

NIH GUIDE

for GRANTS and CONTRACTS

U.S. DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE

Vol. 5, No. 4, April 21, 1976

IN THIS ISSUE:

DESCRIPTIONS OF NIH COLLABORATIVE PROGRAMS

The descriptions of the collaborative programs of the various components of the NIH which appear in this issue replace those published in Vol. 3, No. 21, dated December 26, 1974, of the *NIH GUIDE FOR GRANTS AND CONTRACTS*. This issue also contains a summary of the projected programs of a new institute, the National Institute on Aging (NIA).

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The GUIDE is published at irregular intervals to provide policy and administrative information to individuals and organizations who need to be kept informed of requirements and changes in grants and contracts activities administered by the National Institutes of Health.

Supplements, printed on yellow paper, are published by the respective awarding units concerning new projects, solicitations of sources, and requests for proposals.

NOTICE

PLEASE COMPLETE AND RETURN
FORM ON PAGE 49 IF APPLICABLE

Vol. 5, No. 4, April 20, 1976

DESCRIPTIONS OF NIH
COLLABORATIVE PROGRAMS

A N N O U N C E M E N T

Descriptions of the collaborative programs of the various components of the NIH appear in this issue of the *NIH GUIDE FOR GRANTS AND CONTRACTS*. These announcements replace those published in Vol. 3, No. 21, dated December 26, 1974. The present issue also contains a summary of the projected programs of a new Institute, the National Institute on Aging (NIA); and the new programs of the Center for Research for Mothers and Children, National Institute of Child Health and Human Development (F-34, F-35, and F-36).

Individuals wishing their names to be placed on the mailing list for announcements of the NIA and those who do not now receive the *GUIDE* or supplements or who wish to receive different sets of announcements than they now receive should complete and return the form on page 49 of this announcement.

To those individuals who wish to receive the regular *GUIDE* only (or the *GUIDE* and supplements) the NIH will send all announcements of policy implementation or changes related to both grants and contracts.

Supplemental issues of the *GUIDE* appear on yellow paper at irregular intervals and announce the availability of a Request for Proposal (RFP) or ask that interested organizations submit a statement of capabilities to perform R&D activities in a particular area. For research activities, NIH programs allow a period of at least 45 days from the date of an RFP until the date when the offeror must submit a proposal. Announcements of procurements for support of research provide a minimum term of 30 days for response.

While program staff review statements of capability and send RFP's only to those organizations having personnel and resources capable of performing the particular task, any organization may request the RFP and submit a proposal.

Review of proposals in response to an RFP is the task of technical review groups. These groups, many of which are formally chartered committees, usually contain a high proportion of scientists outside of the Government. At the present time the NIH is in the process of restructuring these technical review groups in such a manner that non-Governmental scientists will

constitute at least three-fourths of the membership of such groups which determine those proposals that are or are not acceptable. Program staff then negotiate contract(s) with one or more offerors whose proposals fall in the "acceptable" range.

Because of the large number of names on these mailing lists, individuals now on the list (and those wishing their names to be added) should request announcements only for those programs in which they have direct interest.

NIH BIOMEDICAL RESEARCH CONTRACTS

1. BACKGROUND In addition to support of research and research training through the grant mechanism, with which the biomedical research community is well acquainted, NIH accomplishes its several missions through work conducted in its own facilities and support of mission-related activities in other institutions, Federal and non-Federal. Work supported in other Federal laboratories is arranged by interagency agreements and appropriate transfer of funds. This represents only a small fraction of funds available for contracts, but is nevertheless significant in that it makes available the talents and expertise existent in other Governmental laboratories. The major part of contractual activities are conducted in universities, research foundations, and commercial and industrial organizations across the Nation.

Contracts are identified in NIH reports as "collaborative research and development." This is because NIH seeks collaboration with other organizations and fosters collaboration among a number of other institutions to accomplish certain research goals.

2. BASIC CRITERIA Contracts are used for procurement of research and development when the following considerations obtain:

- a. the NIH procures a specific service or defined end product, including research, development, and related activities for identified NIH program needs, e.g., evaluation studies, technical assistance, surveys, consulting services, training projects where NIH selects the individuals or specifies the content of the program, planning for NIH use, production of publications or audiovisual materials (other than as results of R&D projects or as proceedings of scientific conferences which are not being procured for use by the Government); and
- b. the NIH exercises direction or control under terms of the agreement by specifying the scope of the work and manner of performance and requires responsiveness by the performer in the event a change in direction of the effort is necessitated by program developments; and
- c. NIH staff closely monitors technical and administrative performance during the course of the activity to ensure that work on the project is accomplished in accordance with terms of the agreement.

3. MANDATORY USE OF CONTRACTS Notwithstanding any of the foregoing, selection of contracts is mandatory whenever:

- a. an award is made to a commercial, i.e., profit-making, organization; or
- b. material having a security classification is involved.

4. SELECTION OF CONTRACTORS It is the policy of NIH to advertise its requirements for research and development contract projects as widely as possible. Participation in such projects is sought from all segments of the biomedical scientific research community and from engineering development organizations, where the expertise for the performance of specialized work may reside. Such advertising is conducted through the medium of COMMERCE BUSINESS DAILY^{1/}, NIH GUIDE FOR GRANTS AND CONTRACTS Supplements, and notices in general or specialized scientific journals. It is also the policy of NIH to encourage possible contractors to submit statements of competence and interest in regard to contract programs which will be announced in general terms, henceforth, in this publication. Such statements will serve as the basis for the compilation of lists of "sources." These sources may be requested directly to submit proposals on individual projects as they are developed within a specific program.

NIH policy is to assure that awards of contracts are based on scientific and technical ability and judgment, availability of facilities, and other such factors as displayed in the contract proposal, as well as on price. Scientific review of proposals is conducted by advisory panels composed of at least 75% non-NIH members from the scientific community. Contracts proposed for award by such bodies receive further review by a senior staff group of the awarding unit.

5. DESCRIPTIONS OF THE COLLABORATIVE PROGRAMS of the NIH awarding units appear in this issue of the NIH GUIDE FOR GRANTS AND CONTRACTS. It will be the policy of NIH to assure that all new collaborative programs are announced in this manner, as well as through other media. The GUIDE also will provide information on the contract programs of the NIH awarding units as well as furnish information on procedural and administrative policy matters. GUIDE supplements are issued by the individual awarding units to announce the availability of RFP's or, as stated above, to compile lists of "sources" from whom proposals may be solicited.

6. RESCISSION This statement supersedes GUIDE No. 21, Vol. 3, December 26, 1974.

^{1/} COMMERCE BUSINESS DAILY available on an annual subscription rate of \$75 plus an additional \$141.90 for airmail service. To order, send remittance plus full mailing address to: Superintendent of Documents, Government Printing Office, Washington, D.C. 20402

References

- (1) DHEW Grants Administration Manual, Chapter 1-10, Considerations in Selecting Award Instrument - Contract or Grant
- (2) FMC 73-7, December 19, 1973

COLLABORATIVE (CONTRACT) ACTIVITIES OF
THE NATIONAL CANCER INSTITUTE

This issuance provides a summary of programs in cancer biology and diagnosis, cause and prevention, treatment, and control and rehabilitation currently conducted by the National Cancer Institute (NCI). The contract mechanism is used at least as a partial means of pursuing the objectives of each of the programs described below.

CANCER TREATMENT

The objective of the Division of Cancer Treatment is the development of drugs which singly or in combination with other drugs or modalities are efficacious in producing complete remissions of clinical cancer at safe and tolerable dosages and in extending the disease-free interval so that the patient's life expectancy approaches or equals that of the normal comparable populations. This program is implemented in laboratories and clinics in Bethesda, Baltimore, and Washington, D.C., by NCI scientists and at universities, commercial organizations, and other institutions under contract agreement with the NCI.

The Division of Cancer Treatment had its beginning as the Chemotherapy Program in 1955 with the establishment of the Cancer Chemotherapy National Service Center. In 1965, a thorough study of the previous 10 years' experience in drug development was undertaken and, as a result of that study, a linear array was developed and the logical steps from drug acquisition through screening to clinical trials were outlined. The program was then reorganized into three major segments along the lines of the linear array.

The first of these major segments is the Drug Research and Development area which is responsible for the input of chemical compounds and natural products for screening, drug formulation, and drug scheduling studies. The second segment is Experimental Therapeutics where toxicology and pharmacologic disposition of drugs are studied. Those compounds that pass these first two segments successfully then undergo clinical trials in man in the Clinical Oncology area of the program, either in the Clinical Center or in clinical resources under contract. In addition, the Cancer Therapy Evaluation Branch of the Division implements and monitors a comprehensive therapy clinical contract program designed to provide for clinical trials of anti-cancer drugs and studies of combined modality therapy; the cancer therapy evaluation program includes responsibility for the clinical cooperative group effort. This unit is also responsible for the communication and filing of all information required by the Food and Drug Administration in connection with the drug development program of the Division of Cancer Treatment.

Clinically active, safe drugs eventually are cleared by the FDA and become commercially available for use by practicing physicians for the control of cancer. There are now 40 anti-tumor drugs which have either been licensed

or are in clinical trial. There are currently ten types of cancer in which treatment with drugs, either singly or in combination with other drugs or with radiation or surgery may result in life expectancy approaching the normal for a comparable group in significant numbers of patients. These cancers are the more rapidly growing types but many of the drugs are effective in inducing impressive tumor regressions in the more slowly growing cancers.

The 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 rapidly and slowly growing tumors. Clinical trials of drug combinations and combinations of drugs with other modalities including surgery, radiotherapy, and immunotherapy are also sponsored. Finally, there are extensive basic and clinical studies of the biology of cancer, and of the 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. For further information write Program Planning Officer, OD, DCT, National Cancer Institute, Bethesda, Md. 20014.

CANCER CONTROL AND REHABILITATION

The Division of Cancer Control and Rehabilitation (DCCR) has the principal Federal responsibility for assuring the rapid and effective application of cancer research findings in the prevention, detection, diagnosis and treatment of cancer and for the rehabilitation and continuing care of cancer patients. It is the ultimate DCCR goal to reduce the incidence, morbidity and mortality from cancer through a five-pronged effort.

1. Identification of new methods, knowledge, and techniques that may be applicable to control activities. These activities will involve close monitoring of the progress of research efforts and potential results; surveys to identify proven, practical knowledge and techniques; and data collection efforts to compile available information directly applicable to control activities.
2. Field testing of potential control knowledge and techniques in limited community field trials to determine their potential for widespread community usage. This effort provides an orderly transition from Phase III clinical research trials to community usage.
3. Evaluation of potentially useful control knowledge and techniques to determine their effectiveness, practicality, acceptability, impact on the disease, and economic or cost-benefits prior to embarking on costly widescale community demonstration and promotion efforts.

4. Demonstration of effective, practical, control knowledge and techniques in large-scale community environments that are widespread geographically and demographically to provide the public and health professionals with first-hand knowledge of the utility and effectiveness of the demonstrated knowledge and techniques; and to provide the basis for continued community support of the efforts.
5. Promotion of demonstrated effective, practical knowledge and techniques to assure their rapid widespread utilization in all areas in the Nation.

DCCR will not support laboratory or clinical research to develop new procedures or techniques, except for research in rehabilitation. DCCR has full responsibility for development and implementation of research in rehabilitation and will support research projects in this area. DCCR will also support work to improve the application and distribution of existing procedures and techniques recommended for general use. Such refinement research will compete for DCCR resources on the same basis as other projects.

DCCR is concerned with the entire scope of the cancer problem, from the prevention of the disease to the rehabilitation and continuing care of the cancer patient during and after treatment. Program thrusts, therefore, are in three major intervention areas: (1) Prevention; (2) Detection, Diagnosis and Pretreatment Evaluation; and (3) Treatment, Rehabilitation and Continuing Care.

Prevention activities will include identifying methods and techniques to inform, educate, and persuade the American public to fully utilize available cancer prevention services.

Activities in Detection, Diagnosis, and Pretreatment Evaluation will be concentrated on promoting more effective communication among physicians, health professionals, and the public regarding the detection, diagnosis, and pretreatment evaluation of cancer patients, with particular emphasis on improvements to this end through the use of existing community resources and mechanisms. Identifying new methods and techniques and disseminating information on them to both health professionals and the public where appropriate is also being stressed.

Treatment, rehabilitation, and continuing care activities will undertake to promote more effective communications among physicians, health professionals, and the public regarding the treatment and rehabilitation of cancer patients. Particular emphasis will be placed on the use of community resources and mechanisms. Additional emphasis will be placed on the identification of new methods and techniques to be demonstrated to both health professionals and the public where appropriate. It will also be necessary to develop and demonstrate a broad spectrum of rehabilitative and continuing care activities. In addition to the traditional approach, such activities will include counseling to the patient and his or her family to maintain family competence assuring adequate self-care, personal care, and vocational functions.

DCCR supports these program activities with both grants and contracts. Identification, and field testing, with the accompanying evaluation, are envisaged to be the first steps in translating and transmitting research

results to the medical providers and cancer patients or potential patients. DCCR support for these activities will be on an individual project basis by the most appropriate support mechanism. The second steps, demonstration and promotion, with the accompanying evaluation are to be accomplished through grants and contracts involving institutions and communities, including outreach and communications programs from the Comprehensive Cancer Centers and the Community-Based Cancer Control Programs.

The grant-supported portion of the DCCR program encompasses all three intervention areas. It is intended (1) to provide new concepts for a more effective utilization of existing procedures and/or techniques and (2) to provide information on refinement of established procedures and/or techniques for a more vigorous prosecution of Cancer Control.

Grant applicants should submit PHS Grant Application Form NIH 398 to the Division of Research Grants, National Institutes of Health, Bethesda, Maryland 20014.

They should type "CANCER CONTROL" in the top margin of the face page of the application. Applications must be received by February 1 (renewals) or March 1 (new) for review at the September-October meeting of the National Cancer Advisory Board; by June 1 (renewals) or July 1 (new) for review at the January-February meeting of the Board; and by October 1 (renewal) or November 1 (new) for review at the May meeting of the Board.

Guidelines for the grant-supported portion of the DCCR are available upon request. Inquiries should be directed to:

Dr. Dorothy R. Brodie
Program Director for Grants
Division of Cancer Control and
Rehabilitation, NCI
Room 714, Blair Building
National Institutes of Health
Bethesda, Maryland 20014
Telephone: (301) 427-7252

DCCR contracts are advertised in the *COMMERCE BUSINESS DAILY* and other publications. All noncompetitive contracts require special justification and DCCR should be queried before fully developed unsolicited proposals are submitted.

Inquiries concerning DCCR contracts should be addressed to:

Mr. Hugh E. Mahanes
Head, Cancer Control Contracts Section
Research Contracts Branch, NCI
Room 201A, Blair Building
National Institutes of Health
Bethesda, Maryland 20014
Telephone: (301) 427-7984

CANCER BIOLOGY AND DIAGNOSIS

General. The research of the Division of Cancer Biology and Diagnosis, NCI, is divided into four programs. The Cancer Biology Program includes the efforts of the Laboratories of Biochemistry, Molecular Biology, Pathophysiology and Theoretical Biology, and the Dermatology Branch, aided by a small number of research support contracts. The Tumor Immunology Program encompasses the intramural research of the Laboratories of Cell Biology and Immunodiagnosis, and the Immunology and Metabolism Branches, plus a national effort supported through research contracts. The Cancer Diagnosis Program includes the intramural research of the Laboratory of Pathology and a national program of research contracts in the area. The Breast Cancer Program consists entirely of a research contract program of national scope.

The three national research contract programs, in Tumor Immunology, Cancer Diagnosis and Breast Cancer were established to foster research in these areas, and are divided into three or four subprograms. Each subprogram is monitored by a committee, largely of non-Government scientists, who provide peer review of contract proposals, and also advise on program goals, directions, and solicitations. Where related NCI grant and contract programs exist, notably grants in immunology, grants in diagnosis of the National Organ Site Programs, and research contracts of the Viral Oncology Program and of the Division of Cancer Treatment involving breast cancer or immunotherapy, coordination is provided by the staff and by the knowledge of the fields by committee members. Unsolicited proposals, if considered relevant to the programs, are reviewed for technical merit and originality and may be funded on the latter basis as non-competitive procurements. However, the bulk of contract awards are made to the best proposals of those solicited by advertised Requests for Proposals.

Tumor Immunology. This research contract program is designed to give emphasis generally to the immunologic aspects of the cancer problem, and specifically to areas deserving early additional support, in the opinion of the staff and advisors. The program is divided into three portions. Immunobiology supports laboratory research into those aspects of immunology of special importance in cancer. Immunodiagnosis includes laboratory and clinical research on the development and testing of immunological techniques that may be used for cancer diagnosis, especially in early stages of the disease, and centers on research in human tumor-associated antigens and responses to them. Immunotherapy involves laboratory and clinical research to develop and test immunologic methods for the treatment of human cancer.

Cancer Diagnosis. This program supports selected areas of research, equipment development and clinical testing to provide new and improved methods for the early detection and diagnosis of human cancer. The first of three subprograms, General Cancer Diagnosis now supports varied efforts ranging from laboratory research on aberrant hormones and other biochemical substances as cancer markers, to the development of immunochemical methods for identification of human fecal blood, to combined laboratory and clinical studies on the early recognition of pancreatic cancer, to controlled clinical trials of sputum cytology for the detection of lung cancer and of fecal blood for bowel cancer, to theoretical studies of strategies for multisite

cancer screening. The area of Cytology Automation is concerned with the development of equipment, based on cell sorting, pattern recognition, or other techniques, that could be used by clinical laboratories for reading Papanicolaou smears or other cytologic specimens for cancer detection. Support may be provided for research, including ancillary aspects, for equipment development, and for both engineering and clinical testing. The newest subprogram in Cancer Diagnostic Radiology is devoted to the development or improvement of radiologic and other imaging techniques used or usable for the diagnosis of cancer. It is presently concerned with the clinical evaluation of computerized transaxial tomography in brain lesions, the development of computerized tomography for other areas of the body, including working out and testing computer algorithms for this with both x-rays and radionuclides. Future work may include ultrasonic imaging.

Breast Cancer. The program of the Breast Cancer Task Force includes laboratory and clinical research of many types, all specifically directed toward breast cancer. Primarily virological studies are not covered here, but are part of the Viral Oncology Program of the Division of Cancer Cause and Prevention. Breast Cancer Epidemiology is devoted to work to identify individuals and groups at high risk of the disease, and includes ancillary laboratory studies. Breast Cancer Experimental Biology supports basic laboratory and animal studies into the growth and spread of tumors of the breast. Present work in Breast Cancer Diagnosis is largely clinically related, including attempts to improve x-ray and mammography, to develop other physical methods such as ultrasound, and to investigate other possible methods for screening and diagnosis, such as cytology of breast fluid and breast cancer antigens. Breast Cancer Treatment is supporting clinical trials of the extent of surgery needed in primary disease, of adjuvant chemotherapy, of tumor estrogen receptors as guides to hormone therapy, and clinical research on tumor cell kinetics as a predictor of therapeutic response.

CANCER CAUSE AND PREVENTION

General. The Division of Cancer Cause and Prevention is responsible for planning and executing a broad research program on etiology and prevention of cancers. Experimental and epidemiologic research is conducted on potential and actual viral, chemical, and radiologic carcinogenic agents and on their combinations. Evaluations of carcinogenic hazards and studies on mechanisms of cancer induction are included. Biometric and epidemiologic investigation of cancers are conducted in populations, and extensive demographic data are continually compiled. The various areas of research complement each other, with data from one area providing input for another area in the planning, conduct and evaluation of research programs. Laboratory findings provide leads that must be evaluated in human populations; observed associations of cancer with other factors determined in epidemiologic studies require further clarification in experimental investigations.

The Division of Cancer Cause and Prevention is divided into three program areas, each headed by an Associate Director. The Viral Oncology area is

concerned with determining the significance of viruses in the induction of cancers in man and with developing means for preventing these cancers with virological, immunological, and other techniques. The Carcinogenesis area is concerned with determining the significance of chemical agents in the induction of cancer in man and with developing means of preventing these cancers. The Field Studies and Statistics area is concerned with continued monitoring of populations for cancer incidence, prevalence, and mortality; identification of groups with different risks of cancers and determination of associated internal and external environmental and genetic factors; conduct of observational research in situations where society or nature has provided experiments on cancer, such as studies on occupational groups, migrant populations, groups with other diseases, etc.; studies on diagnosis and therapy, including design and evaluation of therapeutic trials, end results of the therapies, diagnostic and detection studies, etc.; and collaboration in a variety of investigations requiring epidemiologic, demographic, statistical, and mathematical expertise.

The program is conducted through in-house research and through research contracts for a nation-wide effort of the integrated programs in the three areas. The Division of Cancer Cause and Prevention staff is responsible for planning, coordination, and evaluation of the contract-supported efforts as well as for the conduct of in-house investigations, with major scientific and review input from the scientific community at large. These efforts are coordinated with investigations conducted by NCI grantees.

Viral Oncology The Viral Oncology Program is responsible for the Institute's research into the role of viruses in the causation of cancer in man and animals, intended ultimately to prevent and control neoplastic diseases of viral etiology. The three branches within the Office of the Associate Director for Viral Oncology are responsible for the planning and supervision of broad programs of basic, developmental, and applied research directed toward these objectives, as well as for the management of similarly directed special programs of national scope under the direct operations activities of the NCI.

The many disciplines and skills needed to study problems of viral causation of cancer are located in three branches and are available for deployment in varying combinations for collaboration in problem-solving approaches to disease entities at the program and project levels. This type of collaborative utilization of research capabilities and disciplines has served to unify research efforts and to reduce unnecessary duplication to a minimum.

The mission-oriented research of the Virus Cancer Program started in 1964 with a special Congressional appropriation of \$10 million. Launching of the program was predicated upon the underlying belief that at least one virus is causally related to human leukemia and lymphoma and persists in the diseased individual. Management of this program was under the Leukemia and Lymphoma Branch. Increased evidence of a relationship of viruses to the etiology of solid tumors led to additional funding and the launching

of a Solid Tumor Virus Program in 1967, under the management of the Viral Carcinogenesis Branch. The growth of both programs and their many common interfaces led to their merger in 1968 into the Virus Cancer Program, which now embraces viral etiological research on cancers of all types. The program now employs a research convergence technique to provide coordination of objectives, personnel, resources, and information under the general direction of the Office of the Associate Director for Viral Oncology.

All organizational units under the Office of the Associate Director for Viral Oncology, as well as members of other organizational units in the Division of Cancer Cause and Prevention, participate in the program. The resources of the Institute are strongly complemented by the numerous academic and industrial research groups collaborating in this effort. This integration has made possible the sharing of information resulting from the examination and treatment of large numbers of leukemic patients without which it would be difficult or impossible to conduct significant research programs directed to the etiology, prevention, and control of this disease. It has also made possible concurrent studies on the leukemia sarcoma complex in animals, particularly those common to the human environment. Such studies are expected to yield answers to the possible interrelationships of these diseases and to provide models for the study of the counterpart human studies.

Carcinogenesis The Carcinogenesis area is responsible for planning, implementing, and managing the coordinated research program of the NCI on carcinogenesis by chemical and physical factors and on cancer prevention.

Intramural research and a contract-supported collaborative program, directed by the scientific staff, encompass an integrated effort for the identification of population groups at different risks to cancers, the selection of chemical agents for bioassay with emphasis on suspected environmental carcinogenic hazards, the development and selection of biological models for carcinogenesis bioassays and studies, the identification of carcinogenic activity to selected chemicals by bioassay, and the identification of processes required for the carcinogenic action of selected agents as target points for prevention or inhibitory measures. Processes studied include the penetration of chemicals into the organism and their molecular logistics metabolic pathways and enzymatic mechanisms of activation, interaction with cell constituents, neoplastic transformation, growth regulation of transformed cells, and immunological control.

The newly established Lung Cancer Branch conducts investigations to identify carcinogenic agents and biological factors involved in the development of lung cancer and attempts to determine means by which these factors may be inhibited or prevented. It develops, designs, and standardizes biological and chemical assay systems for testing the carcinogenic and/or synergistic effects of chemical and physical agents involved in lung cancer causation.

The Diet, Nutrition and Cancer Program, serving the entire Cancer Institute, is managed by the Division of Cancer Cause and Prevention to study the effects of diet and nutrition on the etiology as well as the therapy of cancer.

The Smoking and Health Program conducts research in the development of less hazardous cigarettes, of antismoking drugs and in the identification of high-risk smokers.

Field Studies and Statistics The Field Studies and Statistics area has three major functions: (a) research into the etiology of cancer in free-living populations, largely but certainly not exclusively human; (b) consultation and support in mathematics, statistics (including experiment design and analysis) and system analysis in problems of cancer research; (c) development of the basic data of cancer incidence, prevalence, and mortality in the United States sufficiently precise to permit administrators and research workers to measure their successes (and failures) in preventing, diagnosing, or treating cancer. The two Branches (Biometry and Epidemiology) within the Office of the Associate Director for Field Studies and Statistics supplement and support each other in these activities.

Objectives for 1976 The major objectives in the Virus Cancer Program are: (a) the determination of cancer-causing activity in animals by viruses already isolated from human cancers; (b) relating this activity, and other characteristics of the candidate viruses, to cancer in man; (c) the determination of the entire sequence of molecular events, including specific enzymatic activities (e.g., polymerases) in viral replication and tumor induction; and (d) relating this information to the control of cancer in man.

The Carcinogenesis area will give high priority to the identification of chemical-viral interaction mechanisms, the role of various chemicals and dusts in the induction of lung cancer, short term in vitro carcinogenesis bioassay, and the establishment of data collection and retrieval systems to improve efficiency in coordinating information generated by the program and disseminating it to the scientific community.

The Diet, Nutrition and Cancer Program will sponsor research in the etiology and therapy of cancer in relation to diet and nutrition.

High priority will also be given to the development of less hazardous cigarettes, of antismoking drugs, and to the identification of high-risk smokers.

In Field Studies and Statistics, epidemiology studies will be made in human populations of the role of viruses and chemicals in cancer initiation. In 1975, the activities of the Third National Cancer Survey shifted from analysis of the initial data to the setting up of a permanent data collection and analysis system.

For further information write to Deputy Director, DCCP, National Cancer Institute, Bethesda, Maryland 20014.

COLLABORATIVE (CONTRACT) ACTIVITIES OF
THE NATIONAL EYE INSTITUTE

Collaborative research activities of the National Eye Institute are designed to attain highly specific research objectives or to reach stated goals. Contract-supported research is most useful in those areas where laboratory knowledge is at hand and when all indications are that real and significant progress will be made through the targeted application of laboratory results to a clinical problem. The contract mechanism is particularly suited to the development of research resources for the vision research community and for the support of multi-institutional clinical trials.

In fiscal year 1976 the limited resources available to the National Eye Institute for collaborative activities will be utilized primarily for continuing support of the Diabetic Retinopathy Study, a controlled clinical trial to evaluate photocoagulation therapy in diabetic retinopathy. A small number of projects to provide animal models for vision research and to develop other valuable research resources will also receive support. In addition, the Institute plans to expand the number of clinics participating in a clinical trial to evaluate vitrectomy performed for complications of diabetic retinopathy.

For further information, write Dr. Wilford L. Nusser, Chief, Scientific Programs Branch, National Eye Institute, Bethesda, Maryland 20014.

COLLABORATIVE (CONTRACT) ACTIVITIES OF
THE NATIONAL HEART AND LUNG INSTITUTE

DIVISION OF HEART AND VASCULAR DISEASES
ETIOLOGY OF ARTERIOSCLEROSIS AND HYPERTENSION

A major component of the program of the Division of Heart and Vascular Diseases is concerned with basic, animal, and clinical research in the etiology and pathogenesis of arteriosclerosis and of hypertension. Most of the work being supported in this area is supported by research grants, but a number of problem areas have been identified for which collaborative research supported by contract may be more appropriate. One such area is the establishment of resource centers in which models of chronic atherosclerosis and hypertension in non-human primates can be developed and studied. Activities in this area were initiated in FY 1975.

For further information write Dr. Gardner McMillan, Associate Director for Etiology of Arteriosclerosis and Hypertension, Division of Heart and Vascular Diseases, NHLI, Bethesda, Maryland 20014.

DIVISION OF HEART AND VASCULAR DISEASES
ISCHEMIC HEART DISEASE

Program objectives are a reduction of death and disability from acute myocardial infarction, chronic ischemic heart disease, and sudden cardiac death. The program consists of regular research and program project grants directed at problems of ischemic heart disease, as well as Institute-targeted research in defined areas of high interest, utilizing both contracts and special program grants.

The nine specialized Centers of Research in Ischemic Heart Disease which utilize comprehensive, multi-disciplinary programs focused broadly upon both the fundamental and clinical aspects of ischemic heart disease are a major segment of the program. Another special grant program on Sudden Cardiac Death emphasizes both the clinical aspects of the sudden cardiac death problem, as well as fundamental studies on the mechanisms and prevention of lethal arrhythmias.

Research on the protection of ischemic myocardium involves fundamental studies on biochemistry and physiology of the ischemic myocardium and interventions designed to protect the tissue. Clinical studies are to be initiated in the near future. Projects designed to quantify ischemic myocardium are focused primarily on radioisotopic imaging techniques.

The Coronary Artery Surgery Trial is designed as a 7-year study to test the effects of coronary artery surgery in randomized subgroups of patients meeting sharply defined clinical, angiographic, and physiological criteria. All patients undergoing coronary angiography at the participating institutions enter a registry. Eleven participating institutions and a coordinating center are presently involved, and an expansion of CAST is very likely.

For further information, write Dr. Peter L. Frommer, Associate Director for Cardiology, Division of Heart and Vascular Diseases, National Heart and Lung Institute, Room A922, Landow Building, Bethesda, Maryland 20014.

DIVISION OF HEART AND VASCULAR DISEASES
LIPID METABOLISM

The Lipid Metabolism Branch is responsible for planning, developing, and directing a collaborative program of research into the structure, metabolism, and functions of lipids and lipoproteins as they relate to atherosclerosis, and coordinating a national research program designed to increase knowledge related to the diagnosis and management of lipid disorders, especially those associated with premature vascular disease.

The Lipid Metabolism Branch implements its program goals in part through (1) a network of 13 Lipid Research Clinics and (2) a Patient Registry and Coordinating Center, a Lipid Standardization Laboratory, a Central Exercise Laboratory, and a Central Clinical Chemistry Laboratory.

The objective of the Lipid Research Clinics' Program includes:

1. Evaluation of current techniques for the diagnosis of hyperlipoproteinemia and the development of better ones. Standardization of methodology techniques and definitions dealing with hyperlipoproteinemia and its diagnosis.
2. Improvement of detection, diagnosis, and medical care for hyperlipidemic patients by providing guidance and assistance to physicians on the management of these patients and by the testing and development of improved therapy (both dietary and drug) for specific disorders.
3. Determination of the prevalence of hyperlipoproteinemia and its natural history.
4. Design and implementation of an intervention study to test the lipid hypothesis in high-risk patients, i.e., will lowering blood lipids reduce cardiovascular mortality and morbidity in patients with specific types of hyperlipoproteinemia? Will it delay the development and/or progression of cardiovascular disease?

For further information, write Dr. Basil Rifkind, Chief, Lipid Metabolism Branch, Division of Heart and Vascular Diseases, National Heart and Lung Institute, Bethesda, Maryland 20014.

DIVISION OF HEART AND VASCULAR DISEASES
DEVICES AND TECHNOLOGY

The goals of the program are the reduction of death and disability from cardiovascular diseases through the development of therapeutic and diagnostic devices, instrumentation, and related components.

The major current effort is in the development of circulatory assist and cardiac replacement devices. This involves not only the development and assessment of pumps, energy conversion, storage and transmission systems, control systems, and materials, but also the necessary physiological assessment and evaluation of reliability. Biocompatible materials of relevance to cardiovascular devices are of specific interest.

Diagnostic devices of particular interest are in the area of the detection and quantification of arteriosclerotic lesions. There is an existing program in flow and pressure measurement and cardiovascular imaging devices.

For further information write Dr. Peter Frommer, Associate Director for Cardiology, Division of Heart and Vascular Diseases, National Heart and Lung Institute, Room A922, Landow Building, Bethesda, Maryland 20014.

DIVISION OF HEART AND VASCULAR DISEASES
CLINICAL APPLICATIONS AND PREVENTION

Primary research interests and activities in this area are directed toward the conduct of epidemiological studies, clinical trials, biometrics research, and research into the prevention of heart and vascular diseases.

Preventive Cardiology Branch The research conducted and supported in this branch is directed toward studies of preventive measures to reduce morbidity and mortality from atherosclerosis, hypertension, and stroke. Examples of these prevention studies are the Hypertension Detection and Follow-up Program in 14 communities, to determine the extent to which mortality from hypertension can be reduced in the general population; and the Multiple Risk Factor Intervention Trial (MRFIT) in 20 centers is a primary prevention trial to determine the extent to which coronary heart disease mortality can be reduced by reduction of serum cholesterol, elevated blood pressure, and cigarette smoking in men who have above-average risk of developing coronary disease because of these factors.

Clinical Trials Branch Cooperative clinical trials supported by contracts are the primary responsibility of this branch. The aspirin-myocardial infarction clinical trial involving 30 clinical centers was initiated in 1975. The centers have been selected and will be enrolling about 4200 patients with proven myocardial infarction into this 3-year secondary prevention trial. Medical and biometrics staff of the Branch maintain direct liaison with the involved investigators throughout the duration of these trials.

Epidemiology Branch This branch conducts epidemiological studies of heart and vascular diseases in populations within the United States and in cooperation with medical investigators in other countries. The Framingham Heart Disease Epidemiology Study and other prospective studies in Puerto Rico, Japan, Hawaii, Israel, and Yugoslavia are examples of such investigations conducted with direct funds, contract funds, and P.L. 480 counterpart currencies. Genetic studies among twins are also in progress in this Branch.

For further information write Dr. William J. Zukel, Associate Director for Clinical Applications and Prevention, Division of Heart and Vascular Diseases, National Heart and Lung Institute, Bethesda, Maryland 20014.

DIVISION OF BLOOD DISEASES AND RESOURCES

The Division of Blood Diseases and Resources (DBDR) supports contract research in blood-banking sciences, thrombosis, hemorrhagic diseases, biomaterials and sickle cell disease and related red cell disorders. In addition, the clinical evaluation of promising drugs and biologics is occasionally undertaken by the Division as a direct operation.

The Blood Resources Program supports research in blood-banking systems management aimed at improving the operations of blood banking nation-wide. Other work supports improved methods of blood fractionation, development of new fractionation products, improved storage of blood and blood products, improved utilization of blood components, and elimination of the hazards of blood transfusion, with special emphasis on the problem of post-transfusion hepatitis. This program includes development of blood substitutes and research in transplantation biology.

For further information, write Dr. Wolf W. Zuelzer, Associate Director for Blood Resources, Division of Blood Diseases and Resources, National Heart and Lung Institute, Bethesda, Maryland 20014.

The program in thrombosis has supported development and application of agents that dissolve formed blood clots. Currently, trials have been initiated to test the efficacy of heparin and platelet-inhibiting agents in the prevention of venous thrombosis in high risk groups. Other work involves preparation of highly purified reagents used in coagulation research and studying the relationship between diet, platelet function, and thrombosis.

The program in hemophilia has supported pilot epidemiologic studies of the hemophiliac population and continues to evaluate the availability of treatment facilities and their impact on the national blood resource. Other work supports standardization and improvement of clotting factor preparation necessary for treatment of hemophilia, assessment of the usefulness of highly purified animal clotting factors, development of methodology for identifying the hemophilia carrier, and exploration and evaluation of methods to develop a nationwide system with potential for comprehensive care in hemophilia. Studies are envisioned to assess the value of prophylactic and self-treatment with Factor VIII to explore and evaluate genetic counseling techniques in hemophilia.

For further information, write Dr. George C. Murray, Special Assistant for Program Planning, Division of Blood Diseases and Resources, National Heart and Lung Institute, Bethesda, Maryland 20014.

The Sickle Cell Program in cooperation with the Center for Disease Control supports a proficiency testing program to evaluate laboratory testing procedures

for hemoglobinopathies, a basic and advanced laboratory training course for identification of abnormal hemoglobin and a reference bank of abnormal hemoglobins. Other areas of support include investigation of agents to alter the sickling process and treat the painful "sickle crisis;" new techniques for improving the diagnosis of hemoglobinopathies in utero, in cord blood, and in screening clinics; continuing education programs for professional and lay populations; and clinical trials to evaluate methods of managing the iron overload problem in Cooley's anemia.

For further information, write Dr. Clarice Reid, Acting Chief, Sickle Cell Disease Branch, Division of Blood Diseases and Resources, National Heart and Lung Institute, Bethesda, Maryland 20014.

DIVISION OF LUNG DISEASES

The Division of Lung Diseases implements its mandate through four major program activities: Research and Development Program, Manpower Program, Research and Demonstration Centers Program, and Prevention and Control Program, utilizing for each type of activity the support mechanisms most appropriate for achieving its objectives.

The contract mechanism is used to complement and supplement research on problems inadequately represented in investigator-initiated research projects and goal-oriented centers.

The Research and Development Program is addressed to studying the structure and function of the lung, pediatric pulmonary diseases, chronic bronchitis and emphysema, fibrotic and immunologic pulmonary diseases, pulmonary vascular diseases, and respiratory distress syndromes, as well as the development of techniques and devices for pulmonary diagnosis and respiratory assistance, monitoring, and control.

Contract Research activity within this program is administered through three of the Division's four Branches: The Pathophysiology Branch, Etiology Branch, and Special Programs and Resources Branch.

The Pathophysiology Branch fosters a program of basic and applied, clinical, and nonclinical research on the lung and respiratory system in normal and diseased states. Contract-supported programs include the development of physical and chemical methods of separating, culturing, and identifying individual lung cells; characterization of lung structural components and the metabolic changes involved in their development and destruction; and studies of the pathophysiology of respiratory disorders.

The Etiology Branch fosters a program concerned with causal factors of respiratory diseases and the factors affecting their natural history. Representative contract activities include delineation of the role of heterozygosity of α_1 -antitrypsin in the etiology and pathogenesis of respiratory diseases; determination of the prevalence of chronic respiratory diseases in selected populations; and definition of "host factors" as determinants of susceptibility to chronic respiratory disease.

The Special Programs and Resources Branch, through its Bioengineering Program, stimulates investigations that require both engineering and medical expertise, thus bringing sophisticated technology to bear on problems of diagnosis and treatment. Presently, the Branch sponsors a contract program which includes a clinical trial to determine the efficacy of the clinical application of membrane oxygenators to patients with acute respiratory failure, and also contracts to develop and evaluate blood gas sensors for the continuous monitoring of adults and neonates.

The Prevention and Control Program is designed to demonstrate the applicability, in community settings, of diagnostic, therapeutic, or prevention procedures; activities or techniques which have been tested in a research environment; and to educate community physicians, allied health personnel, and the general public with regard to pulmonary diseases. Contract research within this program is administered by the Centers and Control Programs Branch.

The Centers and Control Programs Branch directs activities which facilitate or implement the transfer of knowledge into clinical practice through education, demonstration, and control programs. Present contracts support education programs for the recognition and early treatment of acute respiratory insufficiency and respiratory failure.

The Manpower Program, administered by the Special Programs and Resources Branch, and the Research and Demonstration Centers Program, administered by the Centers and Control Programs Branch, have at present no activities supported through the contract mechanism.

For further information write Dr. Jay Moskowitz, Associate Director for Program Planning and Evaluation, Division of Lung Diseases, National Heart and Lung Institute, Bethesda, Maryland 20014.

COLLABORATIVE (CONTRACT) ACTIVITIES OF THE
NATIONAL INSTITUTE OF ALLERGY AND INFECTIOUS DISEASES

OBJECTIVES

Collaborative Research activities of the National Institute of Allergy and Infectious Diseases are designed to translate into human health benefits newer scientific information and technology acquired through research in the fields of immunology and infectious diseases. To achieve this end the program identifies public health needs by first determining the incidence and impact of diseases falling under the Institute's purview and assessing the technical feasibility of intervention through a targeted contract program. The ultimate goals are the development and evaluation of biologic products and drugs for prevention and treatment of infectious and immunologic diseases and the development of improved methods for assessing the impact of specific diseases and diagnosis of individual cases. In support of these efforts the program sponsors contracts for the development, production, and evaluation of vaccines and antiviral substances, and the production, distribution and evaluation of reagents for research in microbiology and immunology. Information on program is published in the *NIH GUIDE FOR GRANTS AND CONTRACTS* and made available through other media including announcements in scientific journals. Progress reports are deposited in the National Technical Information Service and scientific results are published in journals.

Collaborative programs are designed, through use of contracts, to be flexible and responsive to research needs and promising scientific opportunities. When an activity reaches an appropriate stage of development, efforts are made for other Federal agencies or the private sector to assume responsibility for delivery and utilization. New programs are initiated in response to public health needs and related opportunities resulting from research breakthroughs.

PROGRAM AREAS

Within Collaborative Research are four operating branches: Infectious Diseases, Research Resources, Transplantation and Immunology, and Geographic Medicine. Each is designed to carry out a facet of a broad mission of meeting vital health research needs. The programs of these four branches are described below:

Infectious Disease Branch The Institute's Infectious Disease Branch functions in particularly close concert with intramural scientists of the NIAID and the Bureau of Biologics, FDA. It also benefits from the experience of advisory groups and collaboration with university and drug industry scientists. Within this framework, the branch promotes targeted research leading to the development and evaluation of promising prophylactic and therapeutic agents for the control of selected infectious diseases. A vaccine development program was initiated in 1962 to conduct collaborative vaccine studies, especially against acute respiratory infections. A rubella (German measles) vaccine program, undertaken in 1965, aided in the final evaluation of vaccines under consideration for licensure. Vaccines were licensed in 1969.

Current interests include development and evaluation of vaccines against pneumococcal pneumonia, meningococcal and Hemophilus influenzae meningitis, influenza, respiratory syncytial virus and parainfluenza virus infections, mycoplasmal and streptococcal infections. Another Infectious Disease Branch program is designed to bring interferon and other promising antiviral substances into clinical application. A recently initiated program in hepatitis sponsors developmental studies on hepatitis B antigens and antibodies, experimental infections in animal models, epidemiologic surveillance in high-risk groups and clinical evaluation of hyperimmune hepatitis B antibody gamma globulin for the prevention of infection following parenteral inoculation of possible infectious material. A small effort on venereal disease research has been initiated, consisting of attempts to grow Treponema pallidum in vitro. The Infectious Disease Branch is also initiating efforts toward resolving problems with nosocomial infections.

Research Resources Branch The Research Resources Branch was established in 1962 and conducts a collaborative program for the support of research by stimulating the production, testing and distribution of a wide range of reagents. These reagents for health research purposes include viral and mycoplasma seed cultures and their corresponding antisera, allergens and interferons. All reagents are characterized by appropriate microbiological, immunological and biochemical methods and provide the recipients with well-characterized reference materials. Reagents for most of the important viruses and mycoplasmas involved in infections of the respiratory and gastrointestinal tracts are available for distribution. Reagents are also available for selected arthropod-borne viruses and for the antigens of hepatitis B. The reagents related to allergic diseases have recently received greater emphasis, and this expanded program is working toward the acquisition of reagents for ragweed, ryegrass, and ascarid allergens. Since research involving recombinant DNA molecules is of current interest to many areas, contract-sponsored activities relating to the construction and testing of safer cloning vehicles and hosts is presently under development. The program also provides support for research requiring high-technology biophysical separation, purification, and concentration procedures. These facilities and procedures are needed in the preparation of antigen subunits used for newer, more sophisticated reagents for research in virology.

Transplantation and Immunology Branch The program of the Transplantation and Immunology Branch was started in 1964 to encourage research and provide resources designed to solve the immunological problem of graft rejection in organ transplantation.

From the beginning, the Transplantation and Immunology Committee, made up of experts in the field, has helped to identify objectives to be pursued through contracts with a variety of laboratories. The Branch's program now includes developing and providing well-characterized and standardized reagents useful in tissue typing; providing technical advice and information on reagents, techniques, and transplants through workshops and publications; investigating biological immunosuppressive agents which help to retard graft

rejection; and developing methods for recognition of early graft rejection.

Programs to acquire information relating directly to clinical studies are in progress. These are focused on the evaluation of tissue-matching as an appropriate predictor of graft-survival and a program to collect and analyze information on the efficacy of anti-thymocyte globulin in abrogating renal graft-rejection. These investigations are designed to establish a better understanding of the graft-rejection process. In turn, this information is ultimately to be applied in the circumvention of the graft-rejection process. A program is also underway to evaluate, in the animal model, new techniques for the regulation of immune responsiveness.

Geographic Medicine Branch The Geographic Medicine Branch was created in 1968 to manage several programs transferred to the NIAID from the former Office of International Research. This Branch currently supports contracts and grants under the United States-Japan Cooperative Medical Science Program within the following selected areas: cholera; leprosy; the parasitic diseases schistosomiasis and filariasis; immunology and pathogenesis of tuberculosis; and the viral diseases rabies, dengue, dengue hemorrhagic fever, and other selected areas of arbovirus research. Each of the foregoing scientific areas of interest are further delimited to afford a very specific program focus. In addition, under direct cognizance of the National Institute of Arthritis, Metabolic and Digestive Diseases, the Branch supports research on selected aspects of malnutrition, including the relationship between malnutrition and infection. Finally, under the sponsorship of the National Institute of Environmental Health Sciences, research is conducted on methods to evaluate environmental mutagenesis and carcinogenesis.

Another activity managed by the Geographic Medicine Branch is the International Centers for Medical Research (ICMR) Program. This Program has no NIAID contract support, but rather it is funded through four research project grants.

For further information write Associate Director for Collaborative Research, National Institute of Allergy and Infectious Diseases, Bethesda, Maryland 20014.

COLLABORATIVE (CONTRACT) ACTIVITIES OF THE NATIONAL
INSTITUTE OF ARTHRITIS, METABOLISM, AND DIGESTIVE DISEASES

The Artificial Kidney-Chronic Uremia Program was established by the National Institute of Arthritis, Metabolism, and Digestive Diseases in 1965 with funds earmarked by Congress for a target-oriented, planned program of research and development in chronic uremia, dialysis, and the artificial kidney. The goals of this program are achieved through contracts placed with universities, non-profit research laboratories, and industrial concerns. Currently about 55 contracts are in effect for carefully selected research and development program elements.

Research and development in the program includes studies in the pathophysiology of uremia, blood access and clotting mechanisms, dialyzers and dialysate delivery systems, therapy and its evaluation, and membranes and other materials. Studies in pathophysiology are directed toward minimizing some of the complications of dialysis patients as well as developing a better understanding of the mechanisms of the disease in order to design improved therapy.

Toward these goals, studies are underway in anemia, bone disease, neurological and psychological disorders, gastrointestinal pathophysiology, and abnormalities of carbohydrate and lipid metabolism in uremia.

High program priorities are in studies of evaluation of therapy particularly with the view of quantitating dialysis therapy and various measurements of patient well-being, especially in the known parameters of complications of dialysis.

At present, over 20,000 patients in the United States are being maintained by chronic dialysis. Estimates are that 10,000 new patients each year will be suitable candidates for artificial kidney therapy or for renal transplants when they reach a stage where their own kidneys no longer can support them. The NIAMDD Artificial Kidney - Chronic Uremia Program is one of the major efforts to create the technology to enable these persons to attain a higher level of rehabilitation at lower cost.

All "Sources Sought" or "RFP Available" announcements appear in the *COMMERCE BUSINESS DAILY* and the *NIH GUIDE FOR GRANTS AND CONTRACTS* (Supplement).

For further information write Dr. Robert J. Wineman, Associate Chief, Artificial Kidney Program, National Institute of Arthritis, Metabolism, and Digestive Diseases, Bethesda, Maryland 20014.

Digestive Diseases and Nutrition are supporting the following activities through contracts:

1. The National Cooperative Gallstone Study This study is designed to determine the effectiveness and safety of chenodeoxycholic acid in the dissolution of radiolucent gallstones at two dose levels compared with placebo. In addition, through basic studies utilizing the same patient population, the mechanism of gallstone formation and the mechanism whereby chenodeoxycholic acid alters the biliary lipids is being explored

in 5 additional contracts. At the termination of the two-year therapeutic regimen or when gallstone dissolution has occurred, an additional study will be started to determine the long-term requirements for chenodeoxycholic acid to prevent stone reformation.

2. Crohn's Disease The study of the relative effectiveness of steroids, azathioprine, sulfasalazine and placebo.

3. Studies on the therapeutic application of endoscopy of gastrointestinal hemorrhage.

4. The provision of purification of gastrointestinal hormones for investigators in this area.

5. Evaluation of Human Nutrient Requirements This supports a continuing effort of the Food and Nutrition Board, National Research Council of the National Academy of Sciences, which periodically publishes the "Recommended Dietary Allowances" and monographs on nutritional requirements.

It is anticipated that no additional contracts will be let in FY 76.

COLLABORATIVE (CONTRACT) ACTIVITIES OF THE
NATIONAL INSTITUTE OF CHILD HEALTH AND HUMAN DEVELOPMENT

OBJECTIVES

The Institute uses the contract mechanism when the initiative for carrying out a research project, including design, direction, and methodology originates primarily within the National Institute of Child Health and Human Development (NICHD) or when the research requires extensive participation by staff in its development. Contracts are used (1) to stimulate research in gap areas; (2) to develop resources, methodology, instrumentation, or specific products; (3) to provide services to investigators; (4) when staff can function as both stimulator for collaborative efforts and coordinator of research among a number of investigators; (5) to provide for innovative, creative, pioneering projects which may be of general value to the scientific community; (6) to give coherence to a relatively unstructured field; (7) to support organizational activities such as conferences which are program or mission-oriented and provide for information exchange or the development of methods.

PROGRAM AREAS

The Center for Population Research, NICHD, currently has contracts in the following areas:

Contraceptive Development

1. Development of new potential contraceptive drugs including the synthesis and biological evaluation of novel steroids, unique prostaglandin analogs, novel analogs of luteinizing hormone-releasing factor (LRF), and other miscellaneous non-steroids to determine the extent and nature of their possible antifertility activity.
2. Development of systems and/or materials for uninterrupted administration of antifertility drugs aimed at improving the safety and efficacy of presently available drugs, and evaluation of biological evidence concerning slow and constant release of contraceptive drugs.
3. Development of methods for permanent and reversible sterilization in females and reversible sterilization in males. Design of devices that are safe and effective, easily implantable, and acceptable to various population groups; testing and evaluation of these devices.
4. Studies of how sperm mature and acquire the capacity to fertilize ova, functions of the male duct system and accessory glands, factors affecting the transport of sperm to the site of fertilization, the survival and movement of sperm in the female tract, study of enzymes of sperm.

5. Development of techniques for observing the normal function of segments of the oviduct in ovum pick-up and transport, and studies of the effect of hormones and physical factors on the oviduct.
6. Studies of hormones involved in reproduction and of methods for measuring them, the role of hormones in the initiation and maintenance of pregnancy, regulation of the function of the corpus luteum, and studies to elucidate the control of ovulation.
7. Studies of the ovum, including maturation and ovulation; the biochemistry and physiology of egg membranes and their possible alteration for contraceptive purposes; biochemical function of the fertilized egg before implantation; and the dynamics of decidualization and implantation.

Evaluation of Existing Contraceptive Methods

1. Clinical and laboratory studies of selected subjects (particularly long-term oral contraceptive users) which will elucidate elements of excess risk, estimates of extent of risk, unique properties of presently available drugs, and interaction between steroid drugs and commonly used prescription drugs.
2. In vitro and in vivo (human and animal) studies of the absorption, metabolism, and excretion of steroid contraceptive drugs.
3. Studies to clarify further the effects of oral contraceptives on blood pressure, including extent and magnitude of risk, characteristics of high-risk subpopulations; unique properties of certain contraceptive formulations; physiological mechanism of production of increased blood pressure; and desirable methods of treatment.
4. Human studies which will lead to a more precise estimation of the minimal dose of a drug which will provide acceptable contraceptive effect and/or minimal biochemical or toxic effects; evaluation of potentially toxic effects may be done in animal models.
5. Studies of the effects of oral contraceptives on dietary nutrients.
6. Studies to ascertain whether vasectomy is a relatively innocuous surgical procedure or whether it may be associated with acute adverse effects and/or significant long-term medical complications.

Social Science Research Related to Population

1. Studies of the interrelations between social change and population size, structure, and distribution with particular emphasis upon the social, economic, and other determinants and consequences of population change.
2. Analyses of trends in fertility as affected by age at marriage, divorce, abortion, and related variables; studies of the interrelations of fertility and other socioeconomic variables, such as income, education, religion, and residence; and the relationship between trends in fertility and broad socioeconomic changes such as level of economic activity, women's participation in the labor force, etc.

3. Studies of interrelations between family structure, sexual behavior, and fertility, illegitimacy and abortion; motivations and decisions which determine a couple's number and spacing of children; attitudes toward methods of fertility control and use-effectiveness of various methods among various subgroups of the population; and alternatives to child-bearing which couples perceive and how these perceptions affect fertility.
4. Social, economic, and psychological consequences of various childbearing patterns, size of family, etc., for both parents and children.
5. Evaluation of policies aimed at regulating population and of policies which indirectly affect population growth or distribution. Past and present policies - including family allowances, direct incentives and family planning programs - are evaluated for their impact on population.

For further information write Director, CPR, National Institute of Child Health and Human Development, Bethesda, Maryland 20014.

The Center for Research for Mothers and Children, NICHD, currently has contracts in the following areas:

Pregnancy and Infancy

The major contract program in this area is concerned with the sudden infant death syndrome (SIDS). Its objectives are to increase our understanding of underlying mechanisms of the syndrome, to discover its possible causes, to identify infants at risk for SIDS, and to explore preventive approaches. The contract program involves both basic and clinical studies and encompasses the neurophysiologic, cardiorespiratory, metabolic, immunologic, genetic, pathologic, environmental, and infectious disease aspects of the syndrome.

Mental Retardation and Developmental Disabilities

This contract program includes research in the areas of genetics, communication disorders, nutrition, and pediatrics teamed with psycho-education. It concentrates on the problems of early detection and corrective intervention for mental retardation and developmental disabilities. Development of automated methods for mass screening for chromosomal abnormalities is the objective of research supported in genetics. The problems associated with premature and low birthweight infants are attacked by research on nutritional supplementation during pregnancy and by medical and psycho-educational team research efforts aimed at early identification of the risk factors involved in these conditions coupled with corrective interventions for them. Research in communication disorders includes early assessments of auditory and linguistic abilities of hearing-impaired, mentally retarded, and normal children as a basis for differential diagnosis and corrective intervention.

Growth and Development

This contract program supports pioneering research endeavor that seeks to advance our knowledge of the variety of psycho-social and biological factors that interact to produce a physically and mentally healthy individual. Contracts involve assessment of the relationships between maternal nutrition and fetal growth including immunologic competence and subsequent mental development. Contract funds are also used to stimulate research on the physiology of puberty and adolescence. The contract mechanism is also used to provide specialized research materials and assistance for difficult to conduct but crucial studies of normal and abnormal speech and language development in children. Similarly, through support of a non-human primate breeding colony, assistance is provided to a variety of research projects requiring non-human primates.

For further information write Director, CRMC, National Institute of Child Health and Human Development, Bethesda, Maryland 20014.

COLLABORATIVE (CONTRACT) ACTIVITIES OF
THE NATIONAL INSTITUTE OF DENTAL RESEARCH

NATIONAL CARIES PROGRAM

Much of the collaborative (contract) research in the National Institute of Dental Research relates to the National Caries Program. The development of means to reduce further the universal disease of tooth decay was identified by the Administration as a special initiative area of biomedical research. Substantially increased funds were made available for that purpose in the beginning of fiscal year 1971, with \$3,500,000 allocated to collaborative research.

Primary emphasis is placed on projects that encompass the application of existing knowledge and will either prove or disprove the findings of earlier laboratory and animal studies when applied to man; projects that seek new preventive modalities that are feasible, effective, and less demanding of the time of scarce professional manpower; and projects that assess new, promising variations of current approaches. Most of the collaborative research in the caries area will be targeted to the acceleration of the development of preventive methods for decreasing the incidence of caries and making this disease almost completely preventable.

Three factors, all of which interact, are implicated in caries: (1) susceptibility of teeth to the demineralizing action of acids, (2) the presence of caries-inducing bacteria, and (3) a diet which favors the colonization and destructive activity of cariogenic organisms. Because of the complex nature of caries, it is unlikely that any one approach will completely solve the problem of its control and prevention. Efforts are therefore directed to depressing the effects of all factors to a minimum and utilizing a combination of techniques instead of concentrating on one.

The collaborative (contract) research mechanism is also used by the extramural categorical programs of the National Institute of Dental Research listed below. Their major emphasis, however, is grant-supported research.

The PERIODONTAL DISEASES PROGRAM BRANCH supports research relating to the etiology, pathogenesis, diagnosis, treatment, and prevention of periodontal disease.

The CRANIOFACIAL ANOMALIES PROGRAM BRANCH supports studies of the etiology and treatment of such conditions as cleft lip and palate, malocclusion, temporomandibular joint disturbances, neuromuscular disorders, and acquired disfigurements. It also sponsors studies of the physiology of mastication, deglutition, speech, and oral sensation and perception.

The RESTORATIVE MATERIALS PROGRAM BRANCH seeks to develop and test dental restorative materials, adhesive tooth sealants, maxillofacial prostheses, artificial tooth implants, and diagnostic and treatment devices.

The SOFT TISSUE STOMATOLOGY AND NUTRITION PROGRAM BRANCH supports studies in four areas. The primary focus is on research activities in soft tissue diseases(s), nutrition, and salivary glands. Efforts in the area of soft tissue diseases are designed to provide a better understanding of oral ulcerative and viral diseases and oral cancer. The nutrition portion of the program seeks to develop new knowledge of the effects of sound and poor nutrition on oral health and the development and function of tissues of the craniofacial complex. Studies of salivary glands are designed to improve our knowledge of the development, structure, function, and diseases affecting major and minor salivary glands; biochemical studies of saliva are concerned with the influence of salivary constituents on oral health. A secondary focus of the program is on basic studies of mineral metabolism and the interaction of cells, mineral, and tissue matrices.

The PAIN CONTROL AND BEHAVIORAL STUDIES PROGRAM BRANCH is concerned with the pain, fear, and anxiety associated with dental treatment and with trigeminal neuralgia and other conditions. Oral-facial sensory responses and the behavioral aspects of dental conditions and their treatment, including subjective factors in pain response also are of major interest.

Each proposal is reviewed for technical merit by an ad hoc initial review group composed mainly of non-Governmental scientists and then for policy compliance and funding priority by the NIDR Contracts Review staff.

All "Sources Sought" or "RFP Available" announcements appear in the *COMMERCE BUSINESS DAILY* and the *NIH GUIDE FOR GRANTS AND CONTRACTS* (Supplement).

For further information write Associate Director for Collaborative Research, National Institute of Dental Research, Bethesda, Maryland 20014.

COLLABORATIVE (CONTRACT) ACTIVITIES OF THE
NATIONAL INSTITUTE OF ENVIRONMENTAL HEALTH SCIENCES

The mission of the National Institute of Environmental Health Sciences is directed to definition and explanation of toxicologic mechanisms and effects induced by environmental stressors as related to human health. The NIEHS collaborative research program is limited to support of research efforts intrinsic to the mission of the Institute. Collaborative projects, including both research contracts and interagency agreements, are activities which by virtue of required expertise or logistics lie beyond the scope of the NIEHS intramural program and require NIEHS initiative and participation.

Contract proposals are solicited on a competitive basis, through published announcements and direct contact with research groups of recognized competency. Proposals are subject to technical evaluation by ad hoc reviewers.

The current and projected scope of the NIEHS collaborative research program includes efforts in areas of heavy metals toxicity, chemical mutagenesis, biological effects of microwaves and noise, and environmental factors associated with defects of reproduction and development. Future contract research needs, in the aforementioned or other areas, will be published through the usual mechanisms.

For further information write to Office of Program Development, NIEHS, P.O. Box 12233, Research Triangle Park, North Carolina 27709.

COLLABORATIVE (CONTRACT) ACTIVITIES OF THE
NATIONAL INSTITUTE OF GENERAL MEDICAL SCIENCES

The Institute awards contracts for research and development in three principal areas. This notice is being published for informational purposes, since no active solicitation for sources or proposals is planned at present.

Automation of the Clinical Laboratory Research, development, and evaluation of rapid, reliable automated systems and instruments, for potential application in all aspects of clinical laboratory sciences, including clinical chemistry, toxicology, hematology, microbiology, virology, blood-banking, etc. Subject areas of interest include sample collection and labeling techniques, new or improved analytical methods, data handling and reduction techniques for compact computers, miniaturized and portable test systems for emergency use, all intended to increase reliability, throughput, and clinical significance.

Genetics and Genetic Chemistry Research, development, or production of materials, in areas where current technological constraints are considered as limiting to progress in genetics. Representative potential problem areas are the availability of materials (oligonucleotides, nucleic acids, and tissue culture cells or animals which represent, or are valid models for, genetic disease states, etc.) or of specific methodology (separations and purification techniques, diagnostic or assay procedures, etc.) for genetics research. The primary criteria for consideration are a recognized research need and the potential for advance in a research area relevant to genetics.

Pharmacology/Toxicology Research, development, and evaluation in all aspects of therapeutic drug use, including synthesis, testing, assays in body fluids, and surveillance for effectiveness, side effects, and drug interactions. The principal aim is to promote safer and more effective use of drugs. Related problems include dose-response patterns, kinetics of uptake, distribution, and elimination, metabolic transformations of administered drugs, and quantitative analytical methods and instruments for identification and assay.

For further information write Special Assistant to the Director, National Institute of General Medical Sciences, Bethesda, Maryland 20014.

COLLABORATIVE (CONTRACT) ACTIVITIES OF THE NATIONAL
INSTITUTE OF NEUROLOGICAL AND COMMUNICATIVE DISORDERS AND STROKE

PURPOSE OF RESEARCH CONTRACT ACITIVITIES

The National Institute of Neurological and Communicative Disorders and Stroke (NINCDS) identifies, within its sphere of interest, specific research needs not currently met. These involve the development of knowledge of importance for the prevention or cure of diseases and disabilities which are of major and general concern to the public. It is not always possible for the Institute, using its own personnel and facilities exclusively, to mount a complete research program to promote knowledge in the required areas. In such situations, the NINCDS relies upon negotiated research contracts to support required research.

In its use of the research contract as a mechanism for research support, the NINCDS has a significant role in the framing of project goals and the parameters within which work will be carried out, in the monitoring of research under way, and often in the dissemination or further utilization of the research results. Contract-supported research is undertaken only when such research can and will be carefully monitored by one or more Project Officers from the full-time scientific staff of the Institute.

ONGOING PROGRAMS

Currently, the NINCDS supports approximately 100 research contracts in a broad variety of scientific areas. Research is supported at a number of institutions, including academic institutions, hospitals, not-for-profit research organizations, and profit-making research and development organizations. Contractors are widely distributed geographically. Current contract-supported programs include the following general program areas: Neurological Disorders, Communicative Disorders, Stroke and Neural Trauma, and Fundamental Neurosciences.

NEUROLOGICAL DISORDERS PROGRAM

Epilepsy and Convulsive Disorders Investigations of promising anticonvulsant compounds are being supported, as are highly-focused studies into methodology for the improvement of the diagnosis, therapy, and rehabilitation of epileptics. Included in the program are a number of Pilot Comprehensive Epilepsy Centers. Studies are being developed on the mortality, incidence, and prevalence of epilepsy requiring epidemiologic, demographic, genetic, and statistical expertise.

The Collaborative Perinatal Program A comprehensive analysis is being made of data collected on 50,000 pregnancies and the resultant neurological and mental development of the offspring. Contractors capable of developing and applying sophisticated analytic techniques to highly specialized and complex clinical phenomena have been offered opportunities to participate in this closely coordinated data analysis effort. Twenty specific areas for major

and minor data analysis efforts have been identified.

Infectious Diseases A varied research program on infectious diseases of the nervous system, particularly those related to early life and development, is being conducted.

For further information write to the Director, Neurological Disorders Program, National Institute of Neurological and Communicative Disorders and Stroke, Bethesda, Maryland 20014.

COMMUNICATIVE DISORDERS PROGRAM

Auditory Disorders Areas of emphasis include the development of procedures for early detection of auditory disorders in infants and children and the development of improved treatment of serous otitis media.

Language and Speech Projects in this area are directed toward improvements in assessment and differential diagnosis of children with impaired language development, treatment of children with impaired language development, treatment of adults with aphasia and detection and assessment of laryngeal pathology.

Aids for the Communicatively Handicapped Procedures are being developed for improved design, fitting, and evaluation of hearing aids. Another area of emphasis concerns evaluation of new sensory aids for the hearing-impaired.

Effects of Noise on People New clinical tests of speech discrimination in noise and of procedures for measuring auditory sensitivity and discrimination among young children in both quiet and noisy environments are under development.

For further information write to the Director, Communicative Disorders Program, National Institute of Neurological and Communicative Disorders and Stroke, Bethesda, Maryland 20014.

STROKE AND NEURAL TRAUMA PROGRAM

The NINCDS has initiated a carefully directed research effort designed to broaden knowledge of the processes and consequences of nervous system damage due to trauma or hypoxia-ischemia. Research focused on the clinical consequences of such damage, and on predicting the results of intervention during the acute process, is receiving special attention. In addition, projects are being initiated on the investigation of epidemiologic (population) factors affecting incidence and prevalence of stroke and/or neural trauma, on the development of instruments and procedures of diagnostic and therapeutic potential, on controlled clinical trials of diagnostic and therapeutic methods, and on field evaluations of laboratory-demonstrated methods of prevention or control of these disorders.

For further information write to the Director, Stroke and Neural Trauma Program, National Institute of Neurological and Communicative Disorders and Stroke, Bethesda, Maryland 20014.

FUNDAMENTAL NEUROSCIENCES PROGRAM

Neural Prostheses The development and application of aids for the neurologically handicapped have been limited in many cases by an incomplete understanding of fundamental neuroscience and technology problems. To remedy this lack, contract programs have included multidisciplinary investigations on such problems as the safety of electrical stimulation of the nervous system, methods of increasing information transfer into the nervous system, and methods of functionally activating paralyzed muscles.

Biomedical Engineering Contracts are awarded for the development of basic knowledge and for diagnostic and therapeutic instrumentation related to the NINCDS goals. These range from feasibility studies to prototype development.

For further information write to the Director, Fundamental Neurosciences Program, National Institute of Neurological and Communicative Disorders and Stroke, Bethesda, Maryland 20014.

BIOMETRY AND EPIDEMIOLOGY

The Office of Biometry and Epidemiology studies the occurrence of neurological disease in human population groups. Using the methods of descriptive epidemiology, data on mortality, incidence, and prevalence are established. Hypotheses are evaluated employing analytic and experimental techniques. Such information is useful in providing etiologic clues, in recognizing unusual patterns of disease occurrence, in evaluating treatment modalities, and in planning programs and facilities for individuals with neurological disease. Emphasis will be placed on a coordinated and complementary program of in-house research and contract research. There will be opportunities for collaborative investigations requiring epidemiologic, demographic, genetic, and statistical expertise.

Special emphasis is placed on surveys of the incidence, prevalence, and costs of neurological and communicative disorders. Surveys are being supported in head and spinal cord injury, intracranial neoplasms, multiple sclerosis, and stroke. Requests for proposals are being developed for additional surveys relative to other disorders.

For further information write to the Chief, Office of Biometry and Epidemiology, National Institute of Neurological and Communicative Disorders and Stroke, Bethesda, Maryland 20014.

CONTRACTS APPLICABLE TO ALL AREAS OF THE NINCDS

Supporting Activities In order to conduct a broad variety of complex research activities in various laboratories, clinics, and programs, the NINCDS must from time to time seek supporting services and information outside of the NIH. Such supporting activities are varied in nature and complexity but include long-term holding of research animals, production and delivery of specific biological reagents, cell cultures and antigens, provision

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of data processing and information storage and retrieval services, and provision of specialized professional and technical services.

COLLABORATIVE (CONTRACT) ACTIVITIES OF
THE DIVISION OF RESEARCH RESOURCES

Biotechnology Resources Program The Biotechnology Resources Program (BRP) uses the contract mechanism to fund activities that enhance the effectiveness of its grant-supported programs, facilitate program planning and evaluation, or further develop technological advancements of potential benefit to BRP's clientele. For example, the need for and importance of a national high voltage electron microscopy program was established through a contract awarded to the United States Steel Corporation to provide time on their one million volt electron microscope to biomedical research scientists. Also, contracts to the Baylor College of Medicine, University of Oklahoma, the Rand Corporation, and the University of Washington in consortia enabled the BRP to explore the needs of the clinical investigator users of the General Clinical Research Centers' program that can be satisfied by computing capabilities dealing with data organization and analysis.

For further information write to Dr. W. R. Baker, Jr., Assistant Director, Biotechnology Program, Division of Research Resources, Bethesda, Maryland 20014.

Chemical/Biological Information-Handling (CBIH) Program The CBIH Program is concerned with providing biomedical scientists with the research support capabilities they most need to pursue their investigations effectively. The focus specifically is on (a) designing and developing computer-based information-handling tools important to studies of chemical/biological interactions (a line of inquiry relevant to almost every major medical area), (b) making these tools available to the national scientific community in an easy-to-use and highly reliable form, and (c) collaborating with the users of these tools in order not only to refine and extend them but also to develop deeper insights into the investigative process itself. Particular emphasis is placed on questions of where and how computer technology and information science can catalyze the emergence of predictive capabilities regarding the interactions of chemical substances and living systems.

For further information write to Dr. Suzanne S. Stimler, Acting Director, Biotechnology Resources Program, Division of Research Resources, Bethesda, Maryland 20014.

Animal Resources Program (ARB) The overall objective of the ARB is to support resource projects that provide or enable biomedical scientists to effectively use animals in human health-related research. Special attention is given to those animal resource activities that are broadly supportive of the missions of the various NIH components. The Branch objectives are accomplished through a Primate Research Centers Program, a Laboratory Animal Science Program, and Research Contracts. The ARB has used the research contract mechanisms as an adjunct to its resource grant programs to support specific, essential services or to initiate activity in vital resource areas that have not responded or are not eligible to respond to the grant mechanism.

For further information write to Dr. Charles McPherson, Chief, Animal Resources Branch, Division of Research Resources, Bethesda, Maryland 20014.

COLLABORATIVE (CONTRACT) ACTIVITIES OF
THE NATIONAL INSTITUTE ON AGING

Currently a research plan on aging is under development. The plan should be completed by the end of the 1976 fiscal year. Announcements on areas of interest in grant- and contract-supported research will be identified in subsequent issues of the *NIH GUIDE FOR GRANTS AND CONTRACTS*. During the interim the National Institute on Aging will accept grant proposals on the biomedical, behavioral, and social aspects of aging and will maintain and expand support and characterization of the animal colonies and cell resources by the contract mechanism.

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