 301-435-3961; fax 301-480-2087; e-mail massel@mail.nih.gov.

In Brief:

Chemotherapy Foundation's Ezra Greenspan Dead At 86

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Cancer Research/Cancer Research and Prevention Foundation Award for Excellence in Cancer Prevention Research. Alberts will present his award lecture Oct. 17, during the association's conference in Seattle. Alberts has been funded by NCI since 1971 for laboratory and clinical research related to the clinical pharmacology of cancer chemotherapy and chemopreventive agents. . . . **EZRA GREENSPAN**, professor of medicine emeritus at the Mount Sinai School of Medicine, and founder and chairman of The Chemotherapy Foundation, died Sept. 3. He was 86. Greenspan also served as chairman of the foundation's annual symposium on cancer therapy. He was a founding member of the American Society of Clinical Oncology. **Franco Muggia**, director of medical oncology at the New York University School of Medicine, succeeds Greenspan as chairman and medical director of the foundation and chairman of the Symposium. . . . **MYELOMA INSTITUTE for Research and Therapy**, a part of the Arkansas Cancer Research Center at the University of Arkansas for Medical Sciences, has received an $18 million 5-year NCI grant for four ongoing research projects in multiple myeloma. The projects are part of an ongoing comprehensive research program entitled Growth Control of Multiple Myeloma. Leaders of the four projects are: **Bart Barlogie**, director of Myeloma Institute for Research and Therapy; **Guido Tricot**, director of Clinical Research for the MIRT; **John Shaughnessy Jr**., chief of the Division of Basic Sciences and director of the Lambert Laboratory of Myeloma Genetics, both at the MIRT; **Ralph Sanderson**, director of research, ACRC. In addition, the institute, which has now performed 5,000 stem-cell transplants, will be establishing an endowed chair for myeloma research named in honor of Barlogie. . . **GYNECOLOGIC CANCER Foundation** released the State of the State of Gynecologic Cancers Second Annual Report to the Women of America, as part Gynecologic Cancer Awareness Month. The report details advances in the detection and treatment and contains information about symptoms, risk factors, screening/prevention methods and incidence figures for gynecologic cancers. It was written by members of the Society of Gynecologic Oncologists. The report is available through the Women's Cancer Network, at www.wcn.org, or at www.thegcf.org.

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