THE CANCER LETTER
RESEARCH EDUCATION CONTROL

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P.O. BOX 2370 RESTON, VIRGINIA TELEPHONE 703-620-4646

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NCI MAKES ITS PITCH TO OMB FOR ITS FIRST BILLION DOLLAR BUDGET; RESEARCH AREAS LISTED BY PRIORITY

NCI fired its opening salvo in the 1979 fiscal year budget battle with a letter from Director Arthur Upton to the Office of Management & Budget director (whoever that may be) presenting the institute's case for its first billion-dollar budget.

"The 1979 budget request has been carefully reviewed and endorsed by the President's Cancer Panel and the National Cancer Advisory Board," Upton wrote. "We are requesting $1.036 billion." He pointed out this was $168,864,000 over the amount appropriated by Congress for fiscal 1978.

Upton tackled head on the complaint of critics who contend that

(Continued to page 2)

In Brief

WEISSMAN HEADS DCBD BOARD; EXTRA MONEY FOR GRANTS LIFTS FUNDING LEVEL TO 35%

SHERMAN WEISSMAN, professor of molecular biophysics and biochemistry at Yale, is the new chairman of the Board of Scientific Counselors for NCI's Div. of Cancer Biology & Diagnosis. He replaces Arthur Upton, who received a better offer. . . . **$1 MILLION** addition to FY 1977 traditional research grants from the NCI director's reserve fund (*The Cancer Letter*, Sept. 23) lifted the number of approved RO1s to about 35%. . . . **COURT INJUNCTION** obtained by a resident of Frederick, Md., is holding up development of a facility for recombinant DNA research at the Frederick Cancer Research Center. The facility will be funded jointly by NCI and NIH, if the legal hurdle can be overcome. . . . **ROY DAGNALL**, director of the Huntingdon Research Centre in England, has joined Hazleton Laboratories America as director of research. . . . **CONFERENCES COMING** up: "Recent Advances in Cancer Management," Nov. 7-8, Williamsburg, Va., sponsored by ACS-Virginia Div., Medical College of Virginia, Univ. of Virginia and Eastern Virginia Medical School. Includes sessions on malignant melanoma, carcinoma of the lung and colorectal cancer. Contact MCV/VCU Cancer Center, MCV Station, Box 37, Richmond, Va. 23298. Also, "Immunotherapy of Human Cancer," M.D. Anderson's 22nd annual clinical conference, Nov. 9-11, Houston. Contact Clinical Conference Registration, M.D. Anderson, Texas Medical Center, Houston 77030. And, "Hospice and Continuing Care at Home," regional meeting sponsored by Assn. of Community Cancer Centers and ACS-Michigan Div., Dec. 1-2, Detroit. Contact David English, ACCC Regional Meeting, Michigan Cancer Foundation, 110 E. Warren, Detroit 48401, or call Abe Brickner at MCF, 313-833-0710. . . . **GALE KATTERHAGEN**, ACCC president, and legislative committee chairman Lee Mortenson were on Capitol Hill this week presenting their case to congressional staffs on renewal of the National Cancer Act.

UPTON TELLS OMB PROGRESS DEPENDS ON ADEQUATE BASIC RESEARCH SUPPORT

(Continued from page 1)

NCI is not as concerned as it should be with prevention. "In terms of strategy for fighting cancer, clearly the best approach is to achieve maximum prevention. . . . Ultimately, prevention is the most effective approach to the control of cancer or any other disease. . . . From the standpoint of scientific study, the problem is imminent and extremely complicated; there are an almost incalculable number and variety of environmental factors, both naturally occurring and introduced by man, acting alone or in limitless combinations and over different periods of time. Nevertheless, research has been conducted and progress has been made."

Upton said that "opportunities for making major advances in cancer treatment have never been greater or more exciting. Treatment research and its application is contributing to a reduction in cancer mortality in individuals under the age of 35 and for the first time, according to 1976 figures, in all age groups under the age of 75. This is a major contribution and represents application of principles learned from the rarer types of cancer to the more common types that affect a large number of Americans."

But continued progress depends on adequate support of basic research, Upton pointed out. "Underlying the needs in prevention and treatment is a general requirement for increased understanding of the basic biology of cancer. For this reason it is basic research in cancer biology which receives our highest priority in this budget request. Increased understanding of the fundamental molecular, cellular and organic changes accompanying the many diseases we call cancer is essential to both effective prevention and effective treatment.

"We must reiterate that although results from the nation's major allocation of resources to NCI may appear to be slow in coming, results are accruing. It may take as long as 20-40 years for a given cancer to develop following its initial causation in a given individual. Similarly, it takes at least five years after a given treatment regimen before there is any certainty of its long term effectiveness."

Upton told OMB that "Congress and the President reaffirmed in 1977 the high priority initially given to the National Cancer Program in 1971 by extending and strengthening its authorizing legislation. This priority attention has been accorded NCI for six years now, and it is not surprising that questions are being raised in some quarters about how well the institute has acquitted itself in managing this period of rapid growth and change. The budget request for 1979 reflects careful and serious evaluation of this matter. Your attention is drawn to several of the more important issues with which this budget deals.

"First, it is important to recognize that the budget for NCI represents only a portion of expenditures for the National Cancer Program. As defined in authorizing legislation, the NCP encompasses 'the programs of the National Cancer Institute; related programs of the other research institutes of NIH, and other federal and non-federal programs.' In practice this means that the NCI budget has significant multiplier effect in directing the national resources to the resolution of the problems of cancer. In accord with the traditional practices of NIH, most of our funds are allocated to grants and contracts for work to be performed outside the federal government. Thus, essential work is done without adding to the federal workforce. Indeed, the NCI budget increased 329% between 1970 and 1977, but its staff has grown only 42%. Furthermore, federal cancer emphasis has stimulated significant increased attention by voluntary and other public agencies to cancer. Our budget proposal takes account of this benefit and is intended to further amplify it.

"Second, the wisdom of the Congress in providing a specific separate authorization for cancer control programs is again acknowledged in our request. Observers of biomedical research have recently expressed concern that the fruits of research are most beneficial when they are reflected in new patterns of health care delivery. It should be emphasized that NCI seeks no responsibility for the direct delivery of services to patients. Rather, its control program is oriented to the identification of research results most ready for inclusion in the armamentarium of practicing physicians and to the demonstration, transfer and education required to achieve that end. Without the mandate to address this—expressed through separate authorization and appropriation—the temptation would be great to allocate more funds to basic research, where so much more needs to be done."

Upton pointed out that the budget had been prepared using the techniques and formats prescribed by the Carter Administration for zero base budgeting, which the President is demanding of every federal agency. ZBB requires agencies to list each program area, the estimated cost of each, list them by priority, and explain briefly the justification for each one.

"Although we believe that these techniques pose special problems in developing any budget largely oriented to the conduct of basic research," Upton said, "we have found them to be very useful in helping us to set priorities among the many essential activities we must undertake. Despite the fact that we conducted training courses in ZBB for our staff, we believe our attempt to use these new techniques is far from perfect. Next year's presentation will be vastly superior, based on what we have learned in preparing the 1979 budget."

NCI TELLS WHAT RESEARCH AREAS WILL, WILL NOT BE FUNDED AT CERTAIN LEVELS

HEW Secretary Joseph Califano, Sen. William Proxmire and Rep. David Obey have been quoted in national publications recently as saying that the Cancer Program is getting all the money it needs. "Congress is appropriating more money for cancer than NCI can spend intelligently and effectively," Califano said. Proxmire said that NCI is extravagant. "They fund practically everything out there. You don't have the kind of discrimination that you have in agencies with a limited amount of money. I get the feeling that they will go along with almost any proposal that sounds halfway plausible," Proxmire said.

The fact that only 35% of the approved individual investigator initiated research grants were funded in FY 1977 shows how inaccurate such statements are. That means that 65% of the grants which respected scientists determined were worthy of support went unfunded. Few will say that all approved grants ought to be funded, but NCI and its advisors have felt that at least half should be permitted to proceed.

"There's some awfully good science going without support in that 15-20% immediately below the cutoff," one NCI executive said. "How much are we going to miss? How long will this delay progress in certain areas?"

NCI programs supported by other mechanisms—centers, cancer control, immunology, virology, carcinogenesis, the organ site task forces, treatment—all can offer their own lists of high priority, badly needed projects that are not even coming close to getting more money than can be spent "intelligently."

The HEW secretary and the two Wisconsin legislators should take a look at the 1979 zero base budget in which NCI listed 129 project areas, or "decision packages" as they are called in the presentation, ranked in order of priority at 129 budget levels, from $54,811,000 to $1,036,000.

A point to start in determining which research probably will not be funded if NCI does not receive a substantial increase is $900 million. NCI received $867 million for FY 1978 (or will if the appropriation bill is ever completed), and $900 million would represent the type of token increase OMB has worked into the President's budget in recent years.

Here are some of the "decision packages" that will not be supported if NCI gets $900 million or less in the 1979 fiscal year:

BIOLOGY – $1.9 million

This decision package emphasizes study in the areas of carcinogenesis, viral oncology and tumor biology. Short term objectives—initiate efforts to selectively alter enzyme activities characteristically associated with the metabolism of chemical carcinogens; develop a prostatic cancer model hormonally responsive and biologically similar to human prostatic cancer; further explore the possibility of achieving some degree of targeting of carriers of drugs and metabolites introduced into cultured cells; continue mathematical modelling of metabolic systems, especially endocrine systems; continue work on the characterization of the pathogenesis (production and development) of hepatic fibrosis and the development of angiosarcomas in the liver of workers exposed to vinyl chloride; attempt to identify molecules that activate genes and determine the structure of regulatory regions of genes; concentrate on development of an assay for genetic damage to mammary gland cells.

Impact on major objectives—With funds available for this increment the preparation and analysis of cell surface protein function would continue, aiding in some of the molecular biological research. Additional animals would become available, assuring intramural investigators necessary resources for their work. It would, at this level, be feasible to proceed with laboratory investigations in basic immunobiology, histopathological (relating to abnormalities of the minute structure of tissues) aspects of the immune response, host factors related to tumor regression, molecular genetics, and metastasis. This increment would allow the utilization of unique National Bureau of Standards computer sciences needed for complex mathematical modelling of biological processes. This level of funding is necessary in order to carry out anticipated expansion of basic research in the field of carcinogenesis.

Bits of spleen—from the subject animal or from other animals—implated into splenectomized leukemic mice prolonged their lives and in a few instances cures resulted. These unexpected results demonstrate that the malignant process can be altered at a relatively late stage in the disease and suggest a novel approach to reversing an established malignancy. Without funding of this increment, further research here would be hampered.

Non-funding of this increment would delay the terminal phases of a dermatological project now going on to test chemotherapeutic agents for typical application effectiveness against skin cancer. It would also delay the study of cell surface proteins, as they would have to compete for funds with other on-going projects.

CAUSE & PREVENTION – $2.4 million

The present rate of testing chemicals for carcinogenicity will be expanded by approximately 20 new chemicals bringing the total to about 85 new chemicals put on test in 1979. Emphasis is on epidemiologic and dietary surveys, studies of under- and overnutrition, and testing of dietary modification in experimental animal systems. A study would be made of the relationship of genetic background to cancer experience and the effects of the immune system stimulation and depression on human cancer susceptibility.

Short-term objectives—To increase the scope of

bioassay testing which would result in increasing the capability of identifying possible hazardous compounds at a faster rate than at present; initiate studies on mechanisms of action involved in the inhibition of chemical carcinogenesis by antioxidants and similiarly acting substances present in some foods; support studies such as biologic characterization of genetically susceptible and normal individuals; investigate factors associated with unusually low risk of cancer.

Impact on major objectives—These new studies would help in understanding the benefits which may accrue from minimizing exposures to known risk factors and may help in sorting out competing risks to which large numbers of people in some areas of the United States are exposed.

A lesser funding level would essentially preclude the potential development of understanding basic to the achievement of protection against exposure to environmental carcinogens, not now available.

CANCER CONTROL (Prevention) – $1.3 million

Education and training activities for both health professionals and non-professionals will be developed to effect more efficient utilization of existing personnel, improve personnel competence and to increase understanding on the part of health professionals and the public about current cancer prevention methods and techniques.

Short-term objectives—Initiate new projects for the planning of model cancer control prevention education programs under the auspices of state health departments and/or community health agencies. This program is intended to make individuals aware of their individual risk profiles and to emphasize cancer prevention techniques. This is important because it tests the theory that it will be easier to convince individuals to utilize cancer prevention methods and techniques if they are more acutely aware of their personal probability of contracting the disease.

Initiate an interagency agreement with the Bureau of Radiological Health to provide dosimetry monitoring and radiation physics consultation to gynecological projects. This is important because present projects with this agency have demonstrated the benefits to the patient of dosimetry monitoring, training for professionals in quality assurance procedures and development and field patient exposure and improvement of image quality. This would expand its usefulness to those involved in gynecological cancer diagnosis and treatment.

These projects are intended to develop and test a concept in cancer prevention initiated in five geogrpahically separated areas and will be limited demonstration models. If this were not funded, the health community could not plan programs to begin to investigate the feasibility of one concept of cancer prevention. If the interagency agreement is not funded, the benefits of dosimetry review and consultation and education in radiation physics presently available to over 200 community hospitals participating in various cancer treatment networks would not be extended to other cancer programs.

TREATMENT – $3.7 million

Funding of this increment will provide additional support through the grant mechanism to the Clinical Cooperative Groups which are a major resource for the clinical and preclinical evaluation of new drugs and drug combinations.

Short-term objectives—Provide additional funding for selected Type 2 (competing renewal) grants to the Clinical Cooperative Groups for clinical evaluation of new drugs and drug combinations; initiate a search for radioprotectors that selectively protect normal tissues exposed to radiation in the treatment of malignancy; fund priority projects through grant support in high LET (Linear Energy Transfer) therapy research.

Impact on major objectives—Ongoing studies through clinical trials should result in an increased cure rate in malignancies such as those being studied in Clinical Cooperative Groups if funding is provided at this level. New initiatives can be expected to develop important radioprotectors through funding of this increment. This level of funding would allow the evaluation of ongoing clinical trials to determine new areas of direction.

Without this increment of funds there would be a delay in the development of safer, more effective radiotherapy and drug therapy. Lack of additional resources would reduce patient entry into important clinical trials and thereby require more time to answer critically important questions as to the best treatment methods.

DETECTION & DIAGNOSIS – $677,000

A multiplicity of diagnostic methods could be studied, ranging from those on the molecular level through discrete cells, to in situ lesions and small tumors. Chemical studies would include investigation of hormones, proteins, and enzymes. Diagnostic programs which are specific for single organs or tissues would include those for breast, lung, cervix, pancreas and brain.

Short-term objectives—Search for chemical tumor markers, particularly those isoenzymes and isoproteins which are specific for neoplastic tissue; evaluate retrospectively risk associated with in situ carcinoma and with "precancerous mammary hyperplasia"; determine the frequency of subsequent metastatic spread in breast cancer in patients with "early" invasive carcinoma in order to evaluate the success of various treatment methods.

Without this funding, extension of the search for markers would be limited to studies initiated by other funding mechanism and routine evaluations of old markers, blocking the search for innovative ideas. Research into certain diagnostic methods would have to be eliminated.

CANCER CENTERS SUPPORT – $1.2 million

Funds will be provided to minimally expand the centers support activity.

Short-term objectives–Fund one additional core grant for a total of 65, and to further strengthen and expand some of the existing centers; fund two new exploratory projects for a total of six.

Impact on major objectives–This level will begin to provide some expansion of NCI's Cancer Centers Program over the current level.

This funding increment will still only provide benefits to approximately 47% of the population in need. Non-funding this level will retard the progress of existing and newly developing centers.

No substantial increase in support for research manpower development is listed until the overall NCI level of $944 million is reached. At that level, a decision package totalling $657,000 would be added to this area (for a total of $36.9 million in research manpower development). This would permit "a slight expansion of the National Research Service Awards program involving additional institutional and individual fellowships and a moderate increase in the Research Career Program for young investigators in the areas of carcinogenesis, epidemiology and tumor biology."

The last decision package, which brings the NCI total to $1.036 billion, is $3 million for cancer centers support (a total of $79.1 million for centers). It would provide funds to the remaining existing centers to further enhance the scope and effectiveness of their multidisciplinary programs and services of detection, diagnosis and treatment; initiate two new exploratory projects for a total of 15; and support establishment of three new clinical cancer patient data systems for a total of 27.

TREATMENT RESEARCH – $5.6 million

Resource increases to this level of funding will provide additional impetus to preclinical and clinical treatment research through Cancer Research Emphasis Grants and other grants and contracts.

Short-term objectives–Expand the contract for work embodying the use of liposomes for encapsulation of an antitumor drug to alter the distribution and increase the effective concentration of the drug at the target tumor site; initiate investigations to evaluate other methods of target-site-specific delivery systems; expand the drug synthesis center presently supported under the CREG mechanism; initiate additional research efforts in the clinical treatment area through grant support to both the individual investigators and to well trained teams of investigators; continue expansion of clinical trials to include sizeable studies in bladder cancer and pediatric tumors.

Impact on major objectives–Added resources would allow the expansion into new research areas such as immunostimulants, and expansion in target-site delivery systems, natural product screening, and human tumor xenographs. Further drug service information support would be provided. This support is designed as an expansion of current support for FDA related activities.

Non-funding the expanded effort in natural products and experimental tumor studies would decrease potential for discovering new drugs and better methods for evaluating drugs. Clinical trials in bladder and pediatric tumors have been in existence only a relatively short time, but show great promise. Non-funding this increment would limit the accrual of greater numbers of patients needed to facilitate more rapid and more reliable evaluation of the treatment regimens.

NCI GRANT, CONTRACT AWARDS HELD UP BY IMPASSE ON 1978 APPROPRIATION BILL

NCI and all other HEW agencies have been ordered to refrain from making any new grant and contract awards until Congress enacts an appropriation bill for the 1978 fiscal year, which began Oct. 1.

The House and Senate are still hung up over the abortion issue, with the Senate insisting on a more relaxed version of the provision covering medicaid payments for abortions. The House has repeatedly rejected the Senate plan, but was scheduled to vote again on it late this week.

Meanwhile, NCI is blocked from making any payments to grantees and contractors with funds that would have to come from 1978 appropriations, including noncompetitive grant renewals and contracts funded in FY 1977 or previously on an incremental basis. Payments for the first year of grants and contracts awarded by Sept. 30 will be made, since they will come from 1977 appropriations.

There may be some exceptions, possibly to meet emergency situations and to purchase housekeeping supplies at NIH.

NCI does not expect the cutoff will affect too many existing contracts and grants, unless the impasse continues through the end of the month. Few if any grant renewals will come up this month. And contractors generally invoice for the previous month's activities–the September invoices now coming in can be paid. The crunch will come if there is no money when the October invoices arrive in November.

NCI's 2,000 staff members, and all other employees of HEW and the Dept. of Labor (whose funds are included with HEW in appropriations bill) will feel the pinch worse than anyone. Their next paycheck, Oct. 18, will cover only the last week in September, instead of the normal two week pay period.

Hale Champion, HEW undersecretary, said in a memo to agency employees that they are expected

to continue working "in full anticipation" they will eventually be paid.

HEW also is trying to cut back on travel during this period, but is permitting some on a case by case basis, "but the basic policy of the department will be to continue to carry out its basic functions without interruption," Champion said.

The meeting scheduled this week of the President's Cancer Panel was canceled as a result of the cutback. The Div. of Cancer Treatment meeting of its contractors, scheduled for Lancaster, Pa., also was canceled. All other NCI meetings scheduled will go on as planned. Grant review site visits also were not affected.

Contract Awards

RETINOID DEVELOPMENT ACCOUNTS FOR $3.3 MILLION OVER THREE YEARS

Ten contracts totaling $3.3 million over three years have been awarded by NCI in the effort to develop vitamin A retinoids as a pharmacological approach in cancer prevention.

"We were very pleased with the response to the RFPs and feel that we have some very good people doing the chemistry and biology that is required," said Michael Sporn, chief of the Lung Cancer Branch in NCI's Div. of Cancer Cause & Prevention. "For the first time, we have the participation of the university and research institute communities involved in research on the chemical synthesis of retinoids." (See Contract Awards below.)

Three of the contracts are for long term animal studies on the pharmacology and toxicology of using retinoids to prevent cancer. The American Health Foundation will study its effects on colon cancer, IITRI breast cancer and Univ. of Wisconsin bladder cancer.

NCI at present does not support any clinical trials; however, the National Bladder Cancer Project Collaborative Group A is considering such a study.

Preliminary work by Sporn and his colleagues has indicated that vitamin A retinoids may prevent or help prevent epithelial cancers, which are responsible for two thirds to three fourths of all human cancer deaths. These cancers include lung, bladder, breast, colon, esophagus, pancreas, uterus, prostate, testes—all organs the surface of which is lined with epithelial cells, which depend on vitamin A for cell differentiation.

Vitamin A itself it not useful, since it would be required in doses toxic to humans, and would not reach the major target organs. Sporn and others are convinced that retinoids can be developed which are not toxic and do reach the target areas.

Announcements of the end of the fiscal year contract awards poured out of NCI this week as the institute pushed to spend (obligate) all its FY 1977 money before the Sept. 30 deadline. They were:

Title: Characterization of antigen-binding T-cell receptors
Contractors: Univ. of Chicago, $72,523; and Univ. of California (San Francisco), $70,773.

Title: Plasmatherapy of mouse tumors
Contractors: Sidney Farber Cancer Institute, $114,007, and Sloan-Kettering Institute, $113,504.

Title: Studies of metabolic capacity in intestinal mucosa
Contractors: Sloan-Kettering Institute, $276,607; American Health Foundation, $303,818; and New York Medical College, $252,376.

Title: Long-term studies of prevention of epithelial cancer by retinoids
Contractors: American Health Foundation, $433,926; IIT Research Institute, $360,470; and Univ. of Wisconsin (Madison), $488,000.

Title: Synthesis of new retinoids for in vitro studies of prevention of lung cancer and other epithelial cancers
Contractors: Univ. of Houston, $214,593; Univ. of Hawaii, $124,508; Columbia Univ., $248,034; Research Triangle Institute, $349,675; and Stanford Research Institute, $417,825.

Title: Synthesis of radioactive retinoids for metabolic and pharmacologic studies related to prevention of lung cancer and other epithelial cancers
Contractors: Stanford Research Institute, $318,229; and New England Nuclear Corp., $316,410.

Title: Studies of carcinogenesis in human tissues
Contractors: Univ. of Maryland (Baltimore), $111,042; Univ. of North Carolina, $371,527; Univ. of Kentucky, $358,634; and Middlesex Hospital Medical School, London, England, $293,588.

Title: Use of physico-chemical parameters in obtaining structure activity relationships with potentially cancer related endpoints
Contractors: Stanford Research Institute, $101,153; and Johns Hopkins Univ., $81,009.

Title: Studies on polycyclic hydrocarbon metabolism in the respiratory tract
Contractor: Univ. of Minnesota (St. Paul), $226,215.

Title: Development of the European hamster as an animal model for pancreatic carcinogenesis
Contractor: Medizinische Hochschule, $324,395.

Title: Incorporation of an additional alternation/-renovation project at Frederick Cancer Research Center
Contractor: Litton Bionetics, $723,160.

Title: Collection of serial serum samples from cancer patients
Contractor: Sloan-Kettering Institute, $88,530.

Title: Immunotherapy of mouse ovarian cancer using specific serotherapy in combination with intraperitoneal C. parvum
Contractor: Univ. of Chicago, $71,126.

Title: Intratumoral BCG immunotherapy prior to surgery for carcinoma of the lung
Contractor: Yale Univ., $62,835.

Title: Immunization with BCG and allogeneic renal cancer cells in patients with renal cell cancer
Contractor: Sloan-Kettering Institute, $110,192.

Title: Genetic control of susceptibility to cancer
Contractor: Univ. of North Carolina, $70,480.

Title: Culture of long term tumor-specific cytotoxic lymphocytes for use in the treatment of mouse leukemia
Contractor: Dartmouth College, $91,196.

Title: Development and maintenance of new congenic mouse strains
Contractor: Jackson Laboratory, $44,895.

Title: Genetic control of susceptibility to tumors
Contractor: Jackson Laboratory, $144,622.

Title: Development of ultrasonic endoscopic probes to be inserted through endoscopes for use in cancer diagnosis
Contractor: SRI International, $209,401.

Title: Application of digital image processing techniques to cytology automation
Contractor: NASA/Jet Propulsion Laboratory, $400,854.

Title: Development of large area solid state image receptors
Contractor: General Electric Co., $324,300.

Title: Development of methods of bowel preparation preparatory to barium enema or colonoscopy, continuation
Contractor: American College of Radiology, $42,394.

Title: Development of large area solid state image receptors for x-ray imaging
Contractor: Xerox Corp., Pasadena, Calif., $423,300.

Title: Study structure and distribution of integrated sequences of feline oncornaviruses
Contractor: Sloan-Kettering Institute, $403,280.

Title: Study integration sites of sarc gene of Moloney Murine leukemia virus
Contractor: Yale Univ., $67,060.

Title: Biochemical mapping of the integration site of SV-40.
Contractor: New York State Dept. of Health, $79,110.

Title: Preparation of Carcinogenesis Abstracts, Volumes No. 15, 16 and 17
Contractor: Franklin Institute, $521,519.

Title: Studies of colon carcinogenesis in organ culture of intestinal mucosa
Contractor: American Health Foundation, $276,160.

Title: Study of innovative techniques to facilitate passage of colonoscope to the cecum
Contractor: Northwestern Univ., $119,671.

Title: Diagnostic application of monocyte function in cancer
Contractor: Duke Univ., $79,116.

Title: In vitro augmentation of cell mediated cytotoxicity
Contractor: Sloan-Kettering Institute, $86,954.

Title: Immunoprevention of spontaneous mammary tumors
Contractor: Institute for Medical Research, Camden, N.J., $63,225.

Title: Cryopreservation of human monocytes for use in immunologic studies
Contractor: Univ. of Florida, $87,267.

Title: Purification of breast tumor associated antigens
Contractor: Vanderbilt School of Medicine, $100,356.

Title: Collection of serial serum samples from cancer patients
Contractor: Univ. of Colorado Medical Center, $30,478.

Title: Detect circulating antigen-antibody complexes, continuation
Contractor: Washington State Univ., $46,633.

Title: Immunoprophylaxis of "cancer eye" in cattle
Contractor: Utah State Univ., $288,385.

Title: Detection of tumor specific antigens in the circulation
Contractor: Univ. of Nottingham, England, $46,424.

Title: Hybridization techniques to obtain functional T-cells
Contractor: Farber Cancer Center, $276,433.

Title: Clinical application of assays for tumor associated antigens
Contractor: Northwestern Univ., $62,338.

Title: Cell surface immunobiology of metastatic tumors
Contractor: Univ. of California (Irvine), $329,622.

Title: Immunoprevention of tumors in rabbits
Contractor: Pennsylvania State Univ. (Hershey), $92,299.

Title: Biologic studies of solubilized tumor antigens, continuation
Contractor: Litton Bionetics, $246,268.

Title: Incorporation of six additional alternation/-renovation projects at Frederick Cancer Research Center
Contractor: Litton Bionetics, $356,533.

Title: Studies of the Mareks disease herpesvirus, continuation
Contractor: Life Sciences Inc., $42,845.

Title: Conduct EPA/NCI special skin cancer epidemiology study
Contractor: Westat Inc., $179,889.

Title: Study integration sites of papovirus genomes in transformed cells
Contractor: Univ. of Illinois (Chicago), $97,971.

Title: Study cellular transformation by HSV-2
Contractor: Johns Hopkins Univ., $346,170.

Title: Isolation, identification and culture of epithelial cell types from colon of the rat
Contractor: Southern Research Institute, $289,907.

Title: Isolation, identification and culture of epithelial cell types from bronchus, pancreatic duct and colon experimental animals
Contractor: Univ. of Maryland, $145,296.

Title: Retroaldol type fragmentation of B-hydroxy-nitrosamines which may be environmental carcinogenesis
Contractor: Univ. of Missouri (Columbia), $60,996.

Title: Study on oncogenesis and other late effects of cancer therapy
Contractor: Children's Hospital of Philadelphia, $263,998.

Title: Demonstration of cancer rehabilitation facilities and/or departments, renewal
Contractor: Howard Univ., +355,743.

Title: Mammography training program, renewal
Contractor: Univ. of Texas System Cancer Center, $88,979.

Title: Cervical cancer screening program, renewal
Contractor: Utah State Div. of Health, $333,846.

Title: Statistical coordinating center, continuation
Contractor: Univ. of Texas System Cancer Center, $305,532.

Title: Implementation of the hospice concept for the care of terminal cancer patients
Contractor: Riverside Hospital, Boonton, N.J., $1,511,421.

Title: Serologic assays with purified melanoma associated antigens
Contractor: Sloan-Kettering Institute, $58,640.

Title: Intrapleural BCG after primary surgery for lung cancer
Contractor: Albany Medical College, $120,972.

Title: Effect of dietary protein type and level on carcinogenesis
Contractor: Univ. of Illinois, $819,063.

Title: The psychological aspects of breast cancer
Contractors: Peter Bent Brigham Hospital, $165,449; Midwest Research Institute, $306,221; Stanford Research Institute, $67,440; and West Coast Cancer Foundation, $183,240.

RFPs AVAILABLE

Requests for proposal described here pertain to contracts planned for award by the National Cancer Institute, unless otherwise noted. Write to the Contracting Officer or Contract Specialist for copies of the RFP, citing the RFP number. Some listings will show the phone number of the Contract Specialist, who will respond to questions. Listings identify the respective sections of the Research Contracts Branch which are issuing the RFPs. Their addresses, all followed by NIH, Bethesda, Md. 20014, are:
Biology & Diagnosis Section — Landow Building
Viral Oncology & Field Studies Section — Landow Building
Control & Rehabilitation Section — Blair Building
Carcinogenesis Section — Blair Building
Treatment Section — Blair Building
Office of the Director Section — Blair Building
Deadline date shown for each listing is the final day for receipt of the completed proposal unless otherwise indicated.

RFP ECI-SHP-77-131

Title: *Nicotine titration (accommodation) in cigarette smokers*
Deadline: *Dec. 1*

The Smoking & Health Program plans to investigate the role of changing cigarette type (different nicotine and/or carbon monoxide output) on the quantity of cigarettes used and parallel changes of specific physiological parameters (e.g., serum catimine and carboxyhemaglobin). This study is a documentation of behavioral characteristics and several physiological markers and not a study to modify the patterns of a smoker. The project will have a period of performance of six months.

Enviro Control Inc. is working under Prime Contract NO1-CP-55666 with NCI. This study is a documentation of behavioral characteristics and several physiological markers and not a study to modify the patterns of a smoker.

Enviro Control Inc.
One Central Plaza
Rockville, Md. 20852
Attn: J. Gardner

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