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CANCER PROGRAM SHOULD GET $2 BILLION A YEAR, AMOS SAYS; "FEDS SHORT ON MONEY, LONG OF REGS": YARBRO

The National Cancer Program should be receiving $2 billion a year within the next five years, Harold Amos, member of the President's Cancer Panel, said at the annual meeting of the Assn. of Community Cancer Centers last week in Washington.

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In Brief

ACS CONSIDERS EXPANDING PSYCHOSOCIAL PROGRAMS, TAYLOR SAYS; MENDELSOHN, PITOT JOIN NTP BOARD

AMERICAN CANCER SOCIETY is considering expansion of its programs of research into the psychosocial aspects of cancer, ACS President Willis Taylor said in opening the annual Science Writers Seminar Sunday in San Diego. Taylor, clinical professor of radiology at the Univ. of Washington and head of radiation oncology at Virginia Mason Hospital, said the ACS program would include measures to improve the quality of life for patients who are cured of their disease. "Heartening increases in survival from cancer may now be creating new problems in American society. Pockets of prejudice and ignorance about cancer remain. Some recovered cancer patients encounter job discrimination, with employers refusing to hire or rehire them; some are confronted with difficult adjustments within their families; others are having to cope with fear and stigma arising from misinformation about their disease". . . . MORTON MENDELSOHN, Lawrence Livermore Laboratory, and HENRY PITOT, director of McArdle Laboratory, will be two of the four new members of the National Toxicology Program Board of Scientific Counselors. Pitot is former chairman of the National Cancer Advisory Board. The other two new appointees to the NTP Board have not yet been announced. Mendelsohn will replace Norton Nelson as chairman. Others whose terms have expired are Margaret Hitchcock, Yale; Marjorie Horning, Baylor; and Alice Whittemore, Stanford. . . . NATHANIEL BERLIN, director of the Northwestern Univ. Cancer Center, reported to members of the Assn. of American Cancer Institutes on the cancer center core grant guidelines which have been in effect now for more than a year. "There is an impression leading to the conclusion that the guidelines make it more difficult to support clinical research than some of us would like," Berlin said. An AACI committee will review the guidelines and report at the association's June meeting on suggested changes. Berlin said the guidelines "have had a substantial impact on the review process." Berlin also said he was "concerned about the climate in which centers exist at NIH. There is a considerable number of senior NIH staff who are critical of centers."

AMOS TELLS ACCC THAT CANCER PROGRAM SHOULD RECEIVE $2 BILLION A YEAR

(Continued from page 1)

Terming Cancer Program funds "a matter of critical importance," Amos said, "The idea that important medical initiatives to reduce suffering and ensure a future of better health and productivity for the nation will be sidetracked as economically inconvenient should not be accepted by the biomedical community. The value of the small sums involved is so disproportionate to the good they will accomplish, that our voices must be raised to bring that assessment to an understanding public. The uniqueness of the need for funds for the Cancer Program stems from the nature of the disease iteself, its protracted course before signs and symptoms, and the extended periods of therapy. The ultimate answers about clinical cancer cannot be found unless sufficient clinical research and adequate clinical trials duly funded are assured.

"If that is the agenda," Amos continued, "then it has to be properly funded. I believe funding to be the heart of the problem for the Cancer Program for the immediate future, and I hope we are willing to carry that message to the public."

Amos' remarks were made in accepting ACCC's annual award for outstanding community service. Professor of microbiology at Harvard, Amos served eight years on the National Cancer Advisory Board, and completes a four year term on the President's Cancer Panel this year.

"Your interests are at the heart of the cancer problem as a major medical concern," Amos told ACCC members. "Despite the dedication and passion of the medical and scientific community in its efforts to come to grips with the many facets of malignancy, there are times when it is less than clear that patient treatment and care are the ultimate objectives. But they are indeed."

John Yarbro, professor of oncology at the Univ. of Missouri and former head of NCI's cancer centers program, has been an ACCC supporter and member since its inception in 1974. The members enthusiastically named him president elect last week, and part of his popularity stems from two previous, stingingly witty, addresses to ACCC in which he criticized the federal government's management of clinical research. Yarbro gave them more of the same last week.

In his talk entitled, "It ain't the forms, it's the instructions," contending that the government's trend to use of shorter forms has brought about the writing of lengthy and incomprehensible instructions, Yarbro charged that this trend has moved in on NCI's support of clinical trials.

"Protocols have a way of growing to such vastly oversized proportions that they actually increase the noncompliance rate," Yarbro said. "Even a simple treatment cannot be followed properly if the instructions are sufficiently complex. This is, unfortunately, what has happened to all too many cooperative group protocols. Indeed it is happening to all federally supported clinical trials.

"There is a further weakness in cooperative group research: it is very difficult for it to be original." Admitting it "may be unfair to ask this question," Yarbro said, "Of our curative cancer treatments, how many were developed by cooperative groups and how many by independent clinical investigators? Even neglecting surgical and radiation cures, ask yourself whether any of the following tumors were first shown to be curable by group research: uterine choriocarcinoma, Burkitt's lymphoma, Hodgkin's disease, histiocytic lymphoma, small cell cancer, germ cell cancer, ovarian cancer, osteogenic sarcoma. I am not trying to minimize such brilliant group work as that on adjuvant breast cancer. Rather, I am trying to point out that the independent clinical investigator has historically played a central role and continues to play a central role in cancer research.

"Originality is a characteristic of the individual mind; it withers and dies on the vine of a committee. There is another way to destroy original thought: that is, by subjecting it to the regulation of some kid in the bureaucracy who has never practiced medicine and, if God is merciful, never will.

"We have today far more federal interference in clinical trials than is compatible with creative research. The past success of our federally supported research has always been due to the peer reviewed grant. The system regularly failed when contracts (or contract like research agreements) permitted bureaucratic meddling in research. In a peer reviewed grant, an investigator is selected by other investigators based on a record of past performance (the notion that the proposed work is reviewed is harmless fiction). Support is provided and the investigator is left alone. In a contract award an investigator is selected by bureaucrats based on his willingness to docilely perform their bidding, and the investigator is then subjected to constant bureaucratic meddling. Is it any wonder that grants sometimes produce science and contracts usually produce garbage?

". . . Of late our grant programs have started to fade a bit, in part from an overall shortage of funds and in part from a diversion of funds to contract like targets of bureaucratic preference. This demands an even greater effort by the independent investigator to explore ways to conduct and support original research in unique settings. To find

ways to do independent research in the coming times will not be easy. . . . Our challenge is to prepare for research in such an environment and to seek a source of support that will not cripple and distort original thought. After all, medical research was conducted for centuries without federal support or interference and perhaps the time has come to ask ourselves how this might be done again. I am not denigrating the incredible contribution of three decades of federal funding. Rather, I am suggesting two things: the Feds are short on money and long on regulations and these regulations have begun to entangle, perhaps fatally, innovative clinical trials. Neither FDA nor NCI has any business regulating research. Regulations have no effect on quacks; they only cripple the careful investigator and deceive the public into thinking they are somehow safer.

"An internationally known investigator, familiar to you all, said to me last month, 'There's a quack down the street who can do anything he wants to his patients, but my institution can't start a clinical trial until we get the approval of some kid at NCI.' Much of our time as physicians and scientists is spent trying to change the mind of 'some kid.' Perhaps the time has come to devote our efforts to changing the system."

One of those NCI "kids," Daniel Hoth, age 37, was at the meeting and heard Yarbro's remarks. Hoth, chief of the Investigational Drug Branch in NCI's Cancer Therapy Evaluation Program, participates in the review of protocols submitted to NCI by a 20-25 person committee of professional staff members of Hoth's branch and the Clinical Investigations Branch.

NCI requires that all protocols developed by the NCI funded cooperative groups, and protocols by individuals and centers which propose use of NCI sponsored investigational drugs, be submitted to CTEP for approval. Until recently, centers had been excepted from protocol review, and in fact may still initiate protocol studies without NCI clearance if they do not use NCI sponsored investigational drugs.

Hoth told ***The Cancer Letter*** that protocols are not rejected for scientific reasons, that the majority of rejections are because of unnecessary duplication. Most other rejections are based on safety, or risk/benefit factors.

Emil Freireich, head of Developmental Therapeutics at M.D. Anderson, echoed Amos' call for increased funding of the Cancer Program. Freireich was on the ACCC program, presenting a talk on clinical research results from a center:s perspective, with Alan Yagoda, acting chief of the Solid Tumor Institute Service at Memorial Sloan-Kettering.

"I'm personally campaigning now for a War On Cancer II," Freireich said. No one has said that we should give defense $150 billion this year, and then that's all they will get. We have to sustain a significant cancer effort."

Other comments by Freireich included:

"Progress in treating cancer has feached the point now where for nearly all cancer patients, significant treatment is available, at least to alleviate pain. For the majority of patients, treatment now prolongs life. And for a significant percentage, treatment cures them. Yet treatment is still primitive, despite the great progress. We need significant conceptual advances to improve treatment."

Making conceptual advances and bridging the gap to clinical advances is the role of cancer centers, Freireich said. One such advance, he claimed, is the development at M.D. Anderson of continuous infusion of anticancer drugs. He said that adriamycin, given on a 96 hour infusion schedule, can be given at higher doses with little or no cardiotoxicity. "This has opened up a whole new vista," he said.

Another is the use of prognostic factors to aid in selecting the right treatment for the right patient, Freireich said.

Yagoda predicted that "CCOPs will breed more CCOPs," referring to the Community Clinical Oncology Program and his view that it will be successful and will demonstrate the need for more interaction between community hospitals and cancer centers.

"I don't know what effect CCOPs will have on science," Yagoda said. "I think they will be very beneficial in strengthening some research, and in shutting off some studies that should not continue."

Paul Carbone, chairman of the Eastern Cooperative Oncology Group, and Lawrence Davis, associate chairman of the Radiation Therapy Oncology Group, presented discussions on clinical research results from a group perspective.

Carbone pointed to the success ECOG has enjoyed with its Cancer Control Cooperative Group contract from NCI in developing affiliate members from community hospitals. There are 113 community hospitals affiliated with ECOG, and they contribute 40 percent of ECOG's patient accrual. Results of trials conducted by the affiliates are comparable with those from the university hospitals, Carbone said, with no difference in response or survival.

Carbone pointed out that only a small percentage of cancer patients is put on protocol studies "because there are no good adjuvant protocols available for colon cancer, lung cancer, or melanoma. Community hospitals can participate, but the emphasis should be on studies that are important,

not merely to accumulate patients on protocols."

Cooperative groups need the scientific input of centers, Carbone said. "We desperately need good ideas."

Freireich commented that "a formal relationship with community oncologists is vital to any kind of clinical research by centers. The physician at home has to participate in the treatment decisions of his patients, at the beginning, after referral, and all the way through."

Community centers can do some studies better than university centers, Freireich said, mentioning chemoprevention trials and early detection efforts.

NTP BOARD APPROVES CONCEPT OF HUMAN CELL ASSAY FOR GENETIC TOXICITY

The National Toxicology Program Board of Scientific Counselors last week approved the concept of a contract program for development of human cell assay systems for genetic toxicity. NTP expects to award at least two and perhaps three contracts totaling an estimated $300,000 in FY 1983, $350,000 in 1984 and $390,000 in 1985.

Robert Langenbach, of NTP's Cellular & Genetic Toxicology Branch, presented the case for the new project:

The proposed project addresses the problem of further developing human cell systems for use in determining potential genetic toxicity of chemicals. Comparisons of human cells to rodent cells from selected tissues for metabolic activation of chemicals will be made. Also, measurement of multiple genetic endpoints in human cells will be compared to those endpoints measured in rodent cells. From these studies, the potential utility of human cell compared to rodent cell assay systems will be defined. The long term outcome of the proposed human cell approach will validate and/or possibly lead to the replacement of short term assays using rodent cells.

Most short and long term assays for detection of potential human carcinogens use rodents, rodent cells or rodent enzyme preparations to determine the genetic toxicity of chemicals. However, species differences in response to chemical carcinogens do exist and it is important to measure the chemicals' genotoxic effects in human cells.

In vitro systems that use human cells both for metabolic activation. In addition, multiple genetic endpoints (transformation, mutation, chromosome damage, unscheduled DNA synthesis and toxicity) can be measured in the human target cells. This approach, originally termed "cell mediated mutagenesis" was developed by Huberman and Sachs (*Int. J. Cancer, 13,* 326-333, 1974) with rodent embryonic fibroblasts for metabolic activation and Chinese hamster V79 cells as the mutable target. The methodology has been expanded to use many types of activating cells and measurement of many mutagenic endpoints in various target cells (Langenbach and Oglesby, *Chemical Mutagens, 8,* 1983, in press. Cell mediated activation requires the transport of reactive species of the chemical from one cell to another, and this process has been shown in vitro to occur for many classes of chemical carcinogens. Cell homogenate or S-9 preparations from human tissues have also been used for metabolic activation, but studies with rodent systems demonstrated that intact cells stimulate better the in vivo situation than do tissue homogenates.

The basic approach of cocultivating activating cells and target cells will be employed. The metabolic activating cells will be derived from adult human liver, but consideration will be given also to other human tissues including lung and mammary gland. Techniques for obtaining and culturing these human cell types are available. Briefly, the rationale behind consideration of the above cell types is that the liver has the broadest spectrum of carcinogen metabolizing ability, and hepatic parenchymal cells in vitro can activate many classes of chemicals. Additionally, a large data base exists for rodent liver cell mediated mutagenesis. The high incidence rates of lung and mammary cancer in the human population make the use of cell types from these tissues a high priority. In conjunction with the liver cell data, data from lung and mammary gland will provide information concerning organ specificity in carcinogen activation. An in vitro mammary cell system may also be amenable to the study of hormonal effects.

Because the majority of human cancer is of epithelial cell origin, this cell type principally will be used for metabolic activation. Also, freshly isolated cells will be used because extensive culture of cells usually results in the loss of metabolic capacity and other differentiated cell functions. Attempts will be made to preserve freshly isolated cells by freezing techniques. Initially, the target cells will be normal human fibroblasts, although normal epithelial cells and genetically aberrant epithelial or fibroblastic cells will be considered. The endpoints measured will be gene mutations, sister chromatid exchanges, and chromosome aberrations. Methodologies for measurement of these endpoints in human cells is well documented. The measurement of transformation, unscheduled DNA synthesis and inhibition of DNA synthesis will also be explored. Potentially, some of these endpoints would be measurable in the activating cells as well as the target cells. Future studies may include measurement of specific onc gene expression in treated cells.

Once the human cell system is developed, rodent activating cells will be used with the human target cells, and human activating cells will be used with rodent target cells. The measurement of multiple genetic endpoints under these conditions will allow comparison of human cells to rodent cells for activation and as target cells. In addition to determining possible organ and species differences, parameters such as individual variation in human carcinogen activation and age and gender effects can be studied.

The project should have high priority with regard to: (1) developing human cell mediated systems to assay chemicals for multiple genotoxic effects; and (2) comparison of results from the human system to results from rodent systems. These studies will aid in determining the value of including human systems in genetic toxicity testing.

NTP Deputy Director John Moore asked if the RFP "will be liberal in suggesting endpoints and attacks to be made." Langenbach said that it would. "We would like to choose the best of the approaches suggested in the responses."

Board member Leila Diamond commented that the proposed study includes "a whole spectrum of variables. You say you will accept what you consider the best approach. What would that be?"

"To take human liver cells and combine them with human fibroblast cells and look at mutagens, chromosomal aberrations, DNA synthesis," Langenbach said. "But we don't want to inhibit other good ideas."

Langenbach said he was thinking of contracting

with two laboratories, possibly three, one to do the liver study, the others to look at other cell mediated systems. "The question is, do we want two labs doing the liver studies, or one doing liver and the others doing the other studies. I haven't resolved that yet."

"How many endpoints can one lab do and do well, considering the budget?" Diamond asked.

"Two collaborators can do four endpoints," Langenbach said. "Most labs could easily do three endpoints. In the current contract with rodent cells, they do three to four."

"At the same level of funding?" Board member James Swenberg asked. "Yes," Langenbach answered.

"Funding is hard to predict," Moore said. "We're often surprised, and get an elegant study at a surprisingly modest cost."

"How many compounds?" Board member Alice Whittemore asked.

"I think we could look at a dozen chemicals a year," Langenbach answered.

"How will they be chosen?" Whittemore asked.

"That's a good question," Langenbach said, and suggested that four or five standard compounds, and the known human carcinogens, would be the first, along with NTP chemicals, with the aim of getting specific organ effects.

"What about the problem of genetic variability?" Board consultant Lucille Hurley asked.

"That's one of the things we want to look at," Langenbach said. "We hope to find out how much genetic variability there is in humans. That is one of the findings that could come out of this study."

"Don't you know from epidemiological and clinical observations that there is variability?" Hurley asked.

"Yes, but we don't know how much," Langenbach said.

"The way this is written, it is incredibly open ended," incoming Board member Morton Mendelsohn said. "I don't see how useful it can be. There are at least 20 variables. There is no way you can scratch the surface. The essential issue is to set priorities, determine which should be done first."

"Maybe we should consider the possibility that you don't need cell mediation, that there is a direct action," Diamond said.

"I don't think we have the capability to do that now," Langenbach said. "That may be four to six years down the road."

Board Chairman Norton Nelson summarized that the Board had expressed a desire to have the RFP "spell out more details and the sequence of priorities." The vote to approve the concept was unanimous.

STATUS REPORT ON PANCREATIC LESIONS RELATED TO CORN OIL HEARD BY NTP BSC

An observation by National Toxicology Program scientists in 1981 that proliferative exocrine pancreatic lesions were found at an unusual rate in male F344 rats used in NTP study, and that the higher rate appeared to occur in controls for which corn oil was used as a feeding vehicle, caused NTP to take a close look at that situation. Gary Boorman of NTP presented a status report on that investigation last week to the Program's Board of Scientific Counselors.

"In the summer of 1981 proliferative exocrine pancreatic lesions were found in male F344 rats exposed to benzyl acetate," the report said. "However, these lesions were also present, but at a lower level, in the vehicle controls. Since these pancreatic lesions had been considered rare in F344 rats, a review of pancreata from three vehicle and three untreated controls was instituted. It was found that these lesions were 1) more common than previously reported; 2) mainly restricted to the male rate; and 3) appeared to occur at a higher rate in the corn oil controls.

"A special Pathology Working Group met in February 1982 to review some pancreatic lesions and establish diagnostic criteria. Four distinct lesions including focal cellular alteration, hyperplasia, adenoma, and carcinoma were described for the male rat exocrine pancreas. The latter three lesions appear to be stages of a proliferative process. Using these criteria two pathologists reviewed independently all pancreata from control male rats receiving corn oil vehicle in NTP studies conducted from 1976 through 1982. Each vehicle study was matched with an untreated control study conducted at the same lab during a similar time period. After the review the results were compared; in cases of discrepancies lesions were examined together and a consensus reached.

"The results are shown in Table 1.

Table 1: Proliferative Lesions of the Exocrine Pancreas in the Male F344 Rat

	Number of Rats			
	Total	Hyperplasia	Adenoma	Carcinoma
Vehicle control	1162	134 (11.5%)	50 (4.3%)	2 (0.2%)
Untr. control	1041	27 (2.6%)	9 (0.9%)	0

"The proliferative lesions appeared to be four-five times more common in rats receiving corn oil. However, ther appears to be a marked incidence variability even in studies conducted at the same laboratory (Table 2).

"Since all bioassay studies examined to date were terminated at approximately two years, pancreata from F344 male rats that had been allowed to live out their lifespan were examined (Table 3).

Table 2: Proliferative Lesions of the Exocrine Pancreas–Vehicle Control Male F344 Rats

Laboratory A	Sacrifice Date	Number of Rats Total	Hyper-plasia	Aden-oma	Carcinoma
Expected Incidence (Untreated)		50	1	0.4	0
Bioassay 1	3/80	50	13	2	0
2	11/80	50	13	3	0
3	11/80	48	2	0	0
4	1/81	49	6	3	0
5	3/81	50	6	3	0
6	12/80	50	13	10	1

Table 3: Proliferative Lesions of the Exocrine Pancreas in Aged Male F344 Rats

Group	Number of Rats Total	Hyperplasia	Adenoma	Carcinoma
Aged	437	20 (4.6%)	34 (7.8%)	2 (0.5%)

"The nature or pathogenesis of the pancreatic lesions in the male F344 rats is not known. It appears not to be related to laboratory, batch of corn oil or peroxidase level in the corn oil. The lesions appear to be more frequent in recent studies. The lesions occur spontaneously in rats allowed to complete their lifespan at a similar incidence to that seen in vehicle controls from two year studies. Thus the lesions are not unique to corn oil studies (which are terminated at two years of age). Since pancreatic cancer is common in humans it is important that the nature and significance of this lesion in male F344 rats is studied."

Boorman said he did not know why the lesions appear to have become more common in the last two years. "Maybe it's due to better necropsy, or better sampling procedures. My feeling is that that is probably not the case. We just don't know."

A meeting is planned for May to validate the criteria, explore animal models available and, given existing data, what methods should be pursued next.

"I think corn oil studies are still valid," Boorman said. "Only one out of 25 studies use corn oil as a vehicle."

Board Chairman Norton Nelson, told that use of corn oil increases the percentage of calories from fat from four in the standard diet to 14, said, "That is not trivial."

"Other nutrients are being diluted by 14%," Board consultant Lucille Hurley said. "That may be getting an interaction between nutrients."

Boorman said the rats are fed at night, and receive the corn oil in the morning "on top of the diet," which probably would not result in such an interaction.

Board consultant Jeanne Manson suggested that trichloroethylene used to extract certain materials from the corn oil possibly could be contaminating it. But Boorman said that tests of trichloroethylene at high levels did not show any increase in pancreatic lesions.

"This is a useful analysis," Nelson said. "It clarifies a nagging question. I for one feel we may not have a major disturbance after all."

ALL SIX GROUPS WITH CANCER CONTROL CONTRACTS WIN NEW TWO YEAR AWARDS

All six of the cooperative groups which have had Cooperative Group Cancer Control contracts were awarded new two year contracts, NCI revealed last week. The new contracts will extend the program funded by the Div. of Resources, Centers & Community Activities to support the groups in affiliating with community hospitals to enter their patients onto group protocols.

The six new awards, and estimated two year cost totals are:

Eastern Cooperative Oncology Group, $2,371,491; Childrens Cancer Study Group, $1,238,708; Southwestern Oncology Group, $1,540,250; Northern California Oncology Group, $745,884; Radiation Therapy Oncology Group, $1,053,086; and National Surgical Adjuvant Project for Breast & Bowel Cancers, $1,343,996.

A total of nine groups applied in the recompetition of the contracts, and the other three were approved. However, the three were not funded because the money going to the six existing contractors used up the total that DRCCA had budgeted for the program.

The three groups which were not funded were Pediatric Oncology Group, Gynecologic Oncology Group, and Cancer & Leukemia Group B. DRCCA would have needed about $1.25 million to award those contracts.

Another factor in the decision not to bring additional groups into the program at this time is the uncertain fate of the program at the end of two years. When DRCCA initiated the Community Clinical Oncology Program, some NCI executives and some members of DRCCA's Board of Scientific Counselors felt that CCOP would eventually replace the contracts with the cooperative groups. CCOP was specifically designed to bring patients from community physicians and hospitals into clinical research in large numbers. With cooperative groups, along with clinical cancer centers, serving as research bases for CCOPs, it would appear that the groups would no longer need the cancer control contracts to accomplish the same purpose.

The six groups, all of which had come to depend on the cancer control contracts for a significant portion of their accruals, did not want to see the system disturbed, at least until CCOP was up and working. Some argued that the two programs could coexist, and that some communities and groups would pre-

fer the cancer control program over CCOP.

The DRCCA Board agreed that the contract program should not be terminated until the effectiveness of CCOP can be demonstrated. Most Board members wanted simple extensions of the six contracts, but federal contract procedures required that they be recompeted, thus giving the other groups a shot at it.

Even if the additional money could be found, it is questionable that NCI would invest in any new such ventures now. It required at least two years for the six existing programs to become effective. While the program may well be continued on a permanent basis, NCI decided that if the DRCCA Board does reach that conclusion, the program would have to be recompeted in two years anyway,

NCI ADVISORY GROUP, OTHER CANCER MEETINGS FOR APRIL, MAY, FUTURE

Mechanisms of DNA Replication and Recombination—April 4-9, Keystone, Colo. Organizer is Nicholas Cozzarelli.

4th Congress of the Iberian-Latin American Radiotherapists Group—April 4-8, Buenos Aires. Contact G. Gonzales, CRILA, Billinghurst 1135, 1174 Buenos Aires, Argentina.

American Radium Society 65th Annual Meeting—April 5-9, Hyatt Regency Hotel, Savannah, Ga. Contact Mrs. Salley Polek, Office of the Secretariat, American Radium Society, 925 Chestnust St., Philadelphia, Pa. 19107, phone 215-574-3179.

Conference on Occupational & Environmental Health—April 5-8, Park City, Utah. Contact RMCOEH/C.E., Attn: K. Blosch, Univ. of Utah, Bldg 512, Salt Lake City 84112.

Interagency Collaborative Group on Environmental Carcinogenesis—April 6, NIH Bldg 31 Rm 4. 66th meeting. Contact Dr. Herman Kraybill, phone 301-496-1625.

National Council on Radiation Protection & Measurements—April 6-7, Washington D.C. 19th annual meeting. Contact National Council, 7910 Woodmont Ave., Suite 1016, Bethesda, Md. 20814.

Ninth Annual Symposium on Diagnosis & Treatment of Neoplastic Disorders—Medical, Surgical & Radiotherapeutics Aspects—April 7-8, Johns Hopkins Medical Institutions, Baltimore. Contact Program Coordinator, Continuing Education, Turner Auditorium Rm 22, 720 Rutland Ave., Baltimore, Md. phone 301-955-6046.

Repair of Genomic Damage in Living Organisms—April 7-15, Keystone, Colo.

Workshop on Rabbit Immunogenetics & Immunobiology—April 7-9, Memphis. Contact Dr. Henry Krakauer, NIAID, Westwood Bldg Rm 752, Bethesda, Md. 20205, phone 301-496-5598.

1983 Oncology Update Symposium—April 9, Biltmore Hotel, Los Angeles. Sponsored by Northridge Hospital Medical Center. Contact Sandra Rozzen, 213-885-5311.

Federation of American Societies for Experimental Biology—April 10-15, Chicago. Contact FASEB, 9650 Rockville Pike, Bethesda, Md. 20814.

American Assn. of Pathologists—April 11-14, Chicago. Contact Dana Raitt, phone 301-530-7130.

Role of the Laboratory in the Management of Cancer—April 14, Roswell Park continuing education in oncology.

Clinical Cancer Program Project Review Committee—April 15-16, NIH Bldg 31 Rm 10, open April 15, 8:30-10 a.m.

Second Symposium on Management of Advanced Cancer—April 15-16, Don and Sybil Harrington Cancer Center, Amarillo, Texas. Contact Robert Lange, Dept. of Communications, Don & Sybil Harrington Cancer Center, 1500 Wallace Blvd., Amarillo 79106, phone 806-353-3571.

Industrial Cancer and Its Epidemiology—April 17-23, Southampton, England. Contact Course Dept., British Council, 65 Davies St., London W1Y, 2AA, UK.

President's Cancer Panel—April 18, Northwestern Univ. Medical School Alumni Center, Chicago, 9 a.m. Discussion of peer review and grant award procedures.

Clinical Cytopathology for Pathologists—April 18-19, Johns Hopkins Univ. School of Medicine and Johns Hopkins Hospital, Baltimore. Contact John Frost, MD, 610 Pathology Bldg, Johns Hopkins Hospital, Baltimore 21205.

2nd International TNO Meeting on the Biology of the Interferon System—April 19-22, Rotterdam, Netherlands. Contact D. Velden, Interferon 1983, Primate Centre TNO, POB 5815, 2280 HV Rijkwijk, Netherlands.

American Roentgen Ray Society Annual Meeting—April 19-22, Atlanta, Ga. Contact the Society, Harper-Grace Hospitals Dept. of Radiology, 3990 John R., Detroit, Mich. 49201.

Life, Faith, Hope and Magic—The Chaplaincy in a Children's Cancer Center—April 21-22, Shamrock Hilton Hotel, Houston. Eighth annual Pediatric Mental Health Conference. Contact Jeff Rasco, Office of Conference Services, UTMDA, 6723 Bertner Ave., Houston, Texas 77030, phone 713-792-2222.

OLACC/OSU Cancer Conference—April 22-23, Fawcett Center for Tomorrow, Columbus, Ohio. Sponsored by the Ohio Valley Lake Erie Assn. of Cancer Centers and Ohio State Univ. Program will include sessions on oncogenes and oncogenesis, control of side effects of chemotherapy, and breast cancer. Contact Center for Continuing Medical Education, A352 Starling Loving Hall, 320 W. 10th Ave., Columbus 43210, phone 614-422-4985.

Protein Transport & Secretion—April 23-29, Keystone, Colo. CETUS-UCLA symposium. Organizer is Dale Exender, Univ. of Michigan.

Carcinogenesis, Immunology and Transplantation: Environmental Host Factors—April 25-27, Roswell Park Memorial Institute, Buffalo. Leading scientists and clinicians will present current information on certain aspects of cancer and their interrelationship with transplantation. Contact Dr. Gerald Murphy, Director, RPMI, 666 Elm St., Buffalo, N.Y. 14263, phone 716-845-5770.

Orthopedic Radiology—April 25-28, Boston. Contact Dept. of Continuing Education, Harvard Medical School, 25 Shattuck St., Boston, Mass. 02115, phone 617-732-1525.

Head & Neck Conference—April 26-27, Dayton, Ohio. Annual Nicholas J. Thompson Cancer Update. Contact Mary Fisher, Arrangement Coordinator, Wright State Univ. School of Medicine, Greene Memorial Hospital, 1141 N. Monroe Dr., Xenia, Ohio 45385, phone 513-429-3200, ext. 377.

3rd Breast Cancer Working Conference—April 27-29, Amsterdam. European Organization for Research on Treatment of Cancer. Contact J. Van Dongen, Congress Bureau, Oudesijds Achterburgwal, 199, 1012 DK, Amsterdam, The Netherlands.

Second National Conference on Meeting the Challenge of Cancer Among Minorities—April 28-30, Hyatt Regency Hotel, Memphis. Sponsored by the American Cancer Society. Contact John Jones, ACS, 4 West 35th St., New York 10001, phone 212-736-3030.

13th Annual Radiation Therapy Clinical Research Seminar—April 28-30, Gainesville, Fla. Contact Dr. James Parsons, Radiation Therapy Div., Box J-385, J. Hillis Miller Health Center, Gainesville 32610, phone 904-392-3161.

Society of Surgical Oncology—May 1-4, Denver. Annual Meeting. Contact W. Maloney, SSO, POB 1565, Manchester, Mass. 01944.

Gastroenterological Society of Australia—May 1-4, Perth. Contact T. Bolin, G.E. Soc. of Australia, 145 Macquarie St., Sydney NSW 2000, Australia.

Advanced Course on Clinical Cancer Chemotherapy—May 2-6, Sao Paulo, Brazil. Contact David W. Reed, Asst. to the Director, UICC, 3 rue Conseil-General, 1205 Geneva, Switzerland.

European Study Group for Cell Proliferation—May 4-6, Budapest. 12th meeting. Contact MOTESZ Congress Bureau, POB 32, Budapest, 1361, Hungary.

NCI Div. of Resources, Centers & Community Activities Board of Scientific Counselors—May 5-6, NIH Bldg 31 Rm 6, 8:30 a.m. both days.

Society for Clinical Trials—May 8-11, St. Louis. Fourth annual meeting. Contact Dr. Christian Klimt, Secretary, SCT, 600 Wyndhurst Ave., Baltimore, Md. 21201.

Bat-Sheva Seminar on Tumor Metastasis: Control Mechanisms—May 8-13, Rehovot. Contact Dr. Avraham Raz, Dept. of Cell Biology, Weizmann Institute of Science, POB 26, Rehovot, 76100, Israel.

10th World Congress on the Prevention of Occupational Accidents & Diseases—May 8-13, Ottawa. Includes sessions on occupational carcinogens. Contact Canadian Center for Occupational Health, 500-300 Slater St., Ottawa, Ontario, K1P 6A6, Canada.

Electrophoresis '83—May 9-12, Tokyo. International conference and third annual meeting of the Electrophoresis Society. Contact Secretariat Electrophoresis '83, Dr. Nobuya Hashimot, Dept. of Internal Medicine, Jikei Univ. School of Medicine, 3-25-8, Nishishimbashi, Minato-ku, Tokyo 105, Japan.

8th International Symposium of the Fundacion Argentina de Endocrinologia (FAE)—May 9-13, Buenos Aires. Contact Secretary, Fundacion Argentina de Endocrinologia, Suipacha 1322-2 F, 1011 Buenos Aires, Argentina.

NCI Div. of Cancer Biology & Diagnosis Board of Scientific Counselors—May 12, NIH Bldg 31 Rm 8. Open 1 p.m.-adjournment (closed session 10 a.m.-noon).

Clinical and Basic Aspects of Breast Cancer—May 12, Roswell Park continuing education in oncology.

Unique Aspects of Aging & Cancer: Clinical & Psychosocial Issues—May 13, Red Lion Inn, Sacramento. Focus will be on medical psychosocial, and ethical issues relevant to the management of the elderly cancer patient. For physicians, nurses, physician assistants, social workers, clergy, and other health professionals. Contact Gail Catlin, Administrative Coordinator, Sutter Community Cancer Center, 52nd and F Sts., Sacramento, Calif. 95819, phone 916-454-3460.

National Cancer Advisory Board—May 16-18, NIH Bldg 31 Rm 6, 8:30 a.m. each day. Committee meetings will be announced later.

International Conference on Cancer in the Workplace—May 16-18, Vancouver. Contact Dr. H.F. Stich, Environmental Carcinogenesis Unit, British Columbia Cancer Research Center, 601 W. 10th Ave., Vancouver BC, Canada V5Z 1L3.

Role of Cocarcinogens & Promoters in Human & Experimental Carcinogenesis—May 16-18, Budapest. Sponsored by the Hungarian Cancer Society and International Agency for Research on Cancer. Contact M. Borzsonyi, National Inst. of Hygiene, Gyali ut 2-6, 1966 Budapest, Hungary.

Oncology Nursing Society—May 18-21, Town & Country Hotel, San Diego. Eighth annual meeting. Contact ONS, 701 Washington Rd., Pittsburgh, Pa. 15228, phone 412-344-3899.

Multidisciplinary Course on Bone and Soft Tissue Tumors—May 18-20, Rochester, Minn. Contact William Nietz, Meeting Planner, Mayo Clinic/Mayo Foundation, Rochester, Minn. 55905, phone 507-284-2085.

Modern Management Concepts in Leukemia & Lymphoma—May 19, Roswell Park continuing education in oncology.

Leukemia Update—May 19-21, Contemporary Hotel, Walt Disney World, Lake Buena Vista, Fla. Contact the Leukemia Society of America, Central Florida Chapter, 3101 Maguire Blvd., Suite 252, Orlando 32803.

National Conference on Breast Cancer—May 19-21, Sheraton Hotel, Boston. Sponsored by the American Cancer Society. Contact ACS, 4 West 35th St., New York 10001, phone 212-736-3030.

American Society of Clinical Oncology—May 22-24, Town & Country Hotel, San Diego. Contact Alfred Van Horn, Executive Director, 435 N. Michigan Ave., Suite 1717, Chicago, Ill. 60611.

6th Congress of the European Assn. of Urology—May 23-26, Copenhagen. Contact Spadille Cong. Serv., Sommervej 3, 3100 Hornbaek, Denmark.

Experimental Manipulation of Gene Expression—May 24-25, Stony Brook, N.Y. Contact Stony Brook Symposium, Dept. of Biochemistry, SUNY, Stony Brook, N.Y. 11794.

European Nuclear Medicine Society—May 24-27, Brussels. Contact P. Blockx, Brussels Jut' P. Trade Fair, Parc Des Expositions, 1020 Brussels, Belgium.

American Assn. for Cancer Research—May 25-28, Town & Country Hotel, San Diego. Contact Margaret Foti, AACR, Temple Univ. Medical School, Student-Faculty Center LB-41, Philadelphia, Pa. 19140.

RNA Tumor Virus—May 25-29, Cold Spring Harbor, N.Y. Contact Cold Spring Harbor Lab., New York 11724.

American Assn. for the Advancement of Science—May 26-31, Detroit. Contact Joan Wrather, AAAS Meetings Office, 1101 Vermont Ave., Washington D.C. 20005, phone 202-467-5441.

International Congress of Colon Cancer—May 26-28, Rotterdam. Contact Congress Secretariat, Comprehensive Cancer Center (IKR), POB 1738, 3000 DR Rotterdam, The Netherlands.

FUTURE MEETINGS

Nutrition & Cancer—June 8, Biltmore Hotel, Los Angeles. Sponsored by the Hospital of the Good Samaritan. Contact Bonnie VanWaardenburg, Hospital of the Good Samaritan, 616 S. Witmer St., Los Angeles, Calif. 90017, phone 213-977-2345.

Fourth International Conference on the Adjuvant Therapy of Cancer—March 21-24, 1984. Tucson Convention Center, Arizona. Sponsored by the Univ. of Arizona Cancer Center, Stephen Jones and Sydney Salmon, cochairmen. Deadline for submission of abstracts (prepared in the format of AACR/ASCO) is Nov. 1, 1983. Contact Mary Humphrey, Conference Coordinator, Univ. of Arizona Cancer Center, Tucson 85724, phone 602-626-6044.

The Cancer Letter _Editor Jerry D. Boyd

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