THE CANCER LETTER
RESEARCH EDUCATION CONTROL

Vol. 3 No. 40
Oct. 7, 1977

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Subscription $100 per year

NCI PLANS CONTRACT TO STUDY CANCER RESEARCH MANPOWER NEEDS; EPIDEMIOLOGISTS STATE THEIR CASE

NCI's Research Manpower Branch is working on plans for a study on manpower needs of the Cancer Program in an effort to help determine which disciplines should be emphasized in the institute's training programs. The study will be funded by contract, and an RFP is being developed. (Continued to page 2)

In Brief

LITTON BIONETICS' NEW CONTRACT FOR OPERATION OF FCRC TOTALS $128.8 MILLION FOR FIVE YEARS

NEW CONTRACT awarded by NCI to Litton Bionetics for operation of Frederick Cancer Research Center totals $128.8 million for five years. NCI spent $100.9 million through the contract for the first five years, which closed out the end of September. The first year of the contract calls for expenditures of $23.3 million, which includes $1 million available for LB's award. During the first five years, the firm received an average of between 70-80% of the amount available in the award. LB also will receive a fixed fee of $429,950 in 1978, which is paid on the basic research portion of the contract. Breakdown by program for the first year of the new contract: viral oncology, $7.9 million; carcinogenesis, $4.7 million; animal resources, $2.8 million; basic research, $3.3 million; environmental control, $620,859; cancer treatment, $3.6 million; special histopathology, $58,299; and support for the National Institute of Neurological & Communicative Disorders & Stroke, $270,746 (not NCI money). . . . **XIITH INTERNATIONAL** Cancer Congress in Buenos Aires, Oct. 5-11, 1978, reportedly is attracting considerable interest among U.S. scientists. Deadline for receipt of papers is next Jan. 31; deadline for registration at the $150 fee is Dec. 31, with the fee then going up to $200. Brochures, registration forms and information regarding special flights are available from Charles Sherman Jr., editor of the *Newsletter of the American Federation of Clinical Oncologic Societies,* Univ. of Rochester Medical Center, 601 Elmwood Ave., Rochester, N.Y. 14642. . . . **THE $10 MILLION** increase for research contracts in NCI's FY 1978 budget will be scrutinized by Director Arthur Upton before he makes final allocations. The percentage of the total budget going into contracts has been declining, but NCI is under pressure to cut down further in order to put more money into grants. . . . **DAVID OBEY** is picking on someone besides NCI. The Wisconsin congressman blasted the Office of Management & Budget for "severely hampering basic medical research which is crucial to the fight against cancer, heart disease, birth defects and other deadly diseases" for cutting the staffs and budgets of the National Institute for Environmental Health Sciences and the National Institute for Occupational Safety & Health. Obey's remarks were included in a speech he made at Wichita State Univ.

NCI FUNDS ONLY FIVE NEW INSTITUTIONAL FELLOWSHIPS IN '77; 135 LEFT UNFUNDED

(Continued from page 1)

"It is essential that we take an overall look at research manpower needs," Barney Lepovetsky, chief of the branch, told *The Cancer Letter.* "We're training people now for research that will be done five or 10 years down the line. We have to develop some means of assessing what the needs will be five or 10 years from now."

When Congress passed the National Research Service Act as a replacement for the training grant and fellowship programs which the Nixon Administration killed, it decreed that the National Academy of Sciences would do a study on research manpower needs. Two reports from that study have been made "which simply indicate how complex the problem is," Lepovetsky said. A third is due in the near future.

The best NCI has been able to do in its announcements relating to manpower grants is to identify three broad areas of need—cause and prevention, detection and diagnosis, and treatment and restorative care.

Two mechanisms of support are authorized by NRSA—individual postdoctoral fellowships, and institutional fellowship grants which may be pre- or postdoctoral. No residency training is permitted with either.

Individual applications must include research plans and be accepted by a university or research center. They are reviewed by an NIH Div. of Research Grants study section. Applications for institutional awards must include a research plan and the name of the program director. They are reviewed by the Cancer Research Manpower Review Committee, an NCI operated group.

Institutional awards may be for as long as five years, while individual grants average from 1½ to 2 years. No one may receive stipends for more than three years under either mechanism or a combination of both. There is a provision for waiver by the HEW secretary of that limit upon presentation of a convincing argument.

NSRA includes a payback provision which requires that persons receiving stipends must work in research or teaching for at least as long a period as they received support. If they do not, they must repay the entire amount of stipends they received, plus interest. Those with MD and DDS degrees, if they first cannot find research or teaching employment, may petition for alternate service. This involves working either in an identified area of need ("medically underserved area" is how it is sometimes described) or for a health maintenance organization.

There was some apprehension when the payback provision was included in the Act that it would discourage applicants. So far NCI has not found it a problem. "All of our slots are filled with good people," Lepovetsky said. "We have more good postdoctoral fellowship applications than we can fund."

That was an understatement. In the 1977 fiscal year, NCI was able to fund only five approved new institutional grants out of 140 applications, along with 96 noncompeting renewals. The 101 total institutional grants totaled $14 million.

The funding of new individual grants fared considerably better, primarily because the NSRA requires that a minimum of 25% of money spent under the Act go into the individual awards. Thus NCI spent another $4.6 million, slightly more than 25%, to support 400 individual fellowships, of which 132 were new. There were 76 approved unfunded individual grants.

The situation for the new fiscal year just starting will still be tight. Final allocation of NCI appropriations has not yet been made, but Lepovetsky hopes to get $1-1.25 million more than last year.

Meanwhile, a separate project to determine what can be done about the near desperate need for epidemiologists is being conducted by NIH. Marvin Schneiderman, chief of NCI's Field Studies & Statistical Branch, reported on activities of the NIH Epidemiology Committee of which he is a member. It is chaired by Robert Gordon, special assistant to NIH Director Donald Fredrickson, and includes Genrose Copley, program director of epidemiology in NCI's Div. of Cancer Research Resources & Centers, along with representatives of other institutes.

Schneiderman said that one of the major problems has been that "we have not had any extensive documentation of needs—who needs epidemiologists, where are they needed, how many."

Schneiderman said that "some people are concerned that with limited training funds, some disciplines might receive more money than others." Another concern is that some fields already large will be better able to document their needs, with the result that the "large ones get larger, smaller ones smaller."

The committee has worked up this "tentative plan of action:"

1. To determine the status, findings and any recommendations deriving from manpower assessment studies now being carried out by NIH, the National Academy of Sciences, professional groups, or other government agencies.

2. To examine NIH's record of training epidemiologists and biometricians over the last five to 10 years with particular interest in trends and some attention to correlation with research support.

3. To assess the impact of recent legislation on the epidemiologic job market, as such information can be derived from the Epidemiology Committee membership and interviews with selected industrial and/or academic groups.

4. To consider the need for a specific epidemi-

ologic research manpower assessment study; as a part of this exercise, to review the strategies which have been used for other disciplines, to determine their appropriateness to epdemiology; to consider study methods which would yield accurate results.

5. To site visit five to six institutions now training epidemiologists and biometricians, to gain first hand insight into problems, strengths, weaknesses and ways in which present training programs could be improved, from the viewpoint of the institutions, their faculty and students.

6. To formulate recommendations based on the findings.

Leon Gordis, chairman of the Dept. of Epidemiology at Johns Hopkins, told the Board that his department has more than 60 graduate students with 39 in its doctoral program. A dozen will be graduated with doctoral degrees this year, most of them having done their thesis work in cancer epidemiology.

"There is an urgent need in cancer epidemiology for both physicians and nonphysicians," Gordis said. "Although it is generally agreed that professionals with a variety of backgrounds are needed in cancer epidemiology, it is essential that a certain percentage of practicing epidemiologists be physicians. However, there are a number of serious problems in recruiting physicians to this field."

Gordis made a pitch for increased stipends in training programs for epidemiologists. They are limited now to $10-14,000 per year. Clinical residency programs offer salaries above $30,000, Gordis said. "A major increase is essential to recruit physicians into cancer epidemiology. The stipends should be comparable to those paid in other clinical training programs, such as radiation therapy. . . . In addition, support for more than three years should be provided for those individuals whose training must extend beyond this time."

Another major problem is the need for stable support of the institutions, Gordis said. Current training funds primarily provide tuition and stipends. "The present formula of 25% of trainee costs is inadequate for meaningful support of faculty who are themselves conducting epidemiologic research which can serve as a vehicle for student training. . . . The current training grant program fails to provide any form of stable support for departments of epidemiology that would allow for development of new courses and teaching material as well as provide salary support for the departments."

Gordis argued that institutional fellowship awards are preferable to the individual grants. "It is difficult for a physician to apply for training when he will not know until virtually the last minute whether or not he will qualify for support under an individual fellowship. The institutional program on the other hand provides the means for the department to assess the qualifications of applicants, to select the most qualified and to assure these accepted applicants that support will be forthcoming."

Funds for training cancer epidemiologists "should not be diffused over a large number of organizations but rather NCI should select a limited number of departments and perhaps other organizational settings based on their having an active ongoing program in cancer epidemiology research," Gordis said. "A critical mass of cancer epidemiologic research is necessary in order to provide students with the ideal milieu for a quality training program in this area. In cancer epidemiology one learns only by doing and in the absence of a significant research program in a department, a student can only receive training as a spectator rather than a participant. This is inadequate since participation under supervision is critical if the student is to become an independent investigator."

Board member Gilbert Omenn differed with Gordis on stipends. "It won't be the stipend but the research opportunities that will attract people," Omenn said.

Job opportunities for epidemiologists are plentiful, Gordis said. "I receive three or four requests a week for names of potential job applicants. Industry, cancer centers, NIH, federal, state and local health agencies offer many opportunities."

Those opportunities plus the feeling that people planning their life careers are willing to accept two or three years of reduced income convince some NCI staff members that increased stipends will not be necessary. It also probably is not possible. Congressional approval would be required, and it would be difficult to make the case that increases should be provided for one discipline while denying them to others, they feel.

CHLORINATED CHEMICALS, NATURAL FOODS ADD TO CARCINOGEN BURDEN, AMES SAYS

Not only are man made chemical carcinogens being absorbed by Americans in their diets at alarming rates, but they are not necessarily avoided by eating natural foods, Univ. of California biochemist Bruce Ames told the National Cancer Advisory Board.

Ames, renowned for his development of a short term in vitro carcinogenesis test and an NCAB member, said that nitrosamines are found in natural products, as are flavonoids and quercitin, which he said is a strong mutagen. "We eat about a gram a day of flavonoids," he said.

Plants develop their own toxic substances as protection against insects, Ames pointed out. "Plants are defending themselves in some cases with carcinogens." Insects do not eat a wide range of plants available to them. Each variety of insect eats only a relatively few.

The most widely used manmade product contaminating the U.S. environment is ethyline dichloride, Ames said. Its use as a gasoline additive started in

about 1960, "and we will not see the real effects until 1980 to 1990. Are these chemicals getting into people? Yes. We're all filling up with chlorinated chemicals.

Ames said that 20 billion pounds of chlorine are used in the U.S. each year, in a wide variety of products. "Residues are showing up in human fat, in mother's milk."

Dibromochloropropane, a pesticide, is absorbed by lettuce to the extent of 150 parts per million. "That's about the same dose that is giving cancer to animals in tests," Ames said. That chemical also causes sterility in test animals.

Tris, the carcinogen of recent notoriety, also probably causes sterility, Ames contended. "The son of Tris, the chemical manufacturers are using as a replacement, is a mutagen. And the granson of Tris doesn't look so hot either."

Cigarette manufacturers are using Ames' short term test. "There are 2,000 chemicals in cigarette smoke, and all kinds of mutagens," he said. And it isn't just cigarette smoke that is a threat. Carcinogens are produced frequently in cooking foods. "We're finding a lot of carcinogenic materials in broiled fish and broiled steak. . . . Cigarette smoke itself is a relatively weak carcinogen, but the dose is tremendous. A person smoking a pack a day absorbs one gram a day.

"It's depressing. Where do we go from here? We need to develop some strategies, set some priorities."

SUBGROUP RECOMMENDS AGARATINE, TWO OTHER CHEMICALS FOR TESTING

One suspect chemical found in a natural food, mushroom lovers will be unhappy to learn, is agaratine. The Clearinghouse on Environmental Carcinogens Chemical Selection Subgroup agreed at its last meeting to recommend agaratine to NCI for testing in the Bioassay Program.

The subgroup took various actions on five other chemicals:

Calcium silicate—Recommendation deferred until additional information is available regarding asbestosis and other fibrous diseases. David Clayson, subgroup chairman, suggested that the consideration be limited to aluminum silicate, calcium silicate or fibrous calcium silicate. Subgroup member Norton Nelson suggested that if the subgroup is going to get seriously into the question of occupational exposure by inhalation, some additional members with experience in that field be added.

Napthalene—Deferred until NCI staff can determine which mixtures of occupational crude are of primary concern. Norbert Page, ad hoc member, said that based on metabolism and the probability that production of napthalene would increase and offer increasing occupational exposure through inhalation, absorption and ingestion, his agency (NIOSH) would give it a medium to high priority for testing.

Subgroup member William Lijinsky gave the substance a low to medium priority because of a previous negative test, weak epidemiological data supporting a positive finding and the low incidence of the pure compound.

But Clayson said he believed it should be tested because of its production figures, widespread distribution and the fact that it is a coal tar product. He raised the question of whether it should be tested as a commercial crude or as a pure chemical and concluded the occupational crude is the best candidate. He gave it a "reasonably high priority" on the crude but agreed with Lijinsky on the pure substance.

Retene—Recommended for testing by skin application, with medium priority. NCI staff member Elizabeth Weisburger said the primary concern of staff was the home hobbiest who might contact the chemical in the soldering process. T.J. Slavin, of the Motor Vehicle Manufacturers Assn., commented that it could be a hazard in industrial soldering because, he said, the typical factory has poor methods for removing soldering fumes.

Allyl-, Cumen-, Toluene-, Xylenesulfonates—Recommended for testing, with the qualifications that staff continue trying to get information from industry and consider skin painting as the proper route. Subgroup member Paul Ts'o pointed out there is considerable exposure to this class.

Isethionates—Not recommended for testing. Subgroup member Verne Ray said he did not favor testing because the substances have been used for many years in a relatively safe manner. Ts'o agreed, and the subgroup voted unanimously not to test it.

NCAB HEARS REPORT ON CT SCANNING, DEBATES CONTROL OF COSTS, USE

"Computer tomography (CT scanning) coupled with computerized treatment planning and dosimetry offers a great potential for improving radiation therapy through accurate localization of tumor and critical normal structures within the host and by utilizing the tissue density and x-ray attenuation coefficients to increase the accuracy of dose computations."

The above statement is from an abstract of a report by Robert Stewart, Max Boone, John Hicks and Larry Simpson. Stewart, Univ. of Utah, discussed CT scanning with the National Cancer Advisory Board which developed into the inevitable debate on whether the benefits of CT scanning are worth the cost and how those costs can be controlled.

Radiologist William Powers, an NCAB member, said that very little research in the field is being supported by conventional research groups. "Most research is being done by industry, and it is directed at increasing sales. . . . I'm concerned that we're not doing enough development to make optimal use of

these devices."

Answering a question from Board member Frank Dixon about dosages involved in CT scanning, Powers said it averaged about three to four times that in a chest x-ray. "It depends on what you want and the number of sections you take. It is possible that 25 to 50 rads would be delivered."

Powers said that all CT training courses are oversubscribed. No standard examination has been developed to check on their effectiveness. Board member Bruce Ames asked, "What controls are there on people using this? Hospitals make money on them. What control is there to prevent abuses?"

NCAB Chairman Jonathan Rhoads responded that "all are controlled by departments of radiology .... Most are motivated to help rather than harm people. That's the societal method of reducing abuse."

Board member Gilbert Omenn disagreed. "The economic incentive for increasing use applies." Vast numbers of patients with headaches are examined each year, but only a very small percentage are brain tumors, Omenn said. "Over use is harmful."

Powers claimed that "we're not over saturated with these machines now. Seventy to 80% are used directly for cancer."

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 NCI-CB-84220-32

Title: *Comparison of surgical castration with chemotherapy as adjuvants to mastectomy for stage II cancer of the breast*
Deadline: *Feb. 1*

The Breast Cancer Task Force, Div. of Cancer Biology & Diagnosis of NCI, is interested in institutions which can study a minimum per year of 50 premenopausal patients who have histologic stage II breast cancer (T2 or less with metastases to one or more ipsilateral lymph nodes) and have positive estrogen receptor determinations.

The patients are to participate in a two-armed, randomized, prospective, controlled clinical trial which compares a chemotherapy program (cytoxan, methotrexate, 5-fluorouracil (CMF), or equivalent to CMF) with surgical castration as adjuvant to mastectomy. In order to enter the required number of patients (150 for the two treatment groups combined) over a three-year period, a multi-institutional collaborative effort may be necessary.

All estrogen receptor determinations on the breast cancer tissues should be made by a single laboratory using an approved method. Although not essential, assays for other hormone receptors will be of interest.

The preliminary results from Bonadonna's investigation of adjuvant therapy with CMF suggest that suppression or ablation of ovarian function may influence the clinical course of premenopausal patients with stage II cancer of the breast. The Breast Cancer Task Force is interested in learning if surgical castration is as beneficial as CMF (or equivalent chemotherapy) in premenopausal women having ER positive breast cancers.

It is anticipated that a single award will be made and that up to three years will be required to enter the necessary number of patients to the study.

Contracting Officer: P.J. Webb
Biology & Diagnosis
301-496-5565

RFP NCI-CM-87179

Title: *Establishment of rodent quality control and diagnostic laboratory*
Deadline: *Approximately Dec. 9*

NCI is seeking proposals for the operation of an animal disease diagnostic laboratory. The successful offeror shall establish and maintain a repository of an estimated 12 microorganisms in order to establish these associated flora in isolator maintained rodent foundation colonies; monitor isolator animals for the presence of desired flora and absence of undesirable organisms; and operate and maintain a laboratory to detect the presence of slamonella spp. and pseudomonas spp. in mice. The importance of these activities cannot be overemphasized since NCI will use the results obtained to evaluate the technical ability of individual rodent suppliers.

The successful offeror will supply services, qualified personnel, material, equipment and facilities not otherwise provided by the government under the terms of the contract to perform the following: (1) establish and maintain a repository of an estimated 12 organisms in order to establish the desired associated flora in small isolator maintained rodent colonies; (2) monitor these isolator maintained animals for the presence of the desired associated flora and the absence of undesirable organisms; (3) operate and maintain a laboratory to detect the presence of salmonella spp. and pseudomonas spp. in mice supplied on a pre-arranged schedule. It is estimated

that approximately 3,000 fecal samples will be assayed for the purpose for each of three years; (4) supply specimen tubes and mailing containers for fecal samples to be returned to the contractor's laboratory by various animal suppliers; and (5) submit written reports of results of testing in items 2 and 3 above to NCI as tests are completed.

Important factors in considering organizations for award will be the principal investigator's and staff's experience and expertise in (1) the areas of microbiology directly concerned with establishing an associated flora in germ-free rodents; (2) receiving, maintaining and monitoring animals for desired and undesired organisms; and (3) the operation of an animal disease diagnostic laboratory. Respondents must demonstrate an understanding of the importance of "associated flora" toward the physiological well being of "super clean" rodents and should be aware of recent development in state of the art. Facilities must be adequate for the work of the project.

It is anticipated that award(s) will be for three year, incrementally funded, periods of performance.

Contracting Officer: Daniel Abbott
Cancer Treatment
301-427-8125

CONTRACT AWARDS

Title: Immunotherapy of mouse tumors using hapten-reactive T-lymphocytes
Contractor: Scripps Clinic & Research Foundation, $45,000.

Title: Detection of tumor specific antigens in circulation
Contractor: Scripps Clinic & Research Foundation, $73,085.

Title: Suppressor monocytes in cancer patients
Contractor: Univ. of Minnesota, $74,666.

Title: Cell mediated reactivity of normal individuals to human tumor associated antigens
Contractor: Vanderbilt Medical School, $76,374.

Title: Antigenicity of precancerous lesions in animal models
Contractor: Ohio State Univ., $66,489.

Title: BCG immunotherapy of recurrent superficial bladder cancer
Contractor: Univ. of Texas (San Antonio), $69,210.

Title: In vitro transformation of mammalian cells, continuation
Contractor: Univ. of Texas Medical Branch (Galveston), $247,193.

Title: Molecular studies of T-cell mediated cytotoxicity
Contractor: Duke Univ., $51,874.

Title: Studies of colon carcinogenesis in organ culture of intestinal mucosa
Contractor: IIT Research Institute, $225,203.

Title: Restriction endonuclease analysis and EM studies of integrated viral genomes
Contractor: California Institute of Technology, $206,180.

Title: Immunologic study of RNA (type C) viruses, continuation
Contractor: Scripps Clinic & Research Foundation, $175,000.

Title: Research on activation of oncogenic viruses and induction of cancer by immunologic and non-immunologic methods, continuation
Contractor: Massachusetts General Hospital, $555,855.

Title: Physical and biochemical mapping of the integration sites of avian sarcoma virus
Contractor: Columbia Univ., $317,380.

Title: Integration of herpes simplex virus thymidine kinase in human cell genome
Contractor: Baylor College of Medicine, $255,720.

Title: In vitro transforming potential of MPHV
Contractor: Univ. of Alabama, $206,562.

Title: Integration sites of oncogenic viruses
Contractor: Sidney Farber Cancer Institute, $280,140.

Title: Mass screening for breast cancer by electronic pattern recognition, continuation
Contractor: Univ. of Oklahoma, $309,750.

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

Title: Training programs for maxillofacial prosthodontists and maxillofacial dental technicians, renewal
Contractor: Eye & Ear Hospital, Pittsburgh, $97,422.

SOLE SOURCE NEGOTIATIONS

Proposals are listed here for information purposes only. RFPs are not available.

Title: Preparation and characterization of antisera to oncogenic viral antigens, continuation
Contractor: Huntingdon Research Center, Brooklandville, Md.

—*Editor* JERRY D. BOYD

Published fifty times a year by The Cancer Letter, Inc., P.O. Box 2370, Reston, Virginia 22090.