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FDA Advisors Recommend Use Of Cytokines GM-CSF, G-CSF In BMT And Chemotherapy

The FDA Biological Response Modifiers Advisory Committee has recommended approval of GM-CSF for use in bone marrow transplantation and G-CSF for preventing infection caused by some chemotherapy regimens.

(Continued to page 2)

In Brief

McDonnell Foundation Selects Five For $400,000 Fellowships; Alberts, Verma Picked For Awards

JAMES MCDONNELL Foundation has named five physician-scientists to receive three year, $400,000 fellowships to invetigate specific problems in molecular medicine and oncology. The recipients were: **Daniel Haber,** Harvard Univ., who will expand his work on Wilms tumor to define the action of the WT1 gene; **Averil Ma,** Columbia Univ., who will continue his study of myc genes; **David Martin,** Fred Hutchinson Cancer Research Center, who will investigate the regulation of globin genes; **Edmund Waller,** Stanford Univ., who will study the spread of lymphoid cancers; and **Russell Ware,** Duke Univ., who will study the role of the CD7 protein in the development of blood cells. The awards constitute the third year of a five year, $10 million series of awards aimed at attracting new investigators to cancer research. The scholars were selected by the foundation's trustees with assistance from an advisory committee chaired by Philip Majerus of Washington Univ. . . . **AMERICAN CANCER** Society has appointed two scientists to be designated at ACS Research Professors. They are **Bruce Roberts,** at Univ. of California (San Francisco), and **Inder Verma,** at the Salk Institute of Biological Studies in La Jolla, CA. The Research Professor awards, of which there are only 25 at one time, free the recipients from academic tasks such as teaching and administrative duties to allow them to concentrate on research. Assuming the awards remain in effect until the professors retire, the total awarded for Alberts is $875,000 and for Verma, $1.095 million. Alberts is conducting research on transmission of genetic material and Verma has been a leader in research on oncogenes. . . . **FUNDING OF** 321 research grants for a total of more than $40 million was approved by the American Cancer Society Board of Directors recently. The society also approved a Special Institutional Grant for Dartmouth Medical School in the area of nutrition. The SIG, under the direction of **Edward Bresnick,** chairman of the pharmacology and toxicology department, will investigate cancer nutrition, epidemiology, and immunology. Bresnick was awarded $1 million over five years to develop the program.

FDA Advisors OK G-CSF, GM-CSF; Seek More Data On BMT Failure

(Continued from page 1)

The committee last month:

*Gave a strong endorsement of G-CSF, voting 6-0 that even in the absence of a proven survival benefit, the evidence that the drug improves quality of life for cancer patients justifies its use.

*Voted 5-1 that the data were representative enough to recommend G-CSF for preventing chemotherapy related infection in all types of nonmyeloid malignancies.

*Voted 7-0 in favor of approval of GM-CSF for use in non-Hodgkins lymphoma and acute lymphoblastic leukemia for the promotion of autologous bone marrow transplantation engraftment.

*Gave a conditional recommendation of approval of GM-CSF for treatment of bone marrow transplant failure. The committee asked the sponsors to provide FDA more data on this indication.

Amgen Corp. is the maker of G-CSF. Immunex Co. and Hoechst-Roussel Pharmaceuticals Inc. plan to market GM-CSF as Prokine if FDA grants final approval.

FDA 'Satisfied' With GM-CSF Data

Last summer the committee had recommended against marketing approval of GM-CSF and asked the sponsors to return with more complete data.

FDA representative Roger Cohen indicated that the agency was satisfied with the data on the use of GM-CSF for promotion of ABMT engraftment in non-Hodgkins lymphoma and acute lymphoblastic leukemia from Immunex's "300 series" studies, performed at Fred Hutchinson Cancer Research Center in Seattle, Univ. of Nebraska and Dana-Farber Cancer Center.

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Cohen said the design and conduct of the trials were "high quality," but that the target population for the drug "requires refinement." Data on patients with non-Hodgkins lymphoma and ALL were best, and little benefit was seen in patients with Hodkins disease, he said.

An estimated 10,000 cancer patients per year could benefit from the treatment, according to Dean Buckner, of Fred Hutchinson. Patients undergoing ABMT have an average mortality of 5 to 15 percent in the first several days after the transplant, mainly caused by primary infections or "superinfections." About 60 percent of lymphoma patients relapse in the first year, and about a third of these occur in the first three months after transplantation.

Buckner said researchers are considering two strategies to combat post-transplant relapse. One strategy is to transplant earlier in the disease. The other is to increase dose intensity of chemotherapy and provide earlier post-transplant therapy with biological response modifiers. Buckner said he and others at Hutchinson think data on GM-CSF for promotion of engraftment are strong.

"We would like to see GM-CSF given to every patient and then do post-transplant studies," he told the committee.

Lee Nadler, Dana-Farber Cancer Institute, noted that the 300 series studies showed that GM-CSF was effective in patients treated "in a variety of clinical practice." He was principal investigator of the GM-CSF study at Dana-Farber.

James Armitage, chairman of the internal medicine department at Univ. of Nebraska Medical Center and principal investigator of the GM-CSF study performed there, presented the data on the three studies.

The prospective, randomized, double-blind, placebo-controlled studies were performed from May 1988 to June 1990 and enrolled 44 patients at Hutchinson, 37 patients at Nebraska and 47 patients at Dana-Farber. Most patients had either non-Hodgkins, Hodgkins or ALL, but 2 percent of the patients at Hutchinson had acute myelodysplastic leukemia.

Results of the studies indicated that GM-CSF caused:

--Decrease of five to eight days in time to neutrophil recovery to an absolute neutrophil count of more than 500 in patients at Hutchinson and Dana-Farber.

--Three-fold increase in number of patients engrafted three weeks after transplantation at Hutchinson and Dana-Farber.

--Median time to hospital discharge shortened by six days for GM-CSF patients at Hutchinson and four

days for those at Dana-Farber.

--From 61 to 75 percent of Hutchinson and Dana-Farber patients were discharged within four weeks of transplantation compared to 21 to 57 percent of placebo subjects.

--There were no significant differences in the type or frequency of adverse events. Events considered to be serious were reported in 81 percent of GM-CSF patients and 87 percent of placebo patients. Adverse reactions with both groups included fever, nausea and diarrhea. There was no clinical evidence that GM-CSF stimulated the growth of lymphoid malignancies.

"In every case, patients achieved the endpoint more quickly if they received GM-CSF than if they did not," Armitage told the committee.

The studies showed no difference in one-year survival between the GM-CSF or placebo patients.

Armitage said the data still were unclear on the efficacy of GM-CSF in Hodgkins patients. In addition, it was not clear whether purging marrow had any effect, but that whether a patient received purged or unpurged marrow, he or she had an equal advantage in receiving GM-CSF over the patients on the control arm.

Immunex and Hoechst are willing to conduct post-marketing phase 3 and 4 studies to expand the target population of the drug.

The committee found that that there was no reason to discriminate against pediatric or Hodgkins disease patients, but that Immunex and FDA should discuss including a statement in the package insert that would point out the drug's "potential limitations for heavily pretreated" patients or those whose marrows were chemically purged. The committee also said it would be appropriate for the sponsor to plan phase 3 and 4 studies to expand the target population for the drug.

The committee also found that absolute neutrophil count increases are a reasonable surrogate marker for future studies of GM-CSF; however, the committee wanted to see more data on this question.

Two members of the nine-member committee--Frederick Appelbaum and Jordan Gutterman--exluded themselves from discussion and voting on GM-CSF due to involvement with the sponsors.

GM-CSF For Engraftment Delay/Failure

Immunex and Hoechst also asked for approval of GM-CSF for use in treatment of autologous or allogeneic bone marrow transplant failure or delay in engraftment.

Data from Hoechst's study 501 show that, compared to historic controls, GM-CSF improves survival among approximately 10 percent of the patients whose marrow failes to engraft following transplantation, according to Dagmar Oette of Hoechst.

Since the study was presented to the committee last July, data were accumulated on 66 additional patients, Oette said.

The nonrandomized trial was performed at 36 institutions, but three institutions contributed the majority of patients--Memorial Sloan-Kettering Cancer Center, UCLA, and Fred Hutchinson. Patients were enrolled between January 1988 and last August; 140 subjects received GM-CSF for 14 days and 103 were controls. The study endpoint was a difference in survival.

FDA's Cohen said the data on GM-CSF use "continues to confer a survival benefit" that is clearest is allogeneic transplants. GM-CSF's mechanism of action remains a mystery, he said.

Cohen noted that it would have been impossible to obtain "perfectly matched historical controls," and that a traditional placebo controlled trial could not be justified.

Median survival for autologous patients was about five months in those who did not receive GM-CSF and seven and a half months for those who did get the drug. Median survival for allogeneic patients was about a month for controls and nearly three months for those who were given the drug.

In July, the committee said it was concerned that there had been no secondary endpoints in the study. Oette said investigators came up with a "multiple orgain failure (MOF) scoring system" that was useful for predicting survival.

Median survival by MOF score at 100 days in the GM-CSF group was 72 percent, compared to 59 percent for controls. That figure was not statistically significant, Oette said.

Another secondary endpoint was engraftment at day 100 whether the patient was alive or not, in a smaller group of patients. In the control group, 10 patients were alive and engrafted, while 7 patients were engrafted but dead. In the GM-CSF group, 57 alive patients had engrafted and 27 patients who died had also engrafted.

The committee also was concerned that possible changes in supportive care between 1984--the time when the controls were treated--and 1988 could have had an effect on the survival difference. Oette said the researchers looked at the antimicrobial agents used in each group and found little change.

Committee consultants Steven Piantadosi, Johns Hopkins Oncology Center, and Richard O'Reilly, Memorial Sloan-Kettering, as well as several committee members were still troubled by lack of data showing a direct effect of GM-CSF.

"One is still concerned that the effect we're seeing is due to differences in the way patients are treated now versus many years ago," said Janice Gabrilove.

"In fact, things have not changed dramatically in supportive care," Buckner responded. Buckner said he had opposed the idea of a randomized trial to directly measure the cytokine's effect. "The investigators at Hutchinson felt this was due entirely to GM-CSF."

Ccommittee member Michael Hawkins, chief of NCI's Investigational Drug Branch, said the sponsor should have presented some additional data on the GM-CSF patients. "I'd like to see the abolute neutrophil count in these patients," he said.

Oette said that information presents a dilemma: should live as well as dead patients be included? "At the time we felt that if you take only the live patients, it is not clear you would see the ANC rise significantly," since some of the live patients might not have needed GM-CSF, she said. However, use of the treatment catches the patients who do need that boost at an earlier point, she said.

Committee Chairman Jerome Groopman said the committee would be flexible "if there were a discrete biological effect that we could pin on [GM-CSF]."

"What has to come out in an analysis of why are patients surviving," O'Reilly said. "Infections or insults are somehow reduced with GM-CSF, but you're left with the idea of serendipity."

In contrast, committee member Ernest Borden said, "I'm actually pursuaded by the data," and noted a six fold difference in benefit between the historical controls at Hutchinson and the treated patients.

"There is this nagging concern that the effect could be due to differences in care," Groopman said. "I think that is probably not the case." He asked the committee to consider recommending that an effort be made to analyze data from Hutchinson and the other centers on the hematologic response of patients on GM-CSF.

"We all are very much impressed with the growth factor," Gabrilove said. "We don't want to deny it to patients who may need it. The concern is having an additional biological endpoint."

Buckner said investigators at Hutchinson "struggled with tbe question" of whether to conduct a randomized trial, and decided it would not be ethical. "I don't think we would approve it. We have confidence in our historical controls," he said.

Groopman asked the committee to vote to recommend approval of GM-CSF in engraftment failure "contingent on FDA review of hematological data and single center data at Hutchinson" and to recommend that FDA and the sponsor attempt a multivariate analysis of the data. The committee would recommend approval "if FDA finds the data adequate," Groopman said.

In response to criticism of the proposal, Groopman said, "I don't think it's really passing the buck. We are an advisory committee, not an approvatory body."

The committee voted 7-0 in favor of the proposal.

G-CSF Recommended As Chemo Adjunct

In contrast to the questions about GM-CSF, the committee seemed pleased with the clarity of data on G-CSF.

Three committee members--Groopman, Gutterman and Gabrilove--abstained from the discussion and voting on G-CSF due to previous involvement with Amgen. Gabrilove conducted the very first clinical trial of G-CSF, in advanced bladder cancer patients treated with the MVAC regimen.

That study showed that G-CSF resulted in decreased duration of neutropenia, decreased severity of absolute neutrophil count nadir, and decreased duration of antibiotic use. Thirty-five of the 36 patients receiving G-CSF were able to continue chemotherapy on schedule, while only five of 36 patients not receiving G-CSF were able to continue treatment on schedule.

Michael Narachi of Amgen, David Johnson of the Vanderbilt Clinic, Jeffrey Crawford of Duke Univ. Medical Center and George Morstyn of the Ludwig Institute for Cancer Research in Australia reviewed the data on five G-CSF trials. The trials have shown that G-CSF reduces the incidence of infection, as evidenced by febrile neutropenia, in myelosuppressive chemotherapy.

Of approximately 1 million new cancer cases in the U.S. each year, about 250,000 patients receive myelosuppressive chemotherapy, according to an Amgen statement.

The advisory committee voted 6-0 that the benefits of the treatment justify its use; and, in a separated question, voted 6-0 that the classes of chemotherapeutic agents used in the trials were representative enough to recommend that G-CSF be used as an adjunct to all types of chemotherapy.

In addition, the committee voted 5-1 that the data presented are representative enough to recommend the use of the cytokine for all types of non-myeloid malignancies.

The one dissenting vote was that of committee member Paula Pitha, who said she wanted to see data showing that the treatment does not stimulate growth of other tumors.

The committee also found that there was no reason to exclude children with non-myeloid malignancies from receiving G-CSF as an adjunct to chemotherapy.

Cancer Panel Ceases To Function Until New Chairman Is Appointed

With the death of Armand Hammer last month, the President's Cancer Panel has ceased to function and has no plans to meet until the White House appoints a new chairman.

As of last week, there was no indication when the White House will take action to appoint a successor to Panel Chairman Hammer, as well as make appointments to the other two seats on the three-member panel. The term of panel member John Montgomery expired in 1989, as did Hammer's term. But successors were never appointed and Hammer and Montgomery continued to serve.

The term of panel member William Longmire expires this February, but he has told NCI sources he does not want to continue his service. "He sees no point in serving in Hammer's absence," one NCI official said.

Montgomery and Longmire, vacationing for the holidays, could not be reached for comment by **The Cancer Letter's** deadline last week.

The panel is required by law to hold four meetings a year, which are called by the panel's chairman, and submit an annual report to the President. Hammer submitted the panel's report for 1989-90 last August and the panel completed its 1990 schedule of meetings last month. The panel had not gotten around to scheduling 1991 meetings.

NCI Assistant Director Elliott Stonehill said the law creating the panel allows members to serve until they are replaced, but without a panel chairman, Longmire and Montgomery "have no intent to hold a meeting until the White House creates a new panel" by appointing a chairman and naming new members.

Judging by its failure to make timely appointments to other advisory boards, namely the National Cancer Advisory Board, and fill high-level posts such as that of the NIH director, there is no telling when the Administration will get around to making appointments for the President's Cancer Panel. At the very least, appointments could take several months for background clearances to be conducted.

Panel Was His 'Bully Pulpit'

Hammer, who died Dec. 10 at age 92 of cerebral arteriosclerosis at his home in Los Angeles, had served as chairman of the Cancer Panel since 1981, following his appointment by then President Ronald Reagan.

Early critics of the appointment charged that placing the chairman of Occidental Petroleum Corp., the nation's seventh largest oil company which also has interests in fertilizers and chemicals, at the head of a panel charged with overseeing the National Cancer Program was akin to placing the wolf in charge of the sheep. One group called on Hammer to resign. In addition, Hammer had pleaded guilty to an illegal contribution to Richard Nixon's campaign fund.

He was also criticized for setting what to some appeared as overly optimistic goals, predicting a "cure" for cancer by 1990.

"I believe that a scientific breakthrough in the cure of some cancers is closer than we know," he said at his second panel meeting (**The Cancer Letter,** Dec. 11, 1981).

Hammer brushed off the early attacks and used his position on the panel as a 'bully pulpit' to promote funding of cancer research, and tried to influence the direction of research.

He announced that the Armand Hammer Foundation would award $1 million to the scientist who finds a cure for cancer similar to the Salk polio vaccine, and he gave out another $1 million in $100,000 prizes to researchers. He criticized Congress and the White House for failing to provide more funding for research.

Some of his favored research topics were monoclonal antibodies and adoptive immunotherapy. In 1988, NCI Surgery Branch Chief Steven Rosenberg received a special $200,000 Armand Hammer Cancer Prize for Adoptive Immunotherapy recognizing his work.

Hammer also took the panel around the country to hold meetings at different cancer centers and universities. Whenever Hammer heard about particularly promising research, he immediately visited the laboratory, and in some cases, gave out money on the spot. That was the case in Hammer's gift of $500,000 to Stanford Univ. to triple the size of Ronald Levy's laboratory, according to "Armand Hammer: The Untold Story," by Steve Weinberg, an unauthorized biography of the industrialist.

Hammer said his interest in cancer research came from having met Jonas Salk, who talked to him about the possibility of major advances in cancer therapy.

In 1969, Hammer gave a $5 million endowment to establish the Armand Hammer Center for Cancer Biology at the Salk Institute in San Diego.

In 1977, he gave $5 million to his alma mater, Columbia Univ., to help build the Julius and Armand Hammer Health Sciences Center at the medical school.

In 1988, he founded the STOP Cancer Foundation and set a goal of raising $1 billion for cancer research in four years, with matching funds from Congress.

So far, the foundation has said it has raised $12.5 million from private sources, which were matched by

Congress in the FY 1990 appropriation for NCI.

Hammer was born in New York City in 1898. His father, Julius, was a physician who ran a small pharmaceutical company and was a founder of the American Communist Labor Party. Julius Hammer was convicted for performing an abortion on a woman who later died, and was sent to Sing Sing.

Armand Hammer saved his father's company from bankruptcy by buying large amounts of whisky just before Prohibition went into effect in 1920 and selling it later as medicine.

Soviet's Favorite Capitalist

Hammer received a medical degree but never practiced medicine. While waiting to begin an internship, he went to the Soviet Union to help provide medical aid.

Through his father's political connections, he managed to get an interview with Lenin, who told him the country needed food. Hammer quickly arranged a barter of Russian furs and caviar for American wheat. His career as the Soviet Union's favorite capitalist was launched.

But Hammer's contacts and interests went beyond international trade and art, and he worked informally to improve ties between Washington and Moscow

Hammer had a concession to operate an asbestos mine and a pencil factory in the Soviet Union until 1931. He left the country with a fortune in art treasures which he sold through department stores, and later opened the Hammer Galleries in New York. Over the years he acumulated one of the greatest private art collections in the world.

In 1956, while thinking about retirement, Hammer and his third wife Frances invested $100,000 in the nearly defunct Occidental as a tax shelter. The company happened to strike oil in Libya.

Hammer fought off a number of illnesses over the years and whenever rumors circulated that he was near death, the price of Occidental stock jumped. But, according to various accounts, Hammer's associates never discussed the company's future "when he dies," but "if he dies."

Hammer also was known for a wry sense of humor. At last October's meeting of the National Cancer Advisory Board, the last NCAB meeting that he attended, Hammer said he figured he could live to at least 100, since he had just gotten a new pacemaker "and it's guaranteed for eight years" (**The Cancer Letter,** Oct. 12, 1990).

After that, he said, "I get new batteries."

Survivors include a son by his first marriage, Julian Hammer of Los Angeles; two grandchildren and two great-grandchildren.

Jordan Gutterman Picked To Head Albert Lasker Awards Program

Jordan Gutterman of M.D. Anderson Cancer Center has been elected executive vice president of the Albert and Mary Lasker Foundation and director of the Albert Lasker Medical Research Awards Program.

Gutterman's appointment was effective Jan. 1. He succeeds Alice Fordyce, who has been executive vice president of the foundation for the past several years and director of the medical research awards program since 1961.

Fordyce will remain a consultant to the awards program and continue on the Board of Directors of the foundation, according to a statement released by the foundation.

Michael DeBakey, chancellor and chairman of the Dept. of Surgery at Baylor College of Medicine, is chairman of the Lasker Awards jury.

Gutterman will continue his clinical and administrative posts at M.D. Anderson, where he is professor of medicine and chairman of the Dept. of Clinical Immunology and Biological Therapy. His group has been a leader in applying biological substances such as interferon to cancer therapy. He served as a member of the Lasker Awards jury from 1978 through 1989.

"I am pleased at the opportunity to help continue the remarkable tradition of the Albert Lasker Medical Research Awards Program," Gutterman said. "These are among the most prestigious awards for outstanding biomedical research."

The Lasker Awards have been presented annually, with two exceptions, since 1944. Forty-nine winners later won Nobel Prizes. The 1991 awards will be announced in September.

Abbott Labs Seeks Applicants For Young Investigator Award

Abbott Laboratories has announced the availability of its Young Investigators Award, given annually to an untenured scientist who is engaged in cancer research having potential application to the screening, diagnosis or monitoring of cancer.

A grant of $20,000 per year for two years will be given to the sponsoring institution of the award recipient to fund his or her research. The grant is not transferable or renewable.

Applicants must not be in tenured positions at the time the application is submitted, and must have less than seven years research experience. Applicants will be required to provide information about other

funding sources for the proposed research.

An independent advisory panel of distinguished scientists will select the award recipient. Applications must be submitted by April 30, 1991. Announcement of the award will be made by Aug. 1. Monetary grants will be made in November 1991 and 1992. The award reciepient will make a presentation of research progress at the spring 1992 meeting of the advisory panel.

For further information about the award or to recieve application forms, write to Abbott Laboratories, Young Investigator Award Program, D94K, AP6C, 1 Abbott Park Rd., Abbott Park, IL 60064.

Pollin Organizes Effort To Reach Minority Women Through Basketball

National Cancer Advisory Board member Irene Pollin, wife of Abe Pollin, owner of the Washington Bullets basketball team, is organizing an effort to carry the message of cancer prevention through changes in diet and lifestyle to minority women.

Pollin has organized the wives of Bullets players to develop a model for community outreach which could be used by other National Basketball Assn. teams in their communities.

"These women are bright, beautiful, articulate, and have access to the local media," Pollin told the NCAB at its recent meeting. "We would develop a model which could be taken nationally."

Pollin said the idea was approved by the NBA president and the NBA Players Assn. The Bullets' wives have held a meeting to discuss the idea and are "enthusiastic."

Pollin said the effort would try to get four or five minority women who are wives or girlfriends of NBA team members to contact community groups and television programs to "get the word out" about the disproportionate burden of cancer in the black community and actions that women can take to prevent cancer, such as cutting out fat in the diet and in having mammograms, pap smears and other cancer screening exams.

NCI Advisory Group, Other Cancer Meetings For Jan., Feb., Future

Insulin-Like Growth Factors/Somatomedins--Jan. 12-16, San Francisco, CA. Contact Univ. of California School of Medicine, Extended Programs in Medical Education Rm C-124, San Francisco, CA 94143-0742, phone 415/476-5808.

Transgenes, Development & Disease--Jan. 12-18, Tamarron, CO. Contact Keystone Symposia, 2032 Armacost Ave., Los Angeles, CA 90025, phone 213/207-5042.

Recent Trends In Management of Mediastinal Tumors--Jan. 13, Cairo, Egypt. Contact Kasr el Einy Center of Radiation, Oncology & Nuclear Medicine, Manial University Hospital, Manial El-Rhoda, Cairo, Egypt.

Clinical Trials Dissemination--Jan. 15, NIH Bldg. 31 Rm 10, 8:30 a.m. open. Contact Bill Hall, 301/496-5641.

Developmental Therapeutics Contracts Review Committee--Jan. 16-18, Holiday Inn, Delaware Rm., 8120 Wisconsin Ave. NW, Washington, D.C. Open Jan. 16 8:30-9:30 a.m.

Self Reactivity & Its Regulation--Jan. 17-24, Keysone, CO. Contact Keystone Symposia, 2032 Armacost Ave., Los Angeles, CA 90025, phone 213/207-5042.

The Adipose Cell--Jan. 18-24, Park City, Utah. Contact Keystone Symposia, 2032 Armacost Ave., Los Angeles, CA 90025, phone 213/207-5042.

Gene Regulation & Signalling In Edocrine Systems--Jan. 19-25, Steamboat Springs, CO. Contact Keystone Symposia, 2032 Armacost Ave., Los Angeles, CA 90025, phone 213/207-5042.

Platinum & Other Metal Coordination Compounds in Cancer Chemotherapy--Jan. 23-26, San Diego, CA. Sheraton Harbor Island East Hotel. Contact Cass Jones, Professional Conference Management, 7916 Convoy Ct., San Diego, CA 92111, phone 619/565-9921.

New Drugs--Jan. 24, Brno, Czechoslovakia. Contact Cancer Research Institute, Zluty kopec 7, Brno, Czechoslovakia.

Biometry & Epidemiology Contracts Review Committee--Jan. 24, NIH Executive Plaza North, Conference Rm J, open 9-10 a.m.

Cancer Biology & Immunology Contracts Review Committee--Jan. 25, Chevy Chase Holiday Inn, Chevy Chase, MD. Open 9-10 a.m.

Current Status & Future Directions of Immunodiagnosis & Immunotherapy--Jan. 25-27, Key Biscayne, FL. Contact Div. of Continuing Medical Education, Univ. of Miami School of Medicine, PO Box 016960, Miami, FL 33101, phone 305/547-6716.

Oncology Practice 1991: A Perspective on Breast Cancer & Lymphoma--Jan. 27-Feb. 1, Snowmass, CO. Contact Dr. Stephen Jones, Charles Sammons Cancer Center, Rm 4800, Baylor Univ. Medical Center, 3500 Gaston Ave., Dallas, TX 75246, phone 214/820-2021.

Molecular Basis of Exidative Damage by Leukocytes--Jan. 28-Feb.3, Big Sky, MT. Contact Keystone Symposia, 2032 Armacost Ave., Los Angeles, CA 90025, phone 213/207-5042.

NCI Div. of Cancer Prevention & Control Board of Scientific Counselors--Jan. 31-Feb. 1, NIH Bldg. 1 Wilson Hall, open 8:30 a.m.-3 p.m.

Midwinter Radiological Conference--Feb. 1-3, Los Angeles, CA. Contact Los Angeles Radiological Society-MWRC, PO Box 91215, Los Angeles, CA 90009-1215, phone 213/827-9078.

Major Advances in Oncology: Update on Hematopoietic Growth Factors--Feb. 2, Cleveland, OH. Contact Education Coordinator, Ireland Cancer Center, Univ. Hospitals of Cleveland/Case Western Reserve Univ., 2074 Abington Rd., Cleveland, OH 44106, phone 216/844-7858.

National Cancer Advisory Board--Feb. 4-5, NIH Bldg. 31 Rm 10, open at 8 a.m. on Feb. 4. Committee meeting schedule not available.

Genomic Instability & Cancer--Feb. 4-10, Tamarron, CO. Contact UCLA Symposia, 2032 Armacost Ave., Los Angeles, CA 90025, phone 213/207-5042.

Mid-Pacific Radiological Conference--Feb. 5-9, Maui, HI. Contact MPRC, PO Box 91215, Los Angeles, CA 90009, phone 213/827-9078.

International Congress on Neoadjuvant Chemotherapy--Feb. 6-9, Paris, France. Contact Service d'Oncologie Medicale, Pitie-Salpetriere 47, Bd. de l'Hopital, 75651 Paris Cedex 13, France.

American Cancer Society/American College of Clinical Pharmacology National Conference on New Oncologic Agents--Feb. 6-8, 1991, Dallas, TX. Contact ACS, 1599 Clifton Rd. NE, Atlanta, GA 30329, 404/329-7606.

Testicular Cancer--Feb. 7-8, Knoxville, TN. Contact Education Coordinator, Thompson Cancer Survival Center, phone 615/541-1749.

Advances in Oncology--Feb. 7-9, Cancun, Mexico. Contact UCI Clinical Cancer Center, 714/634-5081.

Biotherapy of Cancer: Symposium for Clinicians & Nurses--Feb. 7-9, 1991, Newport Beach, CA. Marriott Resort Hotel. Contact Meeting Mangement, Biotherapy of Cancer, 5665 Oberlin Dr. #110, San Diego, CA 92121.

Developmental Genetics of Childhood Cancer--Feb. 8-11, San Diego, CA. Catamaran Resort Hotel. Contact American Assn. for Cancer Research, Public Ledger Bldg., Suite 816, 6th & Chestnut Sts., Philadelphia, PA 19106, phone 215/440-9300.

Southwest Oncology Nursing Symposium--Feb. 8-9, Phoenix, AZ. Contact Debbie Todd, Outreach Services, Good Samaritan Medical Center, 1111 E. McDowell Rd., T12A, Phoenix, AZ 85062, phone 602/239-3250.

Membrane Transport in Multidrug Resistance, Development & Disease--Feb. 10-14, Alberta, Canada. Contact American Assn. for Cancer Research, Public Ledger Bldg. Suite 816, Sixth & Chesnut Sts., Philadelphia, PA 19106, phone 215/440-9300.

NCI Div. of Cancer Biology, Diagnosis & Centers Board of Scientific Counselors--Feb. 11, NIH Bldg. 31 Rm 6, open 8:30-11:30 a.m.

International Conference on Cancer Prevention: Facts, Maybes & Rumors--Feb. 12-13, 1991, NIH Lister Hill Auditorium, Bethesda, MD. 8 a.m. both days. Contact Veronique Malet-Dupont, 212/319-6920.

Radiation Oncology--Feb. 13-16, Lake Buena Vista, FL. Contact Div. of Continuing Medical Education, Univ. of Miami School of Medicine, PO Box 016960 (D23-3), Miami, FL 33101, phone 305/547-6716.

St. Joseph's Cancer Institute Cancer Conference--Feb. 15-16, Tampa, FL. Contact St. Joseph's, 3001 W. Buffalo Ave., Tampa, FL 33677, phone 813/870-4991.

Cytokine Use In The 1990s--Feb. 15, San Diego, CA. Contact Meeting Management, 5665 Oberlin Dr. Suite 110, San Diego, CA 92121, phone 619/453-6222.

NCI Div. of Cancer Treatment Board of Scientific Counselors--Feb. 19-20, NIH Bldg. 31 sixth floor conference rooms, open 8:30 a.m. on Feb. 19; open 12:30 p.m. on Feb. 20.

Cancer Prevention Convention--Feb. 21-23, Houston, TX. Contact Jeff Rasco, Conference Services, Box 131, M.D. Anderson Cancer Center, 1515 Holcombe Blvd., Houston, TX 77030, phone 713/792-2222.

Arizona Cancer Center International Workshop on Chromosomes in Solid Tumors--Feb. 24-27, Tucson, AZ. Abstract deadline Nov. 30, 1990. Contact Nancy Rzewuski, Conference Coordinator, Arizona Cancer Center, Tucson, AZ 85724, phone 602/626-2276.

Alabama Cancer Congress--Feb. 28-March 2, Birmingham, AL. Contact Alabama Cancer Congress, phone 800/292-4935 or 205/879-2242.

Monoclonal Antibody Immunoconjugates for Cancer--Feb. 28-March 2, 1991, San Diego, CA. San Diego Marriott Hotel & Marina. Contact Cass Jones, Professional Conference Management, 7916 Convoy Ct., San Diego, CA 92111, phone 619/565-9921.

Cancer Management Course--Feb. 28-March 2, Orlando, FL, Marriott Orlando World. Contact American College of Surgeons, Cancer Dept., Morton Wilhelm, 55 East Erie St., Chicago, IL 60611, phone 312/664-4050.

Future Meetings

International Congress on Biological Response Modifiers--March 22-24, Quebec City, Canada. Contact Dr. Michel Bergeron, Congress Coordinator, CH Universite Laval, 2705 boul. Laurier, Quebec City, Quebec, Canada GIV 4G2, phone 418/654-2705.

International Assn. for Breast Cancer Research--May 26-29, Saint Vincent, Italy. Contact Dr. Roberto Ceriani, John Muir Cancer & Aging Research Institute, 2055 N. Broadway, Walnut Creek, CA 94596.

Anticancer Drug Discovery & Development Symposium--June 27-29, Detroit, MI. Contact Dr. Frederick Valeriote, Div. of Hematology & Oncology, Dept. of Medicine, Wayne State Univ., PO Box 02188, Detroit, MI 48202, phone 313/745-8252.

Small Instruments Grants Program

NIH Small Instruments Grants Program

Application Receipt Date: Feb. 13

In its appropriation for NIH for FY 1987, Congress included $16 million to be spent by the respective NIH Institutes and Centers to fund grants for the purchase of small instruments costing between $5,000 and $60,000.

This action was in response to several studies that indicate that the state of biomedical research instrumentation had seriously eroded over the last 10 years and that this situation was retarding the progress of biomedical research. The most significant need identified in these studies was for the relatively low cost pieces of equipment in the price range of approximately $5,000 to $60,000.

Congress in subsequent years has continued to provide funds for this activity. Approximately $16 million in available for small instrumentation grants this year.

Each institution that received support under the Biomedical Research Support Grant Program in FY 1990 and currently has active NIH research grants is eligible to apply. Only one application may be submitted from each institution or organizational component.

Each institution may establish its own procedures for identifying equipment requests to be included.

The small instrumentation award will be restricted to the purchase of equipment costing between $5,000 and $60,000. Awards will be made on or before Sept. 30, 1991. The amount of the award will be based upon a percentage of the institution's BRSG award for FY 1990 or $5,000, whichever is greater.

Specific funding decisions will depend on available appropriations as well as the appropriateness of the request. Institutions will be notified of the maximum amount for which they may apply.

Letters of instruction were mailed to eligible institutions on Nov. 28.

Investigators interested in participating in their institution's application must contact the institution's Biomedical Research Support Grant program director.

For additional information contact Office of Special Programs and Initiatives, Office of Extramural Programs, NIH Bldg. 31 Rm 5B44, Bethesda, MD 20892, phone 301/496-1968.

NCI Contract Awards

Title: Computer support for the Cancer Therapy Evaluation Program

Contractor: Capital Technology Information Services Inc., Rockville, MD; $4,951,998.

Title: Microcomputer generated statistical tables

Contractor: MOCO Inc., Scituate, MA; $321,258.