THE CANCER LETTER

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UPTON MAY LEAVE NCI SOON, NEWELL ACCEPTS POST AT M.D. ANDERSON TO HEAD CANCER PREVENTION

Arthur Upton, two years after he became director of NCI, is seriously considering offers which would return him to the academic world while his deputy, Guy Newell, has already accepted one, as director of cancer prevention for the Univ. of Texas System Cancer Center/M.D. Anderson Hospital.

Newell will start his new job Sept. 1.

Although Upton told ***The Cancer Letter*** he has not yet made any decision on the offers he has received, he gave every indication he was leaning toward accepting one of them.

Being director of NCI and heading up the National Cancer Program "has been an exciting, satisfying experience," Upton said. If he does leave, "it will not be because of any unhappiness or frustration. I have

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In Brief

NIH CALL FOR REVIEW GROUP NOMINATIONS BRINGS 8,000 NAMES FOR 400 VACANCIES

MORE THAN 8,000 names have been suggested to NIH as nominees for vacancies on NIH scientific review groups in response to a public request earlier this year for such nominations. There will be about 400 vacancies to fill by July 1, 1980. NIH said it will make the list available to review group staffs not only to fill the vacancies but also to draw upon for ad hoc consultants, site visitors and special reviewers. . . . **ADVANCES IN CAUSE** and Prevention of Cancer: A Multidisciplinary Analysis is the topic of a symposium Sept. 15-16 in San Francisco, sponsored by the Northern California Cancer Program and Univ. of California (San Francisco). Contact UCSF, Continuing Education in Health Sciences, 1308 Third Ave., San Francisco 94143, phone 415-666-2894. . . . **JOHN ULTMANN**, director of the Univ. of Chicago Cancer Research Center, has received the 1979 Esther Langer Award for contributions to cancer research. . . . **JEROME WALKINSHAW**, Washington attorney who sometimes lobbies for health programs, told a group of cancer center directors, "How much extra money does the Cancer Program need? $250 million? That's a lot of money, except in Washington. You ought to be able to get it with a well organized effort. You've all got to get together. If you don't, some well meaning jackass in Washington will screw your heart to the wall". . . . **SEATTLE'S PLANS** to host the 13th International Cancer Congress in 1982 are proceeding rapidly. Meetings will be at the Seattle Convention Center, site of the 1962 world's fair. A monorail will whisk participants from downtown hotels to the center 1½ miles away. William Hutchinson, director of the Fred Hutchinson Cancer Research Center, is president of the Congress; Edwin Mirand, Roswell Park Memorial Institute, is secretary general.

NEWELL TAKES JOB IN HOUSTON, UPTON CONSIDERS OFFERS; ONE MAY BE AT NYU

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had an enjoyable time here, and I feel there is no more important task anyone could undertake."

But—the positions which have been offered are so interesting that he had to give them serious consideration, Upton said. He would not reveal where those positions are located "because I don't want to embarrass anyone if I decide not to make the change."

One of the jobs, according to several sources, would be to succeed Norton Nelson as director of the Institute of Environmental Medicine at New York Univ. Nelson asked the university four years ago to start looking for a successor. A search committee has developed a list of candidates, Nelson told ***The Cancer Letter,*** but he declined to say if Upton was on it or if the committee had made a recommendation.

Upton said he was under no deadline to accept or reject any of the offers, but "the positions do need filling and I can't delay a decision indefinitely."

Upton became NCI director July 29, 1977, succeeding Frank Rauscher who had left in October 1976 for the position he still holds with the American Cancer Society. Newell was Rauscher's deputy, served as acting director for 10 months while the Administration dawdled in making a permanent appointment, and returned to the deputy's job after Upton took over.

With Newell's departure, the job of acting director if it develops would appear to be wide open. NIH Director Donald Fredrickson would select the acting director if one is needed. This time, however, it might not be needed if HEW and the White House could be persuaded to shake off the paralysis which seems to affect them in making Cancer Program appointments and line up a new director immediately.

Appointment of a new director, under provisions of the National Cancer Act, is a Presidential task. Jimmy Carter let his HEW secretary, at that time Joseph Califano, make the selection before, and Califano chose Upton. If Carter is still operating under that philosophy, he would permit new HEW Secretary Patricia Harris to select Upton's successor.

In any speculation over a new director, two names immediately surface—Arnold Brown, dean of the Univ. of Wisconsin School of Medicine, and Vincent DeVita, director of NCI's Div. of Cancer Treatment.

Brown was a finalist in the search for Rauscher's successor and was recommended to Califano along with Upton by a search committee set up by the secretary. Brown had been the choice of Benno Schmidt, chairman of the President's Cancer Panel, who had made his recommendation to President Ford a few weeks before Carter defeated Ford. Brown decided not to accept an appointment from Ford unless it was cleared with Carter, and that did not happen.

Brown was chairman of the Dept. of Pathology & Anatomy at Mayo at that time; he moved to Wisconsin as dean last year.

Schmidt still is chairman of the Panel, although Califano had recommended Rockefeller Univ. President Joshua Lederberg for the position. One of the Panel's duties spelled out in the Cancer Act is to advise the President on selection of an NCI director. Carter opted not to take Schmidt's advice before, probably would not now; whether he would listen to a Panel chairman of his own choice is moot until he appoints one.

In any case, they can count Brown out of it this time. "I'm happy where I am and have no intention of leaving Madison," he said. "I told the faculty when I came here that I would stay at least 10 years. Although I was very interested before and thought it would be challenging, I would not at all be interested now. I'm sorry to hear that Art may be leaving. It seems to me that he has done an excellent job."

DeVita took himself out of the running early when Rauscher left. He had been DCT director less than two years, was in the process of revamping the division, reorganizing the Drug Development Program and implementing DCT's new authority over Cooperative Groups and NCI's intramural clinical research.

Those changes now are pretty much in place, the division is operating smoothly, and DeVita has established himself as a first rate administrator. He also has been, when called upon, an articulate and even charismatic defender of the Cancer Program. There were many who felt two years ago that DeVita would be an excellent NCI director. Support for him now is even stronger.

Newell's position in Houston is one newly created by the university with the support of the state legislature.

"We are delighted to have recruited a scientist of Dr. Newell's reputation and ability to direct our efforts at developing a new cancer prevention program," said Charles LeMaistre, UTSCC president. "He is a renowned leader in this field and an ideal choice to lead this program."

Newell, who also will be professor of epidemiology, will direct a wide ranging program to identify and assist persons exposed to cancer causing agents; to work with community service programs in cancer screening and education; and to coordinate studies of trends in cancer incidence among different ethnic and occupational groups, LeMaistre said.

Newell, 41, came to NCI in 1972 as Rauscher's deputy from Tulane, where he received his MD in 1962. He also has a master of public health degree from Harvard.

"As Dr. Newell leaves for his responsible new position, he has the respect and gratitude of the entire NCI staff," Upton said. "He has made enormous con-

tributions to NCI and the Cancer Program." His first major accomplishment was heading the newly created Cancer Control Program, Upton noted, until it was given division status and a permanent director. More recently, he has coordinated the Diet, Nutrition & Cancer Program and the studies of hazards of low level radiation.

"His greatest contribution was his service as acting director," Upton said. "Through his hard work, excellent judgment and articulate representation of NCI's activities and the program's accomplishments, he brought great credit to himself and the institute and advanced the cause of cancer control."

Newell told ***The Cancer Letter*** he was making the change because he has been "very anxious to get back into the private sector. I have worked with two directors of NCI who have been superb people. You just can't find any nicer persons than Dick Rauscher and Art Upton. But you can be No. 2 only so long. I've given this job as much as I can, and I've gotten from it about as much as I can."

The job at M.D. Anderson "gives me a small show, something of my own," Newell said.

Upton came to NCI from the State Univ. of New York at Stony Brook where he was professor of pathology. He is one of the world's leading authorities in radiation carcinogenesis. His impact on NCI and the Cancer Program has been profound.

Even before his appointment became official, Upton told ***The Cancer Letter*** (July 22, 1977) that he would give serious consideration to phasing out or reducing the number of contracts supporting basic research and move those funds into grants. He also said he felt that there were good arguments for distributing the various grant portfolios, administered then by the Div. of Cancer Research Resources & Centers, to the appropriate program divisions.

It should not have been the stunning surprise it was, then, when Upton announced his sweeping reorganization six months later, moving grants to program divisions and initiating the process for phasing down basic research contracts.

Upton is still in the midst of the latest phase of that reorganization. The task forces organized to develop recommendations on the makeup and missions of a revamped Div. of Cancer Control & Rehabilitation and a new Div. of Cancer Prevention have made their reports.

Upton said a final decision on what to do about those recommendations is still at least two or three weeks away. He has been discussing it with his staff and would like to talk it over with several key outside advisors.

One of the most serious problems in creating the Prevention division is the freeze on staff positions imposed by the White House. Although most of the division's activities and staff would be those transferred from other divisions, new positions would be needed for the division director and his support staff. Those are not now available.

"We have agreed that if we are to make the new division a highly effective one, we need to add strength, not just rob the existing divisions," Upton said.

Upton said he might have to enlist Fredrickson's support and "go downtown" (HEW headquarters) to get the matter resolved.

Upton said he was "overjoyed" by Congress' approval of a $1 billion NCI budget for the upcoming fiscal year. "In a time of very tight money, when only the top priority programs qualify for additional funds, it is heartening that the Cancer Program is seen as most urgent." He noted, however, that while "a billion dollars is a large sum, with the increasing cost of living it will just about keep us even."

NCI will go to the Office of Management & Budget next month to start the fight for the FY 1981 budget. It is requesting $135 million more than it will get in fiscal 1980, a total of $1.135 billion. Even then, "we are in the damnable position of having to run faster and faster just to stay even," Upton said.

NEW GUIDELINES DEVELOPED FOR REVIEW OF COOPERATIVE GROUP APPLICATIONS

NCI has completed development of "Guidelines for Review of Grant Applications by the Cancer Clinical Investigation Review Committee." Although they emphasize that "these are guidelines only," members of the Clinical Cooperative Groups for which they were written most likely will consider the new document as their "bible" in their planning and grant writing activities.

The guidelines were written by NCI staff from the Div. of Cancer Treatment and the Div. of Extramural Activities (or DCRRC), with considerable input from the CCIRC.

The ensuing guidelines are written to provide a commonality of understanding among members of the CCIRC, NCI staff, and investigators engaging in cooperative clinical trials. They have been developed by members of the CCIRC with the advice of cooperative group chairmen and NCI staff. These guidelines supplement the instructions in the grant application kit and address both group and individual investigator applications. It should be emphasized, however, that these are guidelines only; the CCIRC does not intend that each cooperative group should have a similar structure. The committee encourages a group philosophy and structure that will produce consistently excellent clinical trials.

Science of Cooperative Clinical Trials

Although much of this report is related to mechanisms of review and the format of grant application, it is important to recognize that the main issue in review is the quality of science of a group. In short, the science of the cooperative group represents the syn-

thesis and expression of the creative thinking of the group and is most clearly visible in the studies proposed and performed by the group.

There are strategies and tactics to the science and both are important. Quality of the former relates to the value of the question being asked and quality of the latter to the level of certainty that an unambiguous answer will be obtained. Judgments about strategies are in part subjective but include comparison with other groups, with contract and center research, and with efforts of individual investigators. The tactics of clinical trials have a general commonality of agreement.

Both the strategies and the tactics of the science should be expressed in the performance of the group. Performance embraces the capacity for adding new knowledge and actual group accomplishments as weighed against costs. Another measure of success is adoption by other investigators of the methods and techniques developed by the group. Implicit in high quality science are well designed protocols which ask relevant and important questions. The completed study should advance knowledge of cancer, particularly in therapeutics.

Alternative hypotheses should be clearly identified and sharply separated. The study design should contain criteria for efficient evaluation of patient eligibility, diagnosis, and staging of disease. Prognostic variables should be considered. Randomization procedures, estimated number of study patients and controls required, and the statistical basis for these requirements should be defined. An estimate of the length of time required to complete the study should be included.

Chemotherapy guidelines should define acceptable variations, including dosage modifications related to toxicity.

If surgery is involved, the guidelines should specify the extent of surgery and criteria for staging and grading. When radiation therapy is included, the study design should define the volume and anatomic structures to be treated and limits for irradiation of sensitive organs. Quality control mechanisms for all modalities should be specified. Pathology review should be required when appropriate.

There should be a clear description of criteria for response. The study should be properly conducted with respect to rapidity of data acquisition and analyses. When the scientific objectives are reached, the results of the study should be presented at national meetings and published promptly. In short, the group should be working efficiently.

The group should not be wasteful in its efforts. The group should not mount studies that cannot answer the questions asked; pose trivial questions as the basis for major studies; conduct studies for which patient material, expertise, or both are absent; or continue studies that merit termination. Cost factors should be considered.

In a given disease area, there should be a logical transition from one study to the next. Interim and final data should be used by the group for the design of the next study. Advances in the state of the art should be incorporated into new studies and, when appropriate, ongoing studies should be modified or terminated. There should be evidence that the group is aware of other existing and planned efforts. The contribution of a group to intergroup studies is acknowledged.

There also should be evidence that investigators in the group with special knowledge and resources are contributing actively to the design and conduct of studies. We encourage multimodal trials and, therefore, multidisciplinary participation in trial design; but we do not seek to confine groups to a certain class of studies. The group should demonstrate the ability to assess toxicity of new cancer treatments. It is customary to evaluate a new therapy by a pilot study in a few institutions.

Assessment must be made of the performance both of total group effort and of individual institutions. As scientific effort is more visible in the protocols and publications of the group, it is particularly important that each individual investigator make a special effort to display, in the individual application, the scientific relevance of his or her participation in the group. Individual institutions should have a strong commitment to the scientific efforts of the group as evidenced by participation in protocol design, participation on committees, responsibility for studies, regular attendance at group meetings, entry of eligible patients, and commitment of unique resources or talents to the group. A high proportion of evaluable patients is important, as is the accession of adequate numbers of patients. Data should be forwarded promptly. Investigators should contribute to the administrative aspects of the group and to group publications.

Evidence is sought for dynamic, active, and high quality scientific leadership by the group chairperson and the executive committee. At the same time, interaction among individual investigators, study chairpersons, statisticians, and other key members of the group should be apparent from group minutes and the general tenor of reported group meetings. Broad representation of several specialties on study committees is an indication of group interaction.

Review of Grant Applications

Applications are reviewed by the CCIRC and the National Cancer Advisory Board as follows:

Renewal/Supplemental Application Deadlines	New Application Deadlines	CCIRC	NCAB
February 1	March 1	June	Sept.
June 1	July 1	November	Jan.
October 1	November 1	Feb.	May

Each grant application from a single group should have the same title—the name of the group—and each should request support for the same number of years,

Committee funding and/or discretionary funds should be requested separately for each discipline. Within the constraint of group structure, funding should be as direct as possible.

Discretionary funds requested for an identified purpose, i.e., "seed money" for new institutions, may be justified as a dollar amount or as personnel to be supported; e.g., data manager—half time. If funds will be passed through to cooperating institutions, include a list of those involved and provide a breakdown by budget category.

If a cooperating institution is performing a programmatic activity and is a separate legal entity administratively independent of the grantee institution, a consortium exists. A separate budget page should be provided for each consortium institution and should include indirect costs. Copies of consortium agreements should be submitted with the application or shortly thereafter. Applicants are referred to the Consortium Policy (NIH Guide to Grants and Contracts, 7:17, dated Nov. 10, 1978).

Biostatistical Budget

The budget should include the costs of study design, forms, data processing, and analytic functions from patient entry to final analysis. Separate budget pages should be provided for intergroup studies and special projects. Requests for computer time should be justified by estimates based on current and projected operating costs for routine updating and other production runs, developmental programming, statistical programming, and/or specialized analysis.

Major assignments of personnel for whom salary support is requested should be listed. When responsibilities are divided among several people, indicate the area or areas, e.g., studies of leukemias, for which each person is responsible.

Individual Investigator Budget

Block No. 7, Research Involving Human Subjects, on the face page of the standard grant application form requires that certification be submitted showing that review has taken place within one year of the requested starting date. If local institutional review is pending, so state but submit DHEW 596 to Grants Administration Branch, Div. of Cancer Research Resources & Centers, NCI, as soon as review is completed.

A budget page should be constructed for each discipline and a summary budget page should show the total of funds requested for all the individual disciplines. Use of satellite facilities and personnel should be documented and justified for each applicable location.

All professional personnel should be listed by name and title and a brief summary of his or her group-related activities provided. The percentage of time spent as a member of administrative or scientific committees of the group and the time spent within the institution for group-related patient care should be identified.

All nonprofessional personnel for whom salaries are requested should be listed by name and job title. Examples could include the following: protocol nurse, data manager, pharmacist, secretary, or administrative assistant. Detailed justification of requested salary support is needed and should include an explanation as to why activities for which funds are requested are not considered ordinary patient care or ordinary administration for which research funds are not available.

Research Plan

Chairperson's Headquarters Grant—The group chairperson's grant application, the protocols, and the progress report display the scientific thrust of the group. Some overlap may be expected in the body of the headquarters grant application and the group progress report. Reviewers scrutinize both for assurances about several important areas.

The group chairperson's office functions as a central administrative office handling typing of the chairperson's correspondence, typing of protocols, printing and distribution of data collection forms, etc. These routine activities need little explanation. In some groups, however, basic administrative activities are augmented by a variety of other tasks to increase the group's efficiency of operation. These procedures should be described clearly if they represent sizeable efforts or important enhancement of group functions. Special efforts might include: protocol development and monitoring of progress; verification of informed consent and approval of human experimentation committees; management of pilot studies; special assistance and quality assurance in ongoing studies such as monitoring the submission of slides, radiographic films, or other materials for special laboratories; distribution of newsletters; preparation of timetables for drafting, revision, and submission of manuscripts to journals; and educational or scientific contributions in addition to group studies such as developing of staging criteria, therapy manuals, and conferences on special techniques. The application also should account for previously awarded discretionary funds identifying purpose, amount, and any demonstrable results or incorporation of resulting knowledge into subsequent group studies.

A brief history of the group and its objectives should be presented. The group should have a constitution which might include an organizational chart showing interrelationships among the chairperson, committees, and individual investigators. A vice-chairperson and an executive committee should be features of the organization. Mechanisms for election or appointment of members of the executive committee and other committees should be defined and composition of each committee noted. Changes in administration and structure of the group should be discussed and explained in the narrative.

A description of group policy might specify the number of group meetings annually, the usual pro-

gram format for business and scientific portions, the sequence of events prior to each meeting to ensure up to date data is provided the statistical office, the procedure to be followed for registration and randomization of patients, the pre-study and on-study forms employed, flow sheets, special evaluation sheets, and off-study forms. The procedure to be followed in the preparation of study protocols, the process through the proganization to achieve group approval of protocols, and the mechanisms for protocol amendments and termination should be outlined.

Criteria for patient eligibility, response and toxicity definitions and standards, and criteria for taking patients off study should be stated unambiguously. The procedures for monitoring of data by the study chairperson and the statistical office should be described, together with the method of institutional and group review with respect to patient registration, legibility of forms, and evaluability of information. Procedures for monitoring of pathologic data and review of diagnoses should be identified. Mechanisms whereby deficiencies in diagnoses are identified, resolved, and transmitted to institutions might be cited. Where appropriate, diagnoses and subclassifications should be verified by review of histologic sections before interpretation of the study data.

There should be a clear presentation of toxicities anticipated from therapy, together with toxicity warnings and criteria for dose modification. Analysis to indicate whether there is comparability of results within group institutions with respect to therapeutic activity and toxicity might be included.

The group should have active, fair, and demonstrable mechanisms for evaluating the performance of individual member institutions (including all members of consortiums) and for taking remedial actions when deficiencies are noted. Items to be considered in performance review might include the following: (1) Participation in the scientific activities of the group, e.g., generation of ideas, committee activities, protocol development, direction of studies, and attendance at meetings; (2) rates of case accrual; (3) prompt submission of data; (4) eligibility of patients for study; (5) quality of reports, i.e., accuracy, legibility, adherence to protocol, and completeness; (6) response to inquiries for information on specific patients; (7) case evaluability; and (8) participation in the preparation of abstracts and publications.

Unique resources should be listed and a statement made with respect to the way the group manages these special resources. Examples are unique patient populations, large patient numbers in a particular disease category, or other noteworthy factors related to patient resources. Special physical facilities and central review or quality assurance bodies, e.g., pathology, clinical pharmacology, and immunology, should be noted together with the number of patients processed through the centralized review facility.

Within each group, a standard data format should be used by each study committee. The number of accessions, eligibility, and evaluability of patients for each study by institution should be provided at least annually.

The group bibliography should include all publications—papers, abstracts, editorials, etc.—that result from group studies or activities. Publications should not be listed if they are not a products of group participation.

Group minutes should include a thorough, up to date, and unambiguous presentation of data accumulated. The quality of this summary reflects the efficiency of the group organization. Methods employed by the statistical office in displaying these data mirror the performance of that office. The results of every active study should be presented. Inferences from these data should be stated clearly by the study chairperson, the statistician, or both. Similarly, reports of ad hoc and standing committees (including the executive committee) should be provided; they are a measure of the flow of information to and from individual investigators within the group.

Statistics and Data Management Grant

The research plan requires that a substantial amount of detailed information be provided to reviewers. Further information may be obtained by communication with the Program Director, CIB/-CTEP/DCT.

Individual Investigator's Grant

The principal investigator for an institution may be a representative from any recognized oncologic specialty; i.e., medical oncology, surgical oncology, radiation therapy, pediatric oncology, gynecologic oncology, pathology, or immunology. The other major disciplines should be recognized by co-principal investigators. In such instances, separate research plans, budget pages, and justifications should be provided in the application.

Investigators are expected to justify their group participation and to identify their own contributions. These activities should be listed under the progress report for each discipline. They should include a description of the specific scientific and administrative contribution which each investigator makes to the group. These might include chairmanship or membership in a disease or modality committee, preparation of specific protocols for the group, and coordination of ongoing protocols. Intergroup activities and other meetings attended for the group should be noted. If the institution, individual, or discipline provides a resource for the group such as a central pharmacology or immunology laboratory, this also should be documented. A brief description of each investigator's current independent cancer research should be given.

The institution should list the number of actual patient entries per year by protocol number as well as projected entries for future years. Each discipline should provide the number of cancer patients treated annually, preferably by tumor type and eligibility

criteria, and the proportion committed to protocol studies. Competition for patient populations by institutional involvement with other cooperative groups should be discussed and explained.

A brief description of the hospital and its clinics should be provided, particularly if there are special facilities or equipment that justify the designation of the institution as a special resource. If available, information about other support for cancer patients should be identified; e.g., state agency support for inpatient and outpatient costs. If satellite institutions are involved, they should be described and fiscal arrangements detailed, giving the relationship to the applicant institution. If a consortium exists, fiscal arrangements should be described.

The application of each member institution should be submitted through the group headquarters to allow the group chairperson opportunity of review. In this respect, it should be recognized that the NCI grant is contingent upon the grantee institution's membership in the appropriate cooperative group.

Group Progress Report

The group progress report, which should cover the interval since the last review by the CCIRC, is a primary document the CCIRC will use in conducting its review and evaluation of a group. It is important that the group progress report be complete. In order to be up to date, the CCIRC supplements information in the progress report by review of individual protocol studies in reports contained in group minutes.

Individual Institutional Progress Report

This should supplement the main group progress report and relate the administrative and scientific activities of the individual institution to the group. The report should not reiterate information that is included in the group progress report; rather, it should concentrate on the specific contribution made by the institution. Pilot studies and projections about future studies to be initiated by the institution should be noted.

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. Address requests to the contract officer or specialist named, NCI Research Contracts Branch, the appropriate section, as follows:
Biology & Diagnosis Section and Biological Carcinogenesis & Field Studies Section—Landow Building, Bethesda, Md. 20205; Control & Rehabilitation Section, Chemical & Physical Carcinogenesis Section, Treatment Section, Office of the Director Section—Blair Building, Silver Spring, Md. 20910. Deadline date shown for each listing is the final day for receipt of the completed proposal unless otherwise indicated.

RFP N01-CP-95637-58

Title: *Biochemistry and cell culture resource*
Deadline: *Approximately Oct. 1*

The Div. of Cancer Cause & Prevention of NCI, Laboratory of Experimental Pathology, is seeking support services for its molecular and cellular studies concerning carcinogenesis and cancer prevention.

Prospective contractors must have adequate facilities and demonstrate knowledge and expertise in the following areas: a) culture of mammalin cells including human epithelial cells; b) in vitro transformation assays with mammalian cells; c) cell- and tissue-mediated mammalian cell mutagenesis assays; d) preparation of monoclonal antibodies by hybridoma cell clones; e) measurement of carcinogen-modified macromolecules by biochemical and immunological assays; f) preparation and analysis of derivatives of vitamin A; g) preparation of specialized tissue culture media and related reagents; h) freezing and storage of viable cells; i) glassware cleaning and sterilization.

Potential contractors who can perform all of the services listed above will be given preference because the production of these reagents and the provision of these services are highly interrelated. Therefore, the award of this contract to a single firm is important to its efficient and economical operation and logistical coordination. The yearly effort should be approximately two person-years at the professional level, and adequate technical, clerical and administrative aid. Proposals should be for three years with a yearly budget.

Contract Specialist: Mary Armstead
Carcinogenesis
301-427-8764

RFQ DAMD 17-79-Q-9028

Title: *Toxicological studies for investigational new drugs*
Deadline: *Oct. 8*

Reproductive performance, teratology, carcinogenicity, and mutagenicity studies are required for investigational new drugs. The drugs will be supplied to the contractor by the government.

Contracting Branch, Acquisition Group
Attn: Contracting Officer, phone 301-663-2183
U.S. Army Medical Research & Development Command
Fort Detrick, Frederick, Md. 21701

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