THE CANCER LETTER INTERACTIVE

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Deflecting Earmarks, NCI Advisors Lay Out Research Opportunities In Breast, Prostate

Call it earmark deflection.

In the final days of negotiations over the appropriations bill for fiscal 1999, NCI was confronted with a proposed $175 million earmark for prostate cancer research.

No such earmark exists even for breast cancer programs at NCI, despite the fact that it was breast cancer advocates who made earmarking for specific diseases into a major political issue.

Staring at the last-minute amendment introduced by Sen. Ted Stevens (R-AK), NCI officials wheeled out an obscure, unwieldy defense system:

(Continued to page 2)

In Brief:

Gertrude Elion, Nobel Laureate Whose Work Led To New Drugs For Cancer, Dead At 81

Gertrude Elion, a Nobel laureate and scientist emeritus with Glaxo Wellcome Inc., died Feb. 21 of a cerebral hemorrhage at University of North Carolina Hospitals in Chapel Hill. She was 81.

In 1988, Elion shared the Nobel Prize in medicine with George Hitchings, her colleague of 40 years, with whom she worked at Burroughs Wellcome, the U.S. subsidiary of the company now known as Glaxo Wellcome.

Elion made numerous contributions to the advancement of science, and her work led to several life-saving medicines, including drugs to treat leukemia, herpes, and immunity disorders. Her name appears on 45 patents.

"Gertrude Elion's love of science was surpassed only by her compassion for people," said Robert Ingram, chief executive of Glaxo Wellcome plc. "While blazing new trails as a woman scientist in what was then a man's world, Dr. Elion persevered in work that led to advances in treatments for a variety of diseases. Along the way, she touched patients all over the world."

Elion's work led to the development of anti-leukemia therapies, Purinethol and thioguanine, and Imuran, used to prevent organ transplant rejections and to treat severe rheumatoid arthritis, Daraprim for malaria, Zyloprim for gout, Septra for bacterial infections and Zovirax for herpes virus infections.

Elion was born on Jan. 23, 1918, in New York City. Her father emigrated from Lithuania to the U.S. at age 12. Her mother came to the U.S. at the age of 14 from a part of Russia that later became Poland. She

(Continued to page 8)

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Progress Review Reports Highlight Research Questions

(Continued from page 1)

The Report of the Prostate Cancer Progress Review Group. The 120-page report was prepared by a group of 22 scientists and advocates who analyzed the NCI research portfolio as well as research opportunities in prostate cancer.

The earmark-busting report proved convincing: the $175 million mandate was removed in the House-Senate conference committee (**The Cancer Letter**, Oct. 30, 1998).

"I don't know whether this is an alternative to [Congressional] earmarking, but I think it's the right way to do it, to get people to say not how much we should be spending, but what questions we need to answer," NCI Director Richard Klausner said to **The Cancer Letter**. "Our challenge is, within whatever budget we get, to make sure that we optimize our ability to answer as many questions as possible."

Over the past 18 months, NCI has completed two Progress Review Group evaluations, one of prostate cancer, another of breast cancer. Institute officials are expected to meet next month to decide whether similar evaluations would be needed in other cancers, Klausner said.

"These PRG reports provide us with descriptions of the questions that need to be answered or the resources that need to be made available to make progress in these two specific cancers," Klausner said.

The two reports are available on the NCI website at http://wwwosp.nci.nih.gov/planning/prg/default.htm

A "Top Priority," But Not An Earmark

NCI has been using the reports to plan spending for its breast and prostate cancer programs, Klausner said at House appropriations hearings earlier this week. The Institute plans to spend about $130 million this year on prostate cancer research, about $40 million more than last year, Klausner said. For breast cancer research, NCI plans to spend about $388 million, also about a $40 million increase, Klausner said to **The Cancer Letter**.

The Institute plans to release a Program Announcement indicating NCI's interest in funding investigator-initiated research project grants in breast cancer.

Late last year, NCI developed a prostate cancer announcement to draw attention to about 20 funding opportunities in prostate cancer research (**The Cancer Letter**, Dec. 11, 1998). The announcement is available at http://www.nci.nih.gov/prostate.html

"This report is serving for us as a blueprint of what the Institute needs to know [in prostate cancer]," Klausner said to the House Labor, HHS and Education Appropriations Subcommittee at a Feb. 24 hearing on NCI appropriations.

In a related development, Klausner told the Senate Labor, HHS and Education Appropriations Subcommittee at a Feb. 23 hearing that the Institute will meet an April 1 deadline to provide the committee with a "professional judgment budget" for prostate cancer research that the committee requested in this year's appropriations report. The appropriations bill urged NIH to "make prostate cancer a top priority in allocating funding increases" (**The Cancer Letter**, Oct. 30, 1998).

The professional judgment budget that is being prepared in response to the Congressional mandate on prostate cancer research is likely to list goals and projects that could be accomplished in one-to-five years, sources said. By contrast, the PRG report has a longer-term horizon of about 10 years.

NCI is considering using the PRG process to examine research needs in other cancers. "I think this approach to linking disease-based spending to science-based or opportunity-based structures, which we are doing in prostate and breast cancer, is going

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to be immediately and readily expandable to all other diseases, though probably without doing as intense a [review] process," Klausner said to **The Cancer Letter**.

The jury is still out on the effectiveness of the PRGs as a defense against earmarks. At the Senate appropriations hearing, Stevens, a prostate cancer survivor, alluded to the battle triggered by his amendment:

"Last year, I had a little battle with [Sen. Arlen Specter (R-PA), chairman of the Labor, HHS and Education Appropriations Subcommittee], and he won, about earmarking funds for prostate cancer research," said Stevens, chairman of the full Appropriations Committee.

"I am alarmed at the rate of allocation base for prostate cancer research as compared to other cancers," Stevens said. "It does seem to me that this is a growing problem. American men are suddenly waking up to the fact that they've been sort of the last pigeon hole more or less in the cancer research base."

NCI's Four Responses

The recommendations of the reports elicited four responses from the Institute, Klausner said to **The Cancer Letter**.

"One, we had mechanisms already in place that would allow us to answer the questions.

"Two, we had mechanisms in place, but they needed to be tailored to address the targeted questions.

"Third, were things we did not have in place that we needed to create.

"Fourth, there were recommendations we didn't know what to do with," he said. "For example, the breast cancer PRG recommended that there be no discrimination based on genetic susceptibility, and we weren't sure what we should do about it."

The two reports make many similar recommendations, Klausner said. "We need access to array technology, we need access to tissues, we need animal models," he said. "We would be better off if we answered as many of those as possible."

However, instead of trying to rank every one of the recommendations, NCI plans to use the PRG reports as Program Announcements, which the Institute uses to indicate its interest in funding grant applications in various fields. Program Announcements do not have specific funding levels attached, unlike Requests for Applications.

"You submit a grant application, reference the PRG report, and we will look at that grant for funding," Klausner said. The funds used would be "exceptions funding," an amount, usually about 10 percent of the research projects grants budget, that NCI sets aside to support grants that are important to the Institute, but that may fall below regular paylines.

"People can reference anything in a grant application, but they don't know whether we are going to pay attention to it, so we are saying we will pay attention to it if you reference the PRG reports," Klausner said. "This is how we are going to use our exceptions dollars."

"We are saying, here are the range of things we think are important," he said. "The filter is going to be how convincing you make your application."

NCI plans to advertise the reports and NCI grants programs in scientific journals, Klausner said.

"It's very difficult to prioritize all things the reports suggest we need to know, and that's why the broad PRG-based Program Announcement is a very nice approach, because in essence we will continue to let peer review prioritize," Klausner said. "We will monitor it over the next year and see how it works."

The reports make many specific recommendations, including, for example, needs for animal models that have specific characteristics. "We said that, yes we think that is a high priority," Klausner said. "We will see if [grant applications for those ideas] come in, in the animal models consortium which is now the mechanism we are using to fund animal models, or through the animal models supplements.

"If it doesn't come in, then we will put out an announcement to provide supplemental funding to ensure that that high priority models are produced," Klausner said.

NCI also plans to set up specific entities recommended in the reports, including a national prostate cancer tissue bank, modeled on the existing breast cancer tissue bank, Klausner said.

The prostate cancer PRG also said "there is a broad set of questions we need to answer in the basic biology of normal prostate development," Klausner said. "There was no way to divide those up into [Requests for Applications]. It was incredibly broad, so what we are going to be producing is an equally broad new program announcement to cover basic biology of the prostate and prostate cancer."

Also, the Institute is designing a new program called "Quick Trials" that would provide investigators a six- to eight-week turnaround time to fund

innovative phase I/II clinical trials, Klausner said. "Basically all you submit is your IRB-approved protocol and the types of correlative studies you want to do and the question you are asking," he said. "We hope to start it this year and use prostate cancer as the test case."

The concept is under consideration by the NCI Executive Committee.

At the House hearing, Klausner said NCI planned to increase the number of phase I and phase II trials in prostate cancer. "In the previous year, we introduced 16 phase I and phase II clinical trials introducing new approaches for prostate cancer," he said. "Our plans for the next 12 to 18 months is to go from 16 new trials to 35. That is a reflection of us having a program in place to identify new agents, to put a priority in this area, and to increase the number of questions we are asking at all levels."

Grants Coding Issues

One of the first tasks of the Progress Review Groups was to examine the NCI portfolio to determine whether the Institute was listing projects correctly, and produce a project-by-project portfolio analysis.

For both prostate and breast cancer, the amounts NCI was claiming to spend closely matched the amounts the PRGs listed. "It wasn't identical project by project," Klausner said. "There were some things that we weren't coding that they wanted us to code and some things that we were coding that they didn't want us to code."

The breast cancer PRG looked at the first two review cycles of fiscal year 1997, finding $227.5 million worth of active projects. The group estimated NCI's total FY97 funding for breast cancer at $341 million, slightly lower than the $344 million the Institute estimated.

The prostate cancer PRG estimated there were $87 million worth of relevant projects. The report commented, "While the process of attribution of many scientific projects was difficult—since funded research projects often address diverse research topics as well as cancers in multiple tissues—the review group was able to identify the major focus of most projects and sort them according to the major research areas discussed in this report."

If NCI plans additional PRGs in other cancers, the process may be easier with a new coding system that the Institute is developing, Klausner said. "The databases were so poor, but through the PRG, we've learned and we are making a lot of progress in organizing our programs and our portfolio," he said. "A lot of the time was spent wading through to try to figure out what's being done."

Deploy PRGs For Other Cancers?

NCI officials will decide whether to conduct reviews in other cancers at a planning retreat in March, Klausner said. "We will be discussing what we have learned, how can we generalize it, do we have the resources, the staff, the stamina, the energy to do these for all diseases, and do we need to?"

"We learned how similar the recommendations and needs are for breast cancer and prostate cancer," Klausner said. A similar review process took place with the Office of Women's Health, which developed a report on the research needs in ovarian cancer, Klausner said.

"The recommendations of [the ovarian cancer report] are incredibly consonant with the recommendations of the breast and prostate PRGs, which of course we in some sense implicitly assumed when we decided to use the Bypass Budget to develop overarching planning processes, that we were convinced what was needed for all diseases," Klausner said.

"The PRGs tested that, now how to generalize that we will be deciding this spring."

Clinical Trials:

NCI Issues Clinical Alert On Chemo For Cervical Cancer

NCI mailed a clinical announcement earlier this week to physicians stating that strong consideration should be given to adding chemotherapy to radiation therapy in the treatment of invasive cervical cancer.

The mailing alerts oncologists to the findings of five large, randomized clinical trials showing that women benefited from the use of radiation therapy and chemotherapy given together. Up to now, surgery or radiation therapy alone has been considered the standard treatment for cervical cancer that has spread within the cervix or within the pelvis.

"The findings of these five trials are remarkably consistent," NCI Director Richard Klausner said. "They are likely to change the standard of care for invasive cervical cancer."

Three of the studies are scheduled to be published in the New England Journal of Medicine. Because of their potential implications for public health, the journal released the articles Feb. 22, by

making them available on the journal's Web site at http://www.nejm.org

The remaining two studies will be published later in 1999, NCI said.

"This is the first fundamental advance in the treatment of cervical cancer in more than 40 years," said Mitchell Morris, principal investigator of one of the studies, by the Radiation Therapy Oncology Group, and professor of gynecologic oncology at University of Texas M.D. Anderson Cancer Center. "Now that we have the data, it is vital to make chemotherapy a part of standard care for women with advanced cervical cancer. Every day that we wait to make it a part of treatment, fewer women have the opportunity to benefit."

In the RTOG study, scheduled to be published in the April 15 edition of NEJM, the overall survival rate at five years for patients who were given both chemotherapy and radiation to the abdomen was 73 percent, compared to 58 percent survival rate for patients who were given only radiation to the abdomen and pelvis.

Disease-free survival rates were 66 percent for patients who were given both chemotherapy and radiation, and 40 percent for those receiving only radiation.

Several hundred women were enrolled in each of the five trials, which were carried out by NCI's Clinical Trials Cooperative Groups in centers around the country. Their cancers varied from disease confined to the cervix to disease that had spread from the cervix to other pelvic tissues.

In three of the studies, women were randomly divided into groups that received either radiation alone or radiation plus concomitant chemotherapy. The chemotherapy agents used were cisplatin and 5-fluorouracil (5-FU) and cisplatin alone. In all three trials, the proportion of women alive after about three years of follow-up was higher in the groups receiving chemotherapy plus radiation than in those receiving only radiation therapy.

In the two other studies, all patients received concomitant chemotherapy and radiation. However, the chemotherapy drugs differed between the arms. In one arm of each of these trials, the chemotherapy used was hydroxyurea while in the other arms, the chemotherapy included cisplatin. In both trials, the groups that received cisplatin had better survival rates.

According to the clinical alert, although the best chemotherapy regimen for cervical cancer has not been determined, "significant results were seen using cisplatin alone or cisplatin in combination with 5-FU and other agents."

The clinical alert is posted on the NCI Web site for clinical trials at http://cancertrials.nci.nih.gov It can also be obtained from CancerFax by calling 301-402-5874 from a fax machine and use the CancerFax code number for the document, 400262, when prompted.

Following are the titles and authors of the five clinical trials:

GOG 851: A Randomized Comparison of Fluorouracil Plus Cisplatin Versus Hydroxyurea as an Adjunct to Radiation Therapy in Stages IIB-IVA Carcinoma of the Cervix With Negative Para-Aortic Lymph Nodes: A Gynecologic Oncology Group and Southwest Oncology Group Study. Principal Investigator, Charles Whitney, Christiana Hospital, Newark, DE. Journal of Clinical Oncology, in press.

RTOG 90012: Pelvic Radiation With Concurrent Chemotherapy Versus Pelvic and Para-Aortic Radiation for High-Risk Cervical Cancer: A Randomized Radiation Therapy Oncology Group Clinical Trial. Principal Investigator, Mitchell Morris, University of Texas M.D. Anderson Cancer Center, Houston. New England Journal of Medicine, in press.

GOG 1203: Concurrent Cisplatin-Based Chemoradiation Improves Progression-Free and Overall Survival in Advanced Cervical Cancer: Results of a Randomized Gynecologic Oncology Group Study. Principal Investigator, Peter Rose, Case Western Reserve University and University Hospitals of Cleveland. New England Journal of Medicine, in press.

SWOG 87974: Cisplatin and 5-Fluorouracil Plus Radiation Therapy are Superior to Radiation Therapy as Adjunctive Therapy in High-Risk Early-Stage Carcinoma of the Cervix After Radical Hysterectomy and Pelvic Lymphadenectomy: Report of a Phase III Intergroup Study. Principal Investigator: William Peters III, Puget Sound Oncology Consortium and University of Washington, Seattle. Presentation at the Society of Gynecologic Oncologists annual meeting, March 22.

GOG 1235: A Comparison of Weekly Cisplatin During Radiation Therapy Versus Irradiation Alone, Each Followed by Adjuvant Hysterectomy in Bulky Stage IB Cervical Carcinoma: A Randomized Trial of the Gynecologic Oncology Group. Principal Investigator, Henry Keys, Albany Medical College, Albany. New England Journal of Medicine, in press.

Grant Review:

NIH Names Members To New Clinical Oncology Review Panel

The NIH Center for Scientific Review has selected members for the new Clinical Oncology Special Emphasis Panel.

The panel was formed in response to the recommendation of a report to the CSR last year (**The Cancer Letter**, Sept. 18, 1998). The panel is scheduled to meet March 8-9 to review its first round of grant applications. Those applications were submitted beginning with the Oct. 1, 1998, receipt date.

The list of panel members is considered "tentative" until after the meeting takes place, Jean Paddock, director of the CSR Division of Clinical and Population-Based Studies, said to **The Cancer Letter**. New members may be added as the subject matter of the grant applications requires, she said.

Following is the current membership:

Chairman: Margaret Tempero, professor of oncology and director, epidemiology, University of Nebraska Medical Center, Omaha.

Vicky Baker, associate professor, Department of Gynecologic Oncology, University of Michigan, Ann Arbor.

Dean Brenner, professor, Division of Hematology-Oncology, University of Michigan Medical School, Ann Arbor.

David Carbone, associate professor, Division of Medical Oncology, Vanderbilt Cancer Center, Nashville.

Gary Clark, professor, Department of Medicine/ Oncology, University of Texas Health Science Center, San Antonio.

Gary Cutter, chairman, Center for Research Methodology and Biometrics, AMC Cancer Research Center, Denver.

John Falletta, professor of pediatrics, Duke University, Durham.

Kenneth Foon, director, professor and chief, Department of Internal Medicine, University of Kentucky Medical Center, Lexington.

Sylvan Green, professor, Department of Epidemiology and Biostatistics, Case Western Reserve School of Medicine, Cleveland.

Sandra Horning, associate professor, Department of Medicine/Oncology, Stanford University Medical Center, Palo Alto.

Roy Jones, director, Bone Marrow Transplant Program, University of Colorado Health Sciences Center, Denver.

Donald Kufe, professor, Department of Medicine, Dana Farber Cancer Institute, Boston.

Patricia LoRusso, associate professor, Harper Hospital, Wayne State University, Detroit.

Scott Lippman, professor, Department of Clinical Cancer Prevention, M.D. Anderson Cancer Center, Houston.

Anne-Marie Maddox, professor, Department of Medicine, Division of Hematology/Oncology, University of Arkansas, Little Rock.

Monica Morrow, associate professor of oncology, Department of Surgery, Northwestern University Medical School, Chicago.

David Ota, professor, Division of Surgical Oncology, University of Missouri, Columbia.

Corette Parker, senior statistician, Statistical methodology & Analysis Center, Research Triangle Institute, Research Triangle Park.

Mark Ratain, professor, Department of Medicine, University of Chicago.

Stephen Sallan, professor, Department of Pediatric Oncology, Dana Farber Cancer Institute, Boston.

Lowell Schnipper, chief, Division of Hematology/ Oncology, Beth Israel Hospital, Boston.

Lynn Schuchter, professor, Division of Hematology/Oncology, University of Pennsylvania Cancer Center, Philadelphia.

Ming Tan, associate member, Department of Biostatistics and Epidemiology, St. Jude Children's Research Hospital, Memphis.

Joel Tepper, associate professor, Department of Radiation, University of North Carolina School of Medicine, Chapel Hill.

Tate Thigpen, professor, Department of Gynecologic Oncology, University of Mississippi School of Medicine, Jackson.

Alfred Yung, professor, Department of Neuro-Oncology, M.D. Anderson Cancer Center, Houston.

Scientific Review Administrator: Martin Padarathsingh, NIH Center for Scientific Review.

NIH Introduces "Modular" Grant Application And Awards

NIH has announced new application, review, and award procedures that will apply with the June 1, 1999 grant application receipt date.

The revised, streamlined format, known as the

Modular Research Grant Application and Award initiative, will apply to many major research grant mechanisms, including the competing individual research project grants mechanism (R01).

Under the modular grant application and award procedures, applicants will request total direct costs in $25,000 increments up to $250,000 in any year of a project. (Applicants requesting more than $250,000 in direct costs in any year will continue to follow existing application and award procedures.)

Applicants will provide limited budget information in a narrative format and will not have to submit other research support information until just prior to award. Currently, applicants must provide itemized budget detail for eight categories of spending, along with other support information, at the time of application.

An update of other support information is typically requested prior to award. Although modular awards are issued without direct cost categorical breakdowns, recipients are required to allocate and account for costs related to their awards in accordance with applicable cost principles and NIH grants policy.

"The purposes of the modular research grant initiative are multifold," said NIH Director Harold Varmus, in a recent statement. "First, the initiative reduces the amount of budgetary information requested from applicants, allowing investigators, research institutions, peer reviewers, and NIH staff to focus most intently on the science during the peer review process. The simplified budget reporting features under the modular grant initiative will also help the NIH achieve its goal of reducing the length of time between application receipt and grant award."

NIH has identified reducing the application receipt to award cycle from 10 months to six months as a goal by the year 2000.

The modular research grant procedures will enable reviewers to evaluate proposed project budgets on the basis of a general, expert estimate of the total effort and resources required to conduct the proposed research.

Reviewers will recommend changes in a proposed project's budget in $25,000 modules. NIH Institute staff will continue to make final award decisions.

"The first year of implementation will be a period for public comment, followed by two years of extensive evaluation. said Ronald Geller, Director of Extramural Affairs, National Heart, Lung, and Blood Institute, and chairman of the Modular Grant Steering Committee. "Pending reaction from the public and the results of the evaluation, NIH will consider raising the modular threshold from $250,000 The $250,000 threshold was selected as a starting point because NIH data indicated that 90 percent of competing individual research project grants (R01) applications request $250,000 or less in direct costs."

Since 1994, the modular grant application and award procedures have been pilot tested in over 25 separate grant solicitations, covering a wide variety of award mechanisms, NIH said.

See http://www.nih.gov/grants/funding/modular/modular.htm for additional information. Comments and questions may be sent to modulargrants@nih.gov

Funding Opportunities:

RFA Available

RFA AI-99-004: New Imaging Technologies For Autoimmune Diseases

Letter of Intent Receipt Date: March 15

Application Receipt Date: May 6

The National Institute of Allergy and Infectious Diseases, NCI, and several other NIH institutes invite applications for research project grants to develop new methods for in vivo imaging of the immune system in small animal models of human autoimmune diseases. Support will be provided for the development of high-resolution imaging technologies to visualize active processes of immune cells in vivo, including instrumentation and computational improvements, and the design, development, synthesis and testing of new contrast agents. Of particular interest are studies designed to specifically label and follow lymphocytes and other immune effector cells at various activation states throughout an ongoing immune response.

The estimated total funds (direct and indirect) available for the first year of support will be $3.5 million. In FY 1999, the participating Institutes and Centers plan to fund approximately five awards.

Inquiries: Vicki Seyfert, Division of Allergy, Immunology and Transplantation, NIAID, 6003 Executive Blvd Rm 4A21, Bethesda, MD 20892, phone 301-496-7551, fax 301-402-2571, email: vs62y@nih.gov

Barbara Croft, Diagnostic Imaging Program, NCI, 6130 Executive Blvd Rm 800, Rockville, MD 20892-7440, Bethesda, MD 20852 (for express/courier service), phone 301-496-9531, fax 301-480-5785, email: bc129b@nih.gov

Program Announcements

PAR-99-063: The Howard Temin Award

The goal of NCI's Howard Temin Award is to bridge the transition from a mentored research environment to an

independent research career for scientists who have demonstrated unusually high potential during their initial stages of training and development. This special award is aimed at fostering the research careers of outstanding junior scientists in basic research who are committed to developing research programs highly relevant to the understanding of human biology and human disease as it relates to the etiology, pathogenesis, prevention, diagnosis, and treatment of human cancer.

The major objective of the award is to sustain and advance the early research careers of the most promising M.D.s and Ph.D.s while they consolidate and focus their independent research programs, and obtain their own research grant support.

The Howard Temin Award offers candidates up to five years to develop knowledge in the basic sciences and research skills relevant to the candidate's career goals, with up to three of the initial years (at least one year required) in a mentored environment followed by a transition to an unmentored independent investigator phase for the remaining time on the award. NCI expects to make only 10 awards each year.

Inquiries: Refer to http://camp.nci.nih.gov/public/ctb/main/ for guidelines on career development opportunities supported by NCI. Andrew Vargosko, Office of Centers, Training and Resources, NCI, Executive Plaza North Room 520 MSC 7390, Bethesda, MD 20892-7390, phone 301-496-8580, fax 301-402-4472, email: av8b@nih.gov

PA-99-062: Academic Research Enhancement Award

Application Receipt Dates: May 25, Sept. 25, Jan. 25

AREA funds are intended to support new (type 1) and ongoing (renewal or competing continuation or type 2) health-related research projects proposed by faculty members of eligible schools and components of domestic institutions. The AREA will enable qualified scientists to receive support for small-scale research projects.

Inquiries: (For NCI-related inquiries) Robert Hammond, Associate Director for Program Coordination, Division of Extramural Activities, Executive Plaza North Suite 600, Bethesda, MD 20892-7405, phone 301-496-2378, fax 301-402-0956, e-mail: rh53k@nih.gov

Gertrude Elion, Developed Drugs For Cancer Treatment

(Continued from page 1)

received a bachelor's degree from Hunter College in New York in 1937 and a master's degree in chemistry from New York University in 1941. Since female scientists were not accepted in academia at that time, she was unable to find a laboratory position and instead went to work teaching high school chemistry and physics, providing laboratory instruction for nurses, and testing pickles and berries for a food company.

Because of labor shortages caused by World War II, she had the opportunity to join Burroughs Wellcome in 1944 as an assistant to Hitchings.

In 1967, she was named head of the Department of Experimental Therapy at Burroughs Wellcome. She officially retired in 1983, but maintained an office at Glaxo Wellcome. She remained active in research and professional organizations while holding appointments as Medical Research Professor of Pharmacology and Medicine at Duke University and Adjunct Professor of Pharmacology at the University of North Carolina at Chapel Hill.

Elion once said, "Science is the kind of discipline where you keep learning all the time. I always wanted a job where you didn't stop learning and there was always something new."

In retirement, she remained active as a leader of Glaxo's Women in Science Scholars Program, which provides mentoring and scholarship opportunities for women studying science.

Elion never completed her doctoral work, but she was awarded 25 honorary doctorate degrees. In 1991, President George Bush awarded her the National Medal of Science.

Elion also received the Garvan Medal from the American Chemical Society, the President's Medal from Hunter College, the Judd Award from Memorial-Sloan Kettering Institute, the Cain Award from the American Association for Cancer Research, the Ernst W. Bertner Memorial Award from M.D. Anderson Cancer Center, the City of Medicine Award in Durham, NC, the Discoverers Award from the Pharmaceutical Manufacturers Association, the Medal of Honor from the American Cancer Society, the Ronald H. Brown Innovator Award, and the Lemelson/MIT Lifetime Achievement Award.

Elion served as president of the American Association for Cancer Research, and as a Presidential appointee on the National Cancer Advisory Board. She was elected to membership in the National Academy of Sciences, the Royal Society, the Institute of Medicine, the American Academy of Arts and Sciences, the National Inventors Hall of Fame, the National Women's Hall of Fame, and the Engineering and Science Hall of Fame.

Elion's family requests that donations be made in her memory to the Leukemia Society of America, 600 Third Avenue, New York, NY 10016. Internet: http://www.leukemia.org/

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