THE CANCER LETTER

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TRAINING GRANTS ARE BACK; NIGMS IMPLEMENTS NEW PROGRAM, WITH AWARDS TO BE MADE IN JUNE

The NIH institutional research training program, gutted by the Nixon Administration and restored by Congress after an overwhelming reaction from the scientific community, is back.

Reinstatement of pre and postdoctoral training grants was assured last year when Congress passed the National Research Service Act, forcing HEW to revive NIH support of biomedical research training. HEW was slow to implement the program, due perhaps partly to the reluctance of Secretary Caspar Weinberger to admit defeat, but probably more to the new requirements of the Act which involved development of new guidelines.

The National Institute of General Medical Sciences announced it is accepting applications from eligible institutions for predoctoral programs in five research areas and postdoctoral programs in four areas.

Deadline for applications is Feb. 15, and awards will be announced in June, permitting programs to be put into effect for the academic

(Continued to Page 2)

In Brief

HEALTH CHIEF DEFENDS CANCER PROGRAM, CORRECTS THE RECORD ON NCI, NIH SUPPORT OF BASIC RESEARCH

CHARLES EDWARDS has changed his attitude somewhat toward the cancer program as he prepares to leave his job as assistant secretary for health. In his response to a *Washington Post* editorial which incorrectly claimed basic research had been set back because funds were diverted to cancer and heart research (***The Cancer Letter***, Jan. 3), Edwards wrote: "All the institutes at NIH, including the National Cancer Institute, conduct basic research and support it elsewhere through grants and contracts. . . In the case of the cancer program, a substantial portion of NCI's present $692 million fiscal 1975 budget will be devoted to basic research. Cancer funds for basic research have, in fact, nearly tripled since fiscal 1971 when the National Cancer Act was passed by Congress. Many of the findings from this research will undoubtedly be important in seeking cures to diseases other than cancer." He also corrected the myth perpetuated by the *Post* editorial that Congress supported increases for cancer research because it is "politically popular" and did not have the backing of scientists: "Our national programs against cancer, heart disease and other disorders . . . include the judgment of the scientific community." Edwards' use of the $692 million figure is interesting. President Ford still plans to ask Congress to cut back its appropriation for NCI to $567 million. . . . **CASPAR WEINBERGER** denied reports that cropped up last weekend that he would soon resign as HEW secretary. He insists he'll stay on as long as the President wants him. . . . **ROSWELL PARK** investigators have

(Continued to page 4)

FIVE PREDOCTORAL, FOUR POSTDOCTORAL PROGRAM AREAS LISTED FOR TRAINING

(Continued from page 1)

year starting next September.

NCI had previously said it would not undertake any predoctoral training programs of its own but rather would transfer some funds to NIGMS to help support grants for predoctoral training related to cancer research.

"All programs should provide multidisciplinary training with extensive involvement of two or more disciplines or departments," the NIGMS announcement said. "Postdoctoral programs should have a scientific or disease orientation and a dominant scientific theme. Predoctoral programs will be limited in number of stipends and amounts awarded, based in part on the number of participating degree programs or departments.

"All predoctoral trainees will be candidates in appropriately related PhD degree programs offered by the applicant institution. Both awards will be highly competitive and limited in number. In general, institutions will be limited to one each institutional pre or postdoctoral award per program area."

The areas of support for predoctoral awards are:

* **Cellular and molecular biology.** Programs should be of a cross-discipline nature in cellular and molecular sciences, involving cooperation between two or more PhD degree programs or departments (such as anatomical sciences, biochemistry, biophysics, genetics, microbiology, and pathology), with representative faculty members capable of providing integrated training and offering thesis research opportunities at the cellular and molecular level.

* **Genetic mechanisms and regulation.** Training should focus on the principles and mechanisms of genetics, drawing upon a number of disciplines and research areas such as chemistry, biochemistry, cell regulatory processes, and developmental biology. The goal of the program is further understanding of molecular and physiological mechanisms as well as population and behavioral aspects of heredity and of genetic disease.

* **Pharmacological sciences.** Training should emphasize the acquisition of competence in the broad fields of pharmacology and toxicology to conduct research on drug actions and effects in living cells, in animals, and in man – ranging from the chemical to the clinical level, with thesis opportunities also included in such areas as biochemistry, physiology, medicinal chemistry, pharmacogenetics and behavioral pharmacology and other cognate fields, via collaborating departments.

* **Systems and integrative biology.** Research training should center around cross-field graduate programs involving such disciplines and departments as physiology, bioengineering and biomathematics; or physiology, nutrition and behavioral science; or other combinations of disciplines for building research competence, usually toward investigating organ systems and/or integrative functions of animals and man.

* **Medical scientist.** Special programs of integrated medical and graduate research training required to investigate problems of diseases in man. These interdisciplinary programs assure the highly selected trainees access to the full range of pertinent biological, chemical, physical and social sciences as well as medicine. Graduates may be expected to enter medical school faculties in either basic science or clinical departments to conduct research and to translate new knowledge directly to clinical teaching, practice, and other aspects of health care.

Areas of support for postdoctoral awards are:

* **Basic pathobiology.** Advanced training in a research environment affording interdisciplinary opportunities for post-PhD's from basic biological sciences and biophysical-biochemical fields to participate in fundamental biomedical research problems including research on, or applicable to an understanding of, pathologic and disease systems; and to provide post-M.D.'s with an in-depth working knowledge of the principles and tools of basic science for research at the cellular and molecular levels in both normal and diseased states.

* **Genetics (with emphasis on medical genetics).** Advanced and special research training in genetics, utilizing and applying the principles and fundamental mechanisms of genetics toward the understanding of human genetic disease. Postdoctoral trainees to be drawn from diverse basic biological and medical backgrounds for research study with faculty representing various approaches to genetic research – ranging from biochemical genetics to human population genetics. Preference will be given to applications presenting training opportunities in medical genetics.

* **Clinical pharmacology.** Advanced research training in basic and clinical pharmacology and planned studies to acquire fundamental scientific knowledge and research techniques in areas such as chemistry, biochemistry, physiology, genetics, certain behavioral science subdisciplines and clinical research specialties, to make individuals holding the M.D. or PhD degree competent to investigate, in depth, the effects and the mechanisms of drug actions in humans.

* **Trauma and burn research.** Special multidisciplinary, research-based program to train postdoctoral scientists to become capable of advancing our knowledge of the body's complex reaction to traum and burn injuries. The supervisory staff should include trauma surgeons and/or burn specialists as well as basic scientists, and the program director is expected to emphasize research training in related fields such as physiology, biochemistry, and microbiology.

The individual postdoctoral fellowship program supported by NIGMS was announced previously and

the deadline for applications for the June awards has already passed. The next deadline is May 1, for the November awards.

Individual awards may be applied for in any of the areas listed for institutional grants. In addition, individual awards may be made in behavioral sciences related to medicine, clinical laboratory sciences, epidemiology and anesthesiology.

All National Research Service awards involve the payback provisions which require participating students to serve specified amounts of time in research, teaching, or public service.

For more details on the program, write or call Margaret J. Carlson, Training Officer, NIGMS, Bethesda, Md. 20014, 301-496-7585.

NEW ANTICANCER DRUGS REPORTED; NCI CRITICIZED FOR DEVELOPMENT DELAYS

Clinical trials will start soon on a new anticancer drug, maytansine, developed by NCI contractors and whose potential was first recognized by investigators at the Univ. of Virginia.

The U.Va. team, headed by S. Morris Kupchan, John W. Mallet professor of chemistry, has found another drug, tripdiolide, which may have equal potential as an anticancer agent. No toxicity tests have been conducted with tripdiolide; NCI has barely started the process involved in producing the drug in quantities required for further tests.

Maytansine and tripdiolide were described by Kupchan in an article in the November, 1974 *Federation Proceedings*. Both drugs are derived from plants—maytansine from maytenus serrata and tripdiolide from tripterygium wilfordii. Maytansine showed potent inhibitory activity against five standard animal tumor systems in the NCI screen. Tripdiolide showed significant activity against the L-1210 leukemia in mice.

A number of physicians who know about these two drugs and possibly others in the NCI pipeline have expressed impatience with the length of time required before they are available for clinical use.

"My hospital has patients who aren't responding to any treatment presently available," said Solomon Garb, scientific director of American Medical Center at Denver. "They say they need toxicity tests for drugs before we can give them to patients. Well, the drugs can't be any more toxic than cancer. So we save our patients from the possible toxic effects of the drugs by letting them die."

Federal regulations prohibit clinical use of a new drug prior to toxicity trials, usually in monkeys and dogs. But Garb and others feel strongly that efforts should be made to speed up the process, perhaps by conducting some of the toxicity testing in parallel with clinical tests.

"It's an absolute disaster and a goddam shame that there's even one day delay when 900 people a day die of cancer," Garb said. "Look. If a certain dose doesn't kill a mouse, it won't kill a human. You try one dose, if that doesn't show results, increase it, gradually build it up until you get results. Long term effects? The patients I'm talking about will be dead in six months. If we have something that will help them now, they should have it."

Saul Schepartz, associate director for drug research and development in NCI's Div. of Cancer Treatment, said it requires an average of four years for a newly-identified drug to reach clinical trials. After the initial biological tests, there is the developmental work—finding a means for administering the drug, developing the supply of raw material, getting it into large-scale production—before the toxicity testing can start. Those tests then take a minimum of nine months.

Occasionally a new drug will come with previously-obtained data, such as foreign trials, that could shorten the process somewhat. But other times, one step or another will present an especially difficult problem. One that frequently causes delays is the development of a system to administer the drug, Schepartz said. Some drugs are not readily soluble for IV solutions, complicating the problems.

When the drug is derived from a plant, as are maytansine and tripdiolide, the U.S. Dept. of Agriculture collects the plants or arranges for their production under an agreement with NCI. The drug is then produced by one of several pharmaceutical firms on contracts with NCI.

Tripdiolide is still about a year away from clinical trials, Schepartz said, which would put it close to the four-year average. Kupchan's team completed its work on the drug in June, 1972.

"Some of us who are involved in discovering new drugs are frustrated by delays like that," one investigator told ***The Cancer Letter.*** "We're not talking about quack medicines. These are drugs that come up through the NCI screen and have been selected for clinical trials. Then they're hung up at NCI. The slowness in developing promising candidate drugs is a problem that can and must be corrected."

Schepartz admitted that tripdiolide was not placed on the schedule for development immediately after Kupchan had completed his work, but he insisted "it was not held up significantly. It was a matter of priorities. We had others at that time with a higher priority."

It's not necessarily a matter of budget restrictions that forces Schepartz to put some drug candidates ahead of others. More limiting is the capacity of clinical investigators to get new trials under way considering other demands on them, he said.

Some clinicians lay much of the blame for the drug development delays onto the Food & Drug Administration. FDA regulations do require the preclinical toxicity testing before an investigational new

drug (IND) application is accepted (an IND must be submitted by a drug's sponsor before the drug is administered to humans). Except for that requirement, however, FDA has not delayed clinical tests on new drugs sponsored by NCI, according to Schepartz.

After toxicology studies have been completed, administration method accepted and clinical investigators located, NCI files an IND application with FDA. A 30-day waiting period is required to permit FDA opportunity to look over the application, a delay Schepartz said is "reasonable." Clinical trials then may start immediately.

From that point on, years may elapse before FDA approves a drug for general practice. The clinical trials may take several years, depending on a host of factors. When the trials are completed, the sponsor must then file a new drug application (NDA) which includes all the clinical data.

FDA has been severely criticized by pharmaceutical manufacturers and investigators for delays in processing NDAs. Attempts have been made to reduce the delays by imposing deadlines on FDA reviewers, use of computer systems and other administrative steps, with limited results.

In Brief

RP INVESTIGATORS FIND FURTHER LEUKEMIA-RADIATION FACTORS

(Continued from page 1)

evidence that doses of radiation, when given during preconception, in utero, or postnatal increase the risk of leukemia in susceptible children. Irwin Bross, director of the Dept. of Biostatistics, and Nachimuthu Natarajan looked for relative risks from all three stages of exposure matching children with a history of allergies, infectious diseases and physical disorders against normal controls. Children with the high indicators of susceptibility for developing leukemia, and who had undergone radiation exposure, were significantly highest on a relative risk scale, the investigators reported. . . . **"SEMINARS IN ONCOLOGY,"** a new quarterly review journal, is published by Grune and Stratton, 111 Fifth Ave., NYC 10003, $19.50 per year, $14.50 for students, interns, residents and research fellows. . . . **CARCINOGENESIS** Conference, sponsored by NCI's Div. of Cause & Prevention, is scheduled for Feb. 2-6 at the Carlton House in Orlando, Fla. New scientific data on major areas of research in carcinogenesis will be presented. Abstracts describing research supported by the Carcinogenesis Program will be available. The conference is open to the public. Contact Allen Heim, NCI, Landow Bldg, Rm A306, Bethesda, Md. 20014, phone 301-496-1881 for more details. . . . **OCCUPATIONAL CARCINOGENESIS** conference is being planned by the National Institute for Occupational Safety & Health. The New York Academy of Sciences will conduct it. . . .

DCT RESPONSIBLE FOR DRUG DEVELOPMENT, CLINICAL TRIALS OF NEW COMPOUNDS

Drug development had its beginning at NCI, on a major scale, with the start of the Chemotherapy Program in 1955. Gordon Zubrod, now director of the comprehensive cancer center at the Univ. of Miami, headed the program and later became director of the Div. of Cancer Treatment, into which the Chemotherapy Program evolved when NCI's components were organized into divisions. Vincent DeVita is now DCT director.

DCT implements clinical tests of new drugs in the NIH Clinical Center by the Medical Oncology unit, and through contracts monitored by Medical Oncology and by the Cancer Therapy Exaluation Branch.

DCT reports there are now 40 anti-tumor drugs which have either been licensed or are in clinical trial.

The Division says its strategy for the future includes studies attempting to explain the differences between rapidly growing and slowly growing tumors, and perfection of animal models for slowly growing tumors; the continuation of a broad screening operation involving chemicals and natural products obtained through developments in university laboratories, industry, and other institutions in this country and abroad as well as those selected on the basis of biochemical or biological rationales; in vitro biochemical screens as well as the use of slowly and rapidly growing animal tumor models to select the best drugs, schedules, and combinations; increased toxicologic and pharmacologic studies in animals and man; and the organization of clinical trials to study each new agent in representative radpidly and slowly growing tumors.

q Clinical trials of drug combinations and combinations of drugs with other modalities including surgery, radiotherapy, and immunotherapy will be continued. Studies will be carried out on supportive care of patients, particularly those at high risk to infection as a consequence of cytotoxic therapy. This includes studies of granulocyte transfusions, bone marrow transplants and laminar flow protected environments, the Division said.

TOBACCO COUNCIL ANNOUNCES 11 NEW GRANTS, INCLUDING STUDIES OF TWINS

Studies of human twins, considered by many scientists to be ideal subjects for determining the effects of environmental agents on various diseases, are being expanded by the Council for Tobacco Research.

Two projects involving twin populations in California and Finland were among 11 new grants funded by the Council. Another twin study had been previously funded in Sweden.

A total of 26 new grants was approved in 1974 by

the Council, which has appropriated over $30 million for smoking and health research since its formation 21 years ago by representatives of tobacco manufacturers, growers and warehousemen.

Other new studies for which the Council is providing financial support include genetic differences in the way human and mouse tissues metabolize cancer-causing chemicals; effects of smoking deprivation on risk-taking; endocrine functions of the lungs; and the possible interaction of viruses and chemicals in cancer.

The Council supports research by independent scientists who conduct their own studies in their own institutions and are responsible for disclosing their findings. Grants are awarded after applications for research support are reviewed by a Scientific Advisory Board currently composed of 10 physicians and scientists.

Recipients of new grants, their institutions and the titles of their research projects:

Gary D. Friedman, Kaiser Foundation Research Institute, Survey of twins in the Northern California health plan.

Leonide Goldstein, Rutgers, The chronic nicotine state and anxiety: a behavorial and electroencephalographic analysis of induced and spontaneous hyperactivation in rats.

J.W. Gorrod, Univ. of London, The metabolism of pyridines in relation to the induction of neoplastic disease.

Norman W. Heimstra, Univ. of South Dakota, Effects of smoking on risk-taking behavior.

Joseph M. Lauweryns, Univ. of Leuven, Belgium, The lymphatics of the lung, their role in fluid transport and clearance of airborne particulate matter in normal and experimental conditions and in various lung diseases.

Jay W. Levy, Univ. of California (San Francisco), Development of a model system in vitro for studying carcinomas, study of possible interplay of endogenous viruses and chemicals in cocarcinogenesis.

Clayton G. Loosli, Univ. of Southern California, The effects of fresh cigarette smoke inhalation on the respiratory tract of mice.

M.C. Pike, Univ. of Southern California, Study of relationship between susceptibility of certain cancers and aryl hydrocarbon hydroxylase.

Ilari Rantasalo, Univ. of Helsinki, The Finnish twin registry.

Una S. Ryan, PapanicolaouCancer Research Institute, Endocrine functions of the lungs.

Irene Y. Wang, Univ. of California (San Francisco), Genetic differences in the in vitro metabolism of chemical carcinogens by human and mouse tissues.

PRIME CONTRACT SUBCONTRACT OPPORTUNITIES

Respond as indicated in each synopsis directly to each prime contractor.

RFP 74-5-10

Title: *Long term carcinogenesis bioassay testing using rodents*

Deadline: *March 3*

It is anticipated that the studies will include dosages via gavage, skin-painting, dosed-water, I. P., and dosed-feed. Resulting contracts(s) will be first-tier subcontract(s) under prime contract.

Pre-proposal conference is to be held Jan. 31, 1975, 9 a.m., at Tracor, Inc., 1601 Research Blvd., Rockville, Md., in the main conference room. Attendance by written request only.

Contact: Tracor Jitco Inc.
1776 E. Jefferson St.
Rockville, Md. 20852
Attn: Subcontract Administrator

Title: *Toxicology studies*

As prime contractor for the toxicology program of the Div. of Cancer Treatment, Battelle Columbus Laboratories has potential subcontractor opportunities in the areas of:

a) Standard and special protocol large animal toxicologic evaluations.

b) Mouse toxicity studies with histopathology.

c) Organ specific toxicologic evaluations—hemolysis, thrombogenicity/venous irritation, cardiac function impairment, simultaneous determination of renal/hepatic toxicity, and CNS toxicity.

d) Detailed toxicologic studies to determine bioavailability of antineoplastic agents.

e) Evaluation of the irritation and absorption resulting from the topical application of antineoplastic agents.

f) Toxicologic studies of two or more antineoplastic agents given simultaneously or sequentially.

This is not a request for proposals, but small and/or minority business concerns and others interested in opportunities under this Prime Contract may submit brief capabilities statements to:

Contact: Battelle Toxicology Program Office
7405 Colshire Dr., Suite 220
McLean, Va. 22101

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. Some listings will show the phone number of the Contract Specialist, who will respond to questions about the RFP. Contract Sections for the Cause & Prevention and Biology and Diagnosis Divisions are

located at: NCI, Landow Bldg. NIH, Bethesda, Md. 20014; for the Treatment and Control Divisions at NCI, Blair Bldg., 8300 Colesville Rd., Silver Spring, Md. 20910. All requests for copies of RFPs should cite the RFP number. The deadline date shown for each listing is the final day for receipt of the completed proposal unless otherwise indicated.

RFP NO1-CP-55667-62

Title: *Provide well characterized referenced compounds to carcinogenesis researchers*
Deadline: *March 24, 1975*

This project is designed to serve a dual purpose. One is to provide compounds that are unavailable from other sources and the other is to provide analyzed chemicals to researchers in order to eliminate variability in experimental results due to the use of unanalyzed chemicals from a variety of sources. All facilities devoted to this project must comply with the OSHA regulations for handling carcinogenic materials.

Contracting Officer: D.J. Dougherty
Cause & Prevention
301-496-6361

RFP NO1-CO-55226-04

Title: *Survey and analysis of Journal of the National Cancer Institute, (JNCI) Readers, Subscribers and authors*
Deadline: *Probably mid-February*

Qualified sources are being solicited to perform a survey and analysis of the readers, subscribers and authors of papers published in JNCI. The results of this effort will characterize the survey population in terms of who they are, why they use the JNCI, and their assessment of the JNCI.

The survey and analysis will include both actual and potential readers, subscribers and authors. The survey will be performed in sufficient detail to provide insight into opinions on the strengths and weaknesses of the JNCI in terms of format, review procedures, technical quality of published papers and usefulness of special features.

This effort will also include a determination of the readers, subscribers and authors reactions to specific proposals for changes in format, content and/or review procedures of the JNCI. It is anticipated that this survey and analysis effort will be completed within a nine-month period.

In order to be considered for award, prospective contractors should have substantial experience in survey design, pretesting, sampling, data collection, analysis and reporting. Experience in surveying technical magazines or journals, expeirence in the biosciences and experience in international surveys is desirable. Evidence of the contractors capability to obtain non-response rates of less than 10% is required. Prospective contractors should submit evidence of applicable staff capabilities and facilities necessary to perform this study.

Qualified organizations are invited to submit written statements of their qualifications and experience. The statements should not exceed 10 pages exclusive of covering letter, staff resumes and tabular presentation of survey experience. Company brochures will not be acceptable.

Contracting Officer: Hugh E. Mahanes Jr.
Control & Rehabilitation
301-427-7984

CONTRACT AWARDS

Title: Breast Cancer Detection demonstration project
Contractors: Albert Einstein Medical Center, $180,737; Wilmington, Dela., Medical Center, $185,327; Pacific Health Research Institute, Honolulu, $171,966.

Title: Phase I studies of new anticancer agents
Contractors: Mount Sinai School of Medicine, $116,000; Mayo Foundation, $165,715; Sidney Farber Cancer Center, $94,210.

Title: Services in support of primary drug screening program
IIT Research Institute, Chicago, Ill., $212,949.

SOLE SOURCE

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

Title: Support for subcommittee on the geochemical environment in relation to health and disease.
Contractor: National Academy of Sciences.

Title: Continuation of metabolism of antineoplastic agents study
Contractor: Stanford Research Institute.

Title: Virus and reagent production and purification
Contractor: Flow Laboratories.

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for the preparation of the Cancer Update Sheets and the Technical Bulletins.

Ideally, one member of the CIDAC staff should have some experience in the information science area as well as extensive subject competence. However, there are several other acceptable alternatives including arrangements to work closely with information scientists on the local library staff or to employ information scientist consultants who will work closely with CIDAC staff during the early stages of the contract.

In order for each CIDAC to focus on one assigned subject area, **no organization will be awarded a contract for operating more than one CIDAC.** However, proposals will be accepted and reviewed for more than one CIDAC from the same organization. Bidders conference will be scheduled for the project. Notice concerning the conference will be mailed with the RFP.

Contracting Officer: Hugh E. Mahanes Jr.
Control & Rehabilitation
301-427-7984

RFP NO1-CP-55670-57

Title: *Development of detailed methods and protocols for carcinogenesis screening using cell culture assays*
Deadline: *March 17*
Budget Estimate: *$1 million first year*

Organizations are sought having the necessary capabilities and facilities to evaluate and determine the usefulness and reliability of in vitro cell transformation systems as initial assays in determining the carcinogenic potential of chemical compounds.

Experimental conditions for cell growth and frequency and type of transformation obtained have been described in the literature for a number of systems. Among the systems to be considered are those in which direct action of a carcinogen on the cell leads to transformation and those in which the activity of a compound is mediated by appropriate metabolic activation of virus infected cultures.

A specific aspect of this project will be the development of metabolic activation systems. The system included for study and development utilizes: 1.) Balb/3T3 cells 2.) Fisher rat embryo cells 3.) Fisher rat embryo cells infected with Rauscher leukemia viruses 4.) Hamster embryo-host mediated 5.) Epithelial cells from a variety of species.

In order to fully evaluate these systems it is the Government's initial intention to have a single laboratory study only one system. The real value of in vitro assays for reproducibility and standardization. The initial group of chemical carcinogens and analogues to be used in setting up the systems will include: 3-Methylcholanthrene; Antracene; 7,12-Dimethylbenz (A) Antracene; Phenanthrene; Benro (A) Pyrene; Pyrene; Dibenz (A.H) Anthbancene; Benzo (E) Pyrene; N-Methyl-N-Nitro-N-Nitrosoguanidine; Diphenylnitrosamine; Dimethylnitrosamine; Methylazoxymethanol Acetate; and N-Acetoxy-N-2 Fluorenylacetamide.

When there is sufficient confidence with the system an additional group of 90 reference chemicals, consisting of both carcinogens and non-carcinogenic analogues will be assayed to determine the response of the assay systems.

All chemicals will be supplied by NCI. Multiple contracts will be awarded for these studies (probably at least five).

Contract Specialist: Anna Beattie
Cause & Prevention
301-496-6361

SOLE SOURCE NEGOTIATIONS

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

Title: Breast cancer detection demonstration project
Contractors: Stella and Charles Guttman Diagnostic Institute, New York; Good Samaritan Hospital and Medical Center, Portland, Ore.; Cancer Research Center, Columbia, Mo.; and Rhode Island Hospital, Providence.

Title: Studies on type-C viruses in relation to oncogenic potential
Contractor: Flow Laboratories, Inc.

Title: Support services to maintain studies of spontaneous and virus induced neoplastic transformation
Contractor: Meloy Laboratories.

Title: Research and development and monitoring of biohazards facilities.
Contractor: Dow Chemical Co., Midland, Mich.

Title: Studies of tumor viruses in nonhuman primates
Contractor: Rush-Presbyterian-St. Luke's Medical Center.

CONTRACT AWARDS

Title: State cervical cancer screening program
Contractor: Illinois State Dept. of Public Health, $815,177.

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