

# NIH GUIDE

# for GRANTS and CONTRACTS

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

Vol. 8, No. 7, May 11, 1979

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#### HAVE YOU MOVED?

If your present address differs from that shown on the address label, please send your new address to: Grants and Contract Guide Distribution Center, National Institutes of Health, Room B3B10, Building 31, Bethesda, Maryland 20205, and attach your address label to your letter. Prompt notice of your change of address will prevent your name from being removed from our mailing list.

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The GUIDE is published at irregular intervals to announce scientific initiatives and to provide policy and administrative information to individuals and organizations who need to be kept informed of opportunities, 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.

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PROGRAM PROJECT APPLICATIONS

REVISED GUIDELINES

CHANGE IN REVIEW PROCEDURES

NATIONAL INSTITUTE OF ARTHRITIS, METABOLISM,  
AND DIGESTIVE DISEASES

////////////////////  
**PROCEDURE NOTICE**  
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Current NIAMDD procedures governing the review of program project applications require approximately twelve months to complete the review process. This notice introduces a procedure designed to shorten the time involved to seven to eight months as currently required for other grant mechanisms. Effective with the June 1, 1979, receipt date, each program project will be reviewed in its entirety by a Special Review Committee convened by the Review Unit of the Extramural Affairs Program of the National Institute of Arthritis, Metabolism, and Digestive Diseases. The individual component projects will no longer be reviewed by study sections. Therefore, the review will normally be completed during one "review cycle".

CHANGE IN RESEARCH CAREER AWARD POLICY

NIH AND ADAMHA

////////////////////  
**POLICY**  
////////////////////

The present policy for the Research Career Award program states:

"Research Career Awards ----- will not be continued or renewed beyond the mandatory retirement for comparable faculty or staff members for that grantee institution or particular part thereof, with no exceptions. RCAs will not in any case be continued beyond the year in which the awardee either reaches age 70, retires from the institution, or attains emeritus position."

In keeping with the initiatives regarding age discrimination, the words "reaches age 70" are hereby deleted. The mandatory institutional retirement policy without regard as to source of salary support is sufficient on this point.

This change in policy is also applicable to the ADAMHA research scientist award program.

CALCULATING INDIRECT COSTS

FOR TRAINING GRANTS



To clarify the statement of policy published in the *NIH Guide for Grants and Contracts*, Vol. 8, No. 5, April 13, 1979:

The new policy excluding tuition and related fees and equipment expenditures from the base to which a rate of up to 8% is to be applied is effective for all PHS grant awards with budget periods beginning on or after November 1, 1978.

*NIH GUIDE TO EXTRAMURAL SUPPORT*

*OF INSTRUMENTATION AND MEDICAL*

*DEVICE RESEARCH (1978)*

NOW AVAILABLE



This new pamphlet, assembled by the staff of the National Institute of General Medical Sciences, contains up-to-date information about the various extramural programs of biomedical device and instrument development supported by the Institutes and Divisions of NIH. This compilation of information is presented to the scientific community as a service in order to highlight areas where research and clinical problems exist and where innovative solutions are needed. It does not constitute a specific request for grant or contract applications.

The largest section of the pamphlet is a series of statements from each Bureau, Institute, and/or Division of NIH which supports instrument and device development. Each statement contains the area of interest of the Institute or Division; examples of current programs; the type of funding mechanism used; and the names, addresses, and phone numbers of program persons who can supply additional information. The other sections of the pamphlet supply general information about the funding process at NIH, sources of current program information, and the impact of new FDA regulations on instrument and device research.

Copies of the pamphlet may be obtained after May 15, 1979, by contacting:

Public Information Officer  
National Institute of General  
Medical Sciences  
National Institutes of Health  
Room 9A05, Westwood Building  
5333 Westbard Avenue  
Bethesda, Maryland 20205

Telephone: (301) 496-7301

REQUEST FOR RESEARCH GRANT APPLICATIONS: RFA

NIH-NIAID-79-5

NATIONAL INSTITUTE OF ALLERGY AND

INFECTIOUS DISEASES

**ANNOUNCEMENT**

TITLE: SEXUALLY TRANSMITTED DISEASES RESEARCH UNITS

*Application receipt date, October 15, 1979.*

I. BACKGROUND INFORMATION

The National Institute of Allergy and Infectious Diseases (NIAID) invites applications for program project grants to be initiated during FY 1980 for participation in an ongoing program of research in Sexually Transmitted Diseases (STD). The policy of the NIAID states that program project proposals for STD research units will now be received only at designated times. Support for proposals for creation of new research units, or continuation of existing units, will be on a competitive basis. This RFA will be issued only once during any fiscal year.

One of the major health problems in the U.S. today is that of sexually transmitted, or venereal, diseases. The explosive rise in gonococcal infections in the last decade has been considered a major infectious disease epidemic; it has been estimated conservatively that over 2,000,000 cases of gonorrhea occur each year, with the majority being unreported to public health agencies. Many other diseases are now also known to be transmitted by sexual contact and illness caused by them is being recognized with increasing frequency. Such diseases as herpes simplex type 2, hepatitis B, cytomegalovirus syndrome, and perhaps group B streptococcal infections are examples. Nongonococcal urethritis (NGU) and herpes simplex type 2 are the most common of these infections, being second only to gonorrhea in numbers of cases.

The estimated cost of treating pelvic inflammatory disease (PID) approximates \$700 million per year, to say nothing of the thousands of women of child-bearing age who are rendered sterile as a result of PID. Herpes simplex virus 2 infections in pregnant women at term pose a most serious hazard to the neonate. Group B streptococcal infection transmitted by the pregnant woman to her offspring at birth poses a similar hazard.

The financial burden of identifying and treating these diseases is a serious economic problem. The hidden costs of all sexually transmitted diseases in family disruption, absence from education or gainful employment, ill health and individual misery, can only be imagined. Research offers one positive means of eventually controlling this public health problem.

The NIAID has been in the forefront in support of research in STD. The program has grown considerably since its inception in 1971, indicative of a widespread recognition of research opportunities for increased

understanding and control of STD. The NIAID program currently supports research by program projects, individual research projects, contracts, training grants, and individual postdoctoral fellowships.

## II. RESEARCH GOALS AND SCOPE

The goal of the program is to encourage investigators to undertake research that will provide the epidemiological and microbiological information needed to control sexually transmitted diseases. The NIAID wishes to broaden the scope of its program in research so that the knowledge gained may be applied to improvement in the means of prevention, diagnosis, and therapy of these infections.

### A. Requirements of the Research Program Project

As one means of achieving the stated goals, the NIAID proposes to maintain support of a number of STD research units, or centers of excellence, to serve as foci for research and training in STD. These units are funded as program project grants. The research to be considered for emphasis in this program can be on any or all of the STDs that are currently recognized as significant public health problems, as listed under "Research Scope."

A strong clinical component should be a major part of the program project application. There are several distinguishing characteristics that must be considered in developing these research units of excellence in STD:

1. They will be based at a teaching hospital or a university or medical school, or at a medical school affiliated hospital.
2. The program project will be multidisciplinary, combining the efforts of investigators in both clinical and basic science disciplines to focus on different facets of the overall problem of STD infections.
3. Integration and coordination of different departments within an institution usually will be necessary for adequate program development. Different collaborating institutions can also be involved. Close coordination and cooperation with a public venereal disease clinic (e.g. a city or county clinic) is an absolute necessity for successful functioning of the research unit.
4. The program project will consist of a number of individual sub-projects, each with a clearly identified research task, and each with a principal investigator, staff, and budget. The program director will be responsible for the overall direction and administration of the total project. It is expected that the principal investigators of each of the subprojects will act as members of a strong and coordinated research team, the whole directed toward resolving some of the many problems in sexually transmitted diseases. Translation of observations showing potential for clinical application should be considered as part of the research effort. The team concept is considered especially important in developing these program projects.

5. It is suggested that efforts be made to advance learning experiences in STD and to make medical students and doctoral candidates more aware of the needs and opportunities in STD research, at both the clinical and fundamental levels. A formal program of training that involves student stipends, however, will not be considered in this program. Formal training programs for both pre- and postdoctoral trainees are supported by a different funding mechanism.

Only institutions with demonstrated expertise in both clinical and basic sciences, and with strong, ongoing research programs and resources that can focus on a multidisciplinary and multifaceted attack on STD infections, will be considered for program project support under the provisions of this program.

B. Research Scope

The research efforts in this program will focus on the following diseases:

Gonorrhea; syphilis; nongonococcal urethritis caused by chlamydial agents alone or in combination (e.g. Ureaplasma); Trichomonas infections; viral infections - herpes simplex type 2, cytomegalovirus, and hepatitis B; nonspecific vaginitis; group B streptococcal infections; parasitic infestations; other diseases that may be recognized as transmitted by the sexual route.

The specific areas of research interest for the above STD problems will be:

1. Biology of the organism - growth, nutrition, physiology and metabolism, antigenic structure, chemical composition.
2. Virulence factors of the causal organisms.
3. Antibody development and the role of humoral and cell mediated immune responses in recovery and resistance.
4. Immunopathology.
5. Pathogenesis and mechanism of recovery and resistance; recurrent infections or reinfections.
6. Animal model systems.
7. Immunodiagnosis - antigen detection, identification, specificity.
8. Therapy - immunotherapy - development of candidate vaccines or antisera. Development of more useful antimicrobial therapeutic modalities. Study of development of antibiotic resistance.

9. Epidemiology - of any of the STDs; this can include mathematical or computer modeling for useful control strategies.

Clinical and fundamental studies involving any or all of the above categories will be considered relevant to this program.

### III. MECHANISM OF SUPPORT

Eligibility Domestic universities, colleges, hospitals, laboratories, and other public or private nonprofit institutions, including State and local governmental units, are eligible.

Length of Support The project can be supported for a maximum of five years; however, this is renewable for an additional period, subject to the competitive review procedure.

The Institute will attempt to maintain support for from three to five STD program projects annually, dependent upon the availability of funds. For FY 1980, competition is open for support of at least one program project in STD research. Although no specific level of available funding can be cited, the projects currently supported range from \$155,000 to \$450,000 in direct costs. The four currently supported projects are funded in FY 1979 at a total cost of \$1.29 million.

This program is supported under authorization of the Public Health Service Act, Public Law 78-410, as amended. The Catalog of Federal Domestic Assistance citation is Sec. 13.856, Microbiology and Infectious Diseases Research.

### IV. REVIEW PROCEDURES AND CRITERIA

All proposals will receive an initial peer review by the Microbiology and Infectious Diseases Advisory Committee, a chartered Institute advisory committee. Ad hoc experts may be included in the review process when necessary. Final review will be made by the National Advisory Allergy and Infectious Diseases Council; applicants will be notified following the Advisory Council meeting in May 1980. The earliest possible funding date for approved new proposals, if in a fundable category, will be July 1, 1980.

The reviewing groups will evaluate the entire program project as well as each individual subproject involved, with special consideration being given to overall scientific merit of the project and of each of the subprojects, to innovative research approaches, and to the research team concept. The expertise of each investigator and his or her past productivity, in this or in closely related research areas, will also be considered. The facilities available, including access to clinical material, will also form part of the evaluation. Finally, budget requests for each subproject and for the total program project will be carefully reviewed. Budgetary adjustments may be made by the reviewers. A priority score will be given for the overall program project application by the initial reviewing group. Other factors in addition to the priority score, however, also may be taken into consideration for possible support of a project.



Proposals considered by the DRG and the NIAID to be not responsive to the terms outlined in this RFA will be returned to the investigator. Late submissions may be considered not responsive to this RFA. The applicant may then wish to consider revising the application and submitting it to the Division of Research Grants as a regular research grant application.

All policies and requirements that govern the research grant programs of the PHS-NIH will apply.

V. METHOD OF APPLYING

The NIAID information brochure of August 1978 on program project grants should be requested by prospective applicants prior to preparation of an application. The development of a program project proposal is clearly detailed in this brochure. In general, applications (on form PHS 398) should include:

1. A table of contents;
2. Description of the integrated program project with rationale and justification, and description of available clinical facilities and patient populations;
3. Complete description of each subproject;
4. Collaborative arrangements with other departments or with other institutions, if applicable;
5. A consolidated first year budget for the total project and a first year budget for each of the subprojects and the program core; budgets for future years' support are to be included.

It is recommended that Institute staff be contacted by letter of intent when development of a program project grant proposal is being considered, prior to formal submission. Inquiries should be directed to:

Milton Puziss, Ph.D., Chief  
Bacteriology and Virology Branch  
MIDP, NIAID  
National Institutes of Health  
Room 738, Westwood Building  
Bethesda, Maryland 20205

All proposals (an original and six copies) should be forwarded to:

Division of Research Grants  
National Institutes of Health  
Room 240, Westwood Building  
Bethesda, Maryland 20205

and must be received by close of business, October 15, 1979.

A brief covering letter must accompany the completed proposal indicating that the proposal is submitted in response to this RFA. A copy of the covering letter should be forwarded to the NIAID staff member shown above, to indicate that the proposal has been submitted.

REQUEST FOR RESEARCH GRANT APPLICATIONS: RFA

NIH-NICHD-BSB-79-2

NATIONAL INSTITUTE OF CHILD HEALTH AND

HUMAN DEVELOPMENT

**ANNOUNCEMENT**

TITLE: IMPLICATIONS OF INTERNATIONAL MIGRATION  
FOR THE UNITED STATES

*Application receipt date, October 15, 1979.*

BACKGROUND INFORMATION

The Behavioral Sciences Branch supports population research on the antecedents and consequences of population change. This RFA is intended to encourage scientists to submit research grant applications designed to elucidate the factors and processes relating to the characteristics and consequences of immigration to the United States.

The generation of new knowledge about immigration and its consequences is, along with research on fertility and mortality, part of the Center's interest in issues related to population change. Presently, legal immigration accounts for one-fourth of the yearly population increase observed in the U.S. and illegal immigration is estimated to contribute even more. Growth from immigration is fundamentally different from growth by natural increase because of its age-sex distribution, social and economic attributes, legal status, and geographic concentration. Also, growth by immigration affects the nation's health and health-related services. Immigrants have a double impact on the population when they are of childbearing age, and the fertility of immigrants has been shown by previous research to be generally higher than that of native born Americans.

RESEARCH GOALS AND SCOPE

This RFA poses several questions about the nature and effect of immigration into the United States. Special interest is directed toward immigrants from Latin America and the Caribbean Basin, but applications are not limited to that area. This solicitation is intended to allow individual investigators maximum flexibility in designing studies relating to immigration. Interdisciplinary efforts and cross-cultural comparisons with or within the U.S. may be necessary. Presented below are a number of research areas that comprise the scope of this RFA. Since the areas are interrelated, investigators are free to design studies that cut across several areas. It is not anticipated that any one application will answer all questions posed here.

1. What is the Stock and Flow of Immigrants for the U.S.?

While estimates diverge widely, Social Security and related data suggest the presence of four million permanent resident aliens in the United States. An analysis of Census Bureau data suggests that there is a net addition of 264,000 legal immigrants each year. Some research indicates the level of permanent net illegal immigration is a minimum of 250,000 per year and may be 500,000 or much higher. Such estimates suffer greatly from deficient data bases. For example, data are inadequate on the average length of stay of immigrants and the characteristics of immigrants in relation to length of stay. The seasonality of migrant streams to and from Mexico has been demonstrated, ethnographic research among Colombians and Dominicans points to a considerable return movement to their homelands, and the movement between Puerto Rico and the mainland underscores the impact of the economic situation in the New York area on that movement. Such observations need to be described with greater precision through the use of direct or indirect estimating techniques.

2. What is the Impact of International Migration on the United States?

Immigrants compete with the native population for land, energy, food, and scarce resources. Can this competition be clearly conceptualized and quantified? Public health is also affected because immigrants may bring some special health problems with them and may compete for scarce health resources with the resident population. Also, the public health sector may be overwhelmed by heavy immigration in certain localities, causing disproportionate burdens to be placed on individual communities for which little relief is available from state and Federal sources. Immigration may also contribute to a change in the general burden on environmental quality and thereby indirectly affect the general state of health. More research is needed on the relationships between immigration, the domestic resource base, the environment, and the general state of health in the United States.

The relationship of immigration to our economic system needs further study. Immigration affects the supply of labor in a wide variety of occupations. What are the implications of this increase in labor supply for domestic employment? Research has demonstrated a considerable diversity of occupational choice among immigrants. Immigrants have made significant contributions as professionals, para-professionals, and service workers in our health professions and it is desirable to understand the dynamics and ramifications of this activity. Immigration may affect the wage structure of the U.S. and thereby cause an alteration in the domestic distribution of income. What is the effect of immigration on wage structures and the distribution of income? The existence of lower wages attributable to immigration may affect capital accumulation and economic growth, and more research is needed on the relationship

of immigration to capital flows and accumulation and to long term economic growth. Most immigrants both pay taxes and consume public goods and services and the public health sector may especially be affected. What are the effects of immigration on the public sector? Some immigrant populations are dispersed throughout the country, although many tend to live in homogeneous enclaves. More research is needed on the social implications of the various types of living patterns observed for immigrants. There is a significant question as to whether immigrants are being assimilated into American life or are developing into dual or poly-linguistic groups. Also, it is not known in what ways family and community life in minority enclaves may be affected by rapid immigration.

### 3. Adjustment or Adaptation of Immigrants

Insufficient information exists on the processes by which immigrant aliens adjust economically and socially within the United States. The adaptation of immigrants and the process of acculturation to this society appear to depend upon a number of factors, including language, family ties, social relationships, and acquaintance with the situation in the U.S. before immigration, but many questions remain. What are the factors that accelerate or impede the acculturation process? To what extent are undocumented aliens absorbed into the ethnic communities of documented immigrants? What are the ways in which immigrants are integrated into the work force?

One topic that has received some research attention is the fertility of immigrant groups. Historically, the fertility of immigrants has been higher than that of native born Americans, but available studies suggest that as immigrants move into the mainstream of society, particularly through education, fertility falls. Residential isolation or the continuation within the home of the cultural patterns of the country of emigration (e.g. language, customs, etc.) may also impede assimilation into U.S. society and be associated with high fertility. Research on this issue is far from definitive regarding patterns of family composition and childspacing, the use of family planning clinics, the extent to which immigrants experience unwanted births, and the age distribution of childbearing. Despite extensive research on adolescent childbearing, little attention has been directed toward adolescent immigrants - legal or illegal - and their problems relating to sexual, contraceptive, and fertility behavior.

To recapitulate, it is not expected that any one application will address all the issues raised in the RFA, and applicants may assume maximum flexibility in designing a research project within its guidelines. Multi-year requests of up to 5 years are permissible. Costs must be appropriate for the work proposed.

#### MECHANISM OF SUPPORT

The CPR supports research in the population sciences with a variety of funding mechanisms. This type of announcement (the RFA) is used when CPR wishes to stimulate investigator interest in a particular area that is important to its mission. The RFA identifies the scope of the Center's interest but does not require that applications conform to narrowly specified research requirements. Applications submitted in response to an RFA are supported through the customary NIH research project grant mechanism but differ from other research grants in that they are specifically problem oriented. Ongoing evaluation, in addition to the usual review of formal progress, may include periodic visits.

This invitation is for a single competition with a specified deadline (October 15, 1979) for receipt of applications. Applications in response to the RFA will compete for funding within the research grant program of NICHD. Title X of the Public Health Service Act (P.L. 91-572 as amended) provides the legislative authority for the Center for Population Research to make grants for "research in the behavioral.....fields related to..... population." The Catalog of Federal Domestic Assistance number is 13.864.

Any nonprofit institution is eligible to apply to this program. Ordinarily grants are supported from one to five years, but may be renewed according to the conventional processes available through the NIH grant program. The earliest requested start date for grants should be July 1, 1980. It is anticipated that a workshop of those funded under this RFA will be convened to discuss common problems, research approaches, and progress. All policies and requirements which govern the research grant programs of the PHS, including the requirement for cost sharing, will prevail.

#### REVIEW PROCEDURES AND CRITERIA

A special review group under the Division of Research Grants at NIH will review applications on the basis of scientific merit, which includes: adequacy and appropriateness of the approach; the training, experience, and research competence or promise of the investigator(s); the adequacy of the research design; the suitability of the facilities; and the appropriateness of the requested budget relative to the work proposed. Applications judged by the DRG and NICHD as nonresponsive to this RFA will be assigned to the most appropriate regular grant program in the Public Health Service. If assignment cannot be made to such a program, the application will be returned to the applicant.

#### METHOD OF APPLYING

Applications should be submitted on form PHS 398, the application form for the traditional research grant. The conventional presentation for research grant applications should be used. In the upper left hand corner of the face page under the words "GRANT APPLICATION" the application should be labeled "IN RESPONSE TO RFA: NIH-NICHD-BSB-79-2." Application kits may be obtained at most universities and hospitals in the United States.

If not available, application kits may be obtained from:

Office of Grants Inquiries  
Division of Research Grants  
National Institutes of Health  
Room 448, Westwood Building  
Bethesda, Maryland 20205

The original and six copies of the application must be received before 5:00 p.m. Eastern Standard Time on October 15, 1979. Applications should be sent or delivered to:

Division of Research Grants  
National Institutes of Health  
Room 240, Westwood Building  
Bethesda, Maryland 20205

An additional copy of the application should be sent to:

Dr. Earl E. Huyck  
Center for Population Research  
National Institute of Child Health  
and Human Development  
Room 7C25, Landow Building  
7910 Woodmont Avenue  
Bethesda, Maryland 20205

Applications in response to the RFA which are received after October 15, 1979, may be assigned to the regular grants program.

#### IDENTIFICATION OF CONTACT POINT

Questions related to this announcement should be addressed to:

Dr. Earl E. Huyck  
Behavioral Sciences Branch  
Center for Population Research  
National Institute of Child Health  
and Human Development  
Room 7C25, Landow Building  
7910 Woodmont Avenue  
Bethesda, Maryland 20205

Telephone: (301) 496-1174

CATARACT RESEARCH

RESEARCH GRANT APPLICATIONS INVITED BY

THE NATIONAL EYE INSTITUTE

**ANNOUNCEMENT**

The National Eye Institute's cataract program maintains a continuing interest in research dealing with the normal lens and its development and maintenance, as well as with the cause and medical treatment of its pathological conditions, such as cataract. Cataracts are the third largest cause of blindness in the United States and have been classified variously as genetic, sugar, toxic, metabolic, traumatic, congenital, and senile. Senile cataract represents the largest class of these disorders and its etiology and pathogenesis is among the least understood.

The purpose of this announcement is to emphasize the need for new and more comprehensive interdisciplinary and cooperative studies to increase our understanding of the structure and physiology of the lens and of the etiology and pathogenesis of its principal disorder, cataract. An extensive discussion of opportunities in this area of research is contained in the recent report of the National Eye Council, titled Vision Research - A National Plan: 1978-1982. Examples of some of the research opportunities identified in this report include:

1. Normal lens development and maintenance of transparency Elucidate the physical and chemical mechanisms underlying maintenance of lens transparency. Demonstrate how disruption of normal physiological processes by prenatal or developmental influences, by external factors or other ocular and systemic disorders can lead to cataract formation. Define cellular transport mechanisms. Study control of enzymic pathways. Examine morphological organization and functional relationships of individual lens parts.
2. Causes and pathogenesis of senile cataract Study its natural history. Identify possible risk factors associated with senile cataract. Develop means for preventing or slowing the rate of development of senile cataract through drug treatment. Develop tissue culture methodology for study of human senile cataract. Determine chemical composition and morphological abnormalities in the various types of senile cataract in comparison with age, sex, and race-matched normal human lenses.
3. Cataract in association with congenital, metabolic, or genetic factors Develop means of preventing these types of cataracts or reversing them once they occur. Define how genes regulate the

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This program is described in the Catalog of Federal Domestic Assistance, 13.869, and will be supported under authority of Public Health Service Act, Title III, Section 301 (c); Public Law 78-410, as amended; 42 U.S.C. 241.

differentiation of lens fiber cells. Develop methods for study of systemic metabolic abnormalities in human congenital and developmental cataracts. Study chromosomal characteristics in humans and lab animals with cataract. Determine cataractogenic effects of viruses.

4. Drug-induced and secondary cataracts Determine the mechanism(s) of drug-induced cataracts and cataracts which result from lens injuries. Investigate the chemical factors in aqueous humor that may contribute to cataract formation. Investigate the role of radiation in cataractogenesis.

#### APPLICATION SUBMISSION AND REVIEW PROCEDURES

National Institutes of Health peer review procedures will be followed for all responses to this announcement. Applications will be in the form of traditional research grants, i.e., ROIs. Applicants must use the regular research grant application form PHS 398 which is available at institutional central application control offices. Please identify grant applications submitted in response to this announcement by writing at the top of the face sheet of the application "SUBMITTED IN RESPONSE TO NEI PROGRAM ANNOUNCEMENT ON CATARACT". The completed application should be mailed to:

Division of Research Grants  
National Institutes of Health  
Room 240, Westwood Building  
5333 Westbard Avenue  
Bethesda, Maryland 20205

where it will then be assigned for consideration and review according to the NIH referral guidelines for research grants. The scientific quality and the technical merit of all applications will be evaluated by a Division of Research Grants Study Section and by the National Advisory Eye Council.

Approved applications will compete for available funds with all other approved applications assigned to the National Eye Institute. Potential applicants are encouraged to communicate with National Eye Institute staff early in the process of preparing applications.

Application receipt dates are July 1, November 1, and March 1. Applications received after any one receipt date are considered and reviewed together with those received for the subsequent receipt date. The earliest possible award date is approximately nine to ten months after receipt date.

Preliminary drafts of proposals and other inquiries regarding this announcement and requests for copies of the report, Vision Research - A National Plan: 1978-1982 may be addressed to:



Dr. George M. Steinberg  
Cataract Program Director  
Scientific Programs Branch  
National Eye Institute  
Bethesda, Maryland 20205

Telephone: (301) 496-5301

This supersedes the announcement in the *NIH Guide for Grants and Contracts*,  
Vol. 6, No. 1, page 11.

REQUEST FOR RESEARCH GRANT APPLICATIONS: RFA

NIH-NIDR-NCP-79-1

NATIONAL INSTITUTE OF DENTAL RESEARCH

**ANNOUNCEMENT**

TITLE: RESEARCH ON THE IMMUNOLOGICAL CROSS-REACTIONS BETWEEN  
*STREPTOCOCCUS MUTANS* AND MAMMALIAN TISSUES

*Application receipt date, October 15, 1979.*

The National Caries Program (NCP) of the National Institute of Dental Research is a special initiative research and development effort aimed at eliminating dental caries as a major health problem by preventing the disease. One of the principal strategies of this program is to combat the responsible microbial agent or agents. *Streptococcus mutans* is suspected of being a prime causative microbial agent and efforts to develop a vaccine against this organism are deemed scientifically appropriate as a means of reducing dental caries. In some animal trials, anti-*S. mutans* vaccines have been effective in reducing the incidence and severity of experimentally-induced dental decay. Additional studies are required to explore factors which may affect the safety and acceptability of such vaccines. One of these factors involves the reported immunologic cross-reactions between *S. mutans* and human heart tissue. Identification and elimination of any cross-reacting materials is essential to ensure the safety of vaccines derived from *S. mutans*.

Individual grant applications are invited for research on the nature and mechanisms of the immunological cross-reactions between *S. mutans* and mammalian tissues. Initially, there will be a single competition with an application receipt date of October 15, 1979; this RFA may be reissued at a later date.

BACKGROUND INFORMATION

Use of indirect immunofluorescent techniques showed that rabbit antibody to *S. mutans* binds to human heart. Recently, this finding appears to have been substantiated by other laboratory tests, such as two-dimensional and rocket immunoelectrophoresis, radioimmunoassay, induction of generalized anaphylaxis and histopathological examination of the heart tissues of *S. mutans* immunized animals. It is known that similar cross-reactions with human heart tissues have been reported for rabbit antibody to certain Group A streptococci and the mechanism of this reaction is being elucidated. For example, the streptococcal antigenic determinants, which cross-react with the sarcolemmal sheaths of cardiac myofibers, are composed of four polypeptides with molecular weights ranging from 22,000 to 32,000 daltons. Similar detailed information regarding *S. mutans* cross-reactive components is not available. Studies of the immunochemical nature of the serotypic antigens of *S. mutans* have been carried out, but evidence relating these to heart-reactive determinant sites has not been obtained. It is apparent that further work to elucidate the nature of this binding of *S. mutans* antisera to mammalian tissues must be pursued. This should facilitate

formulation of effective anti-carries vaccines, which are devoid of these cross-reactive components. The purpose of this RFA is to invite proposals to study the nature and mechanisms of the immunological cross-reaction between *S. mutans* and mammalian tissues.

#### GENERAL INFORMATION

This RFA identifies the scope of the program's interest in the topic. It leaves the choice of research objectives, identification of specific aims, development of appropriate protocols and methodology, and the procedures for analysis and interpretation of data to the investigator's initiative. However, once an award is made under this program, any substantial modification of the research originally proposed must be mutually agreed upon by the investigator and the National Caries Program.

The program will be supported by research project grants (Catalog of Federal Domestic Assistance Program 13.840, authorization 42 USC 241, 42 CFR 52). Although funds have been allocated for this program in the NCP financial plans for fiscal years 1980 through 1982, award of grants resulting from this RFA is contingent upon receipt of appropriated funds. It is anticipated that multiple awards will be made if sufficient numbers of high quality applications are received. Requests should be restricted to three years of research support. All policies and requirements which govern the research grant programs of the PHS, including cost sharing, will apply to grants made as a result of responses to this invitation.

#### APPLICATION PROCEDURE

Applications should be prepared on form PHS 398, the application form for the traditional research grant, which can be obtained from the Division of Research Grants (DRG), NIH, or from the institution's application control office. The first (face) page of the application and the outside of the mailing package should be labeled "RESPONSE TO NIH-NIDR-NCP *S. MUTANS* - CROSS-REACTION." The receipt date, for an original and six copies of the application, is on or before October 15, 1979. Applications should be sent to:

Division of Research Grants  
National Institutes of Health  
Room 240, Westwood Building  
5333 Westbard Avenue  
Bethesda, Maryland 20205

Proposals judged nonresponsive to this RFA by the DRG and the NIDR will be processed as regular research grant applications, as will applications received after October 15, 1979. The DRG will not accept an application in response to this announcement that is the same as one concurrently being considered by any other NIH awarding unit.

#### REVIEW PROCEDURES

Applications in response to this invitation will be reviewed in competition with each other. The initial review of the applications for scientific and

technical merit will be by an appropriate study section of the DRG; final review will be by the National Advisory Dental Research Council in May 1980. Applicants will be informed of the outcome of the review shortly thereafter. The earliest possible funding date will be July 1, 1980.

Questions concerning this RFA and other grant-related activities of the National Caries Program should be addressed to:

Chief, Caries Research Grants and Contracts Branch  
National Caries Program  
National Institute of Dental Research  
Room 522, Westwood Building  
5333 Westbard Avenue  
Bethesda, Maryland 20205

Telephone: (301) 496-7884

RESEARCH GRANT APPLICATIONS SOUGHT BY  
THE NATIONAL CARIES PROGRAM,  
NATIONAL INSTITUTE OF DENTAL RESEARCH

**ANNOUNCEMENT**

This supersedes the announcement in the *NIH Guide for Grants and Contracts*, Vol. 5, No. 21, p. 1.

The National Caries Program supports efforts to develop practical methods to reduce the incidence of coronal and root caries and ultimately eliminate these major health problems. The objective of this announcement is to encourage submission of high quality applications for research grants to study the etiology, pathogenesis, and prevention of dental caries. Since the disease results from demineralization of the susceptible tooth surface by acid produced by oral flora from dietary carbohydrates, the interests of the National Caries Program focus on four strategy areas:

- I. Combat the responsible microbial agents.
- II. Increase the resistance of the tooth and host.
- III. Decrease caries conducive properties of the diet.
- IV. Improve delivery and acceptance of caries preventive measures.

Examples of areas of needed research include:

- Determination of the number and distribution at various tooth sites and elsewhere in the oral cavity of potentially cariogenic organisms such as *Streptococcus mutans*, *S. sanguis*, *S. salivarius*, *S. mitior*, *Rothia* sp., enterococci, lactobacilli, and actinomyces.
- Examination of the salivary and microbiological determinants of plaque formation and ecology, including salivary pellicle, adherence factors, bacterial, and salivary components which influence the growth, composition, and metabolic activity of the plaque flora.
- Development of a caries vaccine. This will require identification of immunogenic cell surface components of cariogenic organisms, methods for estimation of immune responses to such antigens, assessment of the contributions of systemic and secretory responses, elucidation of the mechanisms of uptake and sequence of antigen processing in peripheral and central secretory immune sites, and evaluation of the importance of cell mediated immunity of mucosal surfaces in caries etiology and prevention.
- Physico-chemical characterization of the caries process in enamel and cementum.
- Determination of the cariostatic mechanisms of action of fluoride and the influence of other trace elements both on the tooth and on the cariogenic oral flora.

- Synthesis or isolation and taste, stability, and safety evaluation of new, potentially noncariogenic sweeteners; determination of the effects of such sweeteners on microbial metabolism, plaque formation, and caries development.
- Development of reliable and feasible methods for early detection and prediction of dental caries.

Legislative authority for this program is found in Section 301 of the Public Health Service Act (P.L. 78-410, 42 USC 241, 42 CFR 52). The Catalog of Federal Domestic Assistance number is 13.840.

Discussions of these and other important topics for investigation have been published in the proceedings of National Caries Program sponsored conferences referenced below.

Applications for research grants shall be submitted on application form PHS 398 which can be obtained from the institution's application control office or the Division of Research Grants, NIH, Bethesda, Maryland 20205. Application receipt dates are July 1, November 1, and March 1.

Applications will be reviewed by the appropriate DRG Study Section and by the National Advisory Dental Research Council.

Inquiries concerning program interests or draft proposals may be addressed to:

John D. Townsley, Ph.D.  
Chief, Caries Research Grants  
and Contracts Branch  
National Caries Program  
National Institute of Dental Research  
Room 522, Westwood Building  
5333 Westbard Avenue  
Bethesda, Maryland 20205

Telephone: (301) 496-7884

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Physicochemical Mechanisms of Dental Caries. Ed. W.E. Brown, J. Dent. Res. 53: 153-318, 1974.

Identification of Cariogenic Bacteria by Fluorescent Antibody and Other Techniques. Ed. A.S. Bleiweis, J. Dent. Res. 55: A1-A206, 1976.

- 1 Immunological Aspects of Dental Caries; Selection of Immunogens for a Caries Vaccine. Ed. W.H. Bowen, R.J. Genco, T.C. O'Brien, Special Suppl. Immunology Abstracts, Information Retrieval, Inc., Arlington, Va. 1976.
- 2 Cariostatic Mechanisms of Fluorides. Ed. W.E. Brown, Caries Research 11: Suppl., 1976.

- 1 Microbial Aspects of Dental Caries. Ed. H.M. Stiles, W.J. Loesche, T.C. O'Brien, Special Suppl. Microbiology Abstracts B, Information Retrieval, Inc., Arlington, Va. 1976.
- 1,2 Prediction of Dental Caries. Ed. B.G. Bibby, R.J. Shern, Special Suppl. Microbiology Abstracts B, Information Retrieval, Inc., Arlington, Va. 1978.
- 1,2 Sweeteners and Dental Caries. Ed. J.H. Shaw, G.G. Roussos, Special Suppl. Feeding, Weight and Obesity Abstracts, Information Retrieval, Inc., Arlington, Va. 1978.
- 1 Secretary Immunity and Infection, Proceedings of the International Symposium on the Secretary Immune System and Caries Immunity. Ed. J.R. McGhee, J. Mestecky, and J.L. Babb, Plenum Press, London and New York, 1978.
- 1,2 Saliva and Dental Caries. Ed. I. Kleinberg, S.A. Ellison, and I.D. Mandel. Special Suppl. Microbiology Abstracts B, Information Retrieval, Inc., Arlington, Va. 1979.

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- 1 - Copies may be purchased from the publisher.
  - 2 - A limited number of copies are available gratis from the National Caries Program.

FOGARTY INTERNATIONAL CENTER,  
SENIOR INTERNATIONAL FELLOWSHIPS

IN

SPECIAL FIELDS:

AGING

ARTHRITIS

DIABETES

EPILEPSY

TROPICAL DISEASES

**ANNOUNCEMENT**

As part of its Senior International Fellowship Program and in cooperation with certain Institutes of NIH, the Fogarty International Center announces that several Senior International Fellowship Awards will be allocated each year to specified fields for research and study abroad. The fields and cooperating Institutes are:

Aging	- National Institute on Aging
Arthritis	- National Institute of Arthritis, Metabolism, and Digestive Diseases
Diabetes	- National Institute of Arthritis, Metabolism, and Digestive Diseases
Epilepsy	- National Institute of Neurological and Communicative Disorders and Stroke
Tropical Diseases	- National Institute of Allergy and Infectious Diseases

These awards will be in addition to those made under the broad range of fields of its regular program. The number will be dependent upon the availability of special funds for this purpose and the merit of applications.

The eligibility requirements and general terms are the same as for regular Senior International Fellowships.

Application Deadline - October 1, 1979

Notification of Final Selection Decisions - March 1980  
Fellowships may be activated at any time within 12 months of issuance of the Notice of Research Fellowship Award (PHS Form 416).

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This program will be supported under authority of Section 307, International Health Act, Public Law 86-610.



Concurrent Applications - An applicant cannot submit concurrent applications to both the regular Senior International Fellowship Program and the Special Emphasis Fellowship Program. Applications in both Programs will be reviewed by a single review group. Because of the possibility that an application may be approved but cannot be funded by the applicant's designated Program, an applicant may request consideration by the appropriate administrative agency for the alternate Program. Such dual consideration would apply only to those applications whose objectives are relevant to either Program. Such consideration will be granted only upon written request at the time of submission of an application.

An applicant must be a U.S. citizen or permanent resident, be an experienced investigator at mid-career, hold a full-time staff position at a U.S. biomedical research or graduate-level educational institution, be nominated by that institution, and have an invitation by a foreign host institution. Awards are made for periods of three to 12 months and provide a stipend, travel costs, and host institution allowance. To be given particular consideration in one of the specified fields, the study proposal in the application must be clearly and directly related to that field but may range from basic biological mechanisms to clinical aspects.

Individuals interested in being considered for these special Fellowships should first familiarize themselves with the general program guidelines for Senior International Fellowships. Application kits will be sent only to offices of Deans or equivalent institutional officials upon request. In order to assure proper processing, all inquiries and application materials submitted should be clearly identified in the following manner: "SENIOR INTERNATIONAL FELLOWSHIP - SPECIAL FIELD ( \_\_\_\_\_ )" .  
(name of field)

Further information may be obtained from:

Senior International Fellowship Program  
Scholars and Fellowships Program Branch  
Fogarty International Center  
National Institutes of Health  
Bethesda, Maryland 20205

Dr. Donald M. Pitcairn  
Telephone: (301) 496-1653

This supersedes the announcement contained in Vol. 7, No. 19, p. 1, of the *NIH Guide for Grants and Contracts*.

SENIOR INTERNATIONAL FELLOWSHIPS,

FOGARTY INTERNATIONAL CENTER

1980 - 1981

**ANNOUNCEMENT**

The Senior International Fellowship Program of the Fogarty International Center, NIH, provides opportunities to U.S. biomedical research and graduate-level educational institutions to nominate outstanding staff members at mid-career, who have demonstrated productive scholarship and have recognized stature in their profession, to pursue research and study abroad and to share their expertise as representatives of the best in the American health sciences. It is intended that this award be a career-enhancing educational experience with mutual benefits to all involved.

Fellowship awards are made for periods of three to 12 months for research and study in the health sciences at foreign host institutions. An applicant must be a U.S. citizen or permanent resident, have a full-time appointment at the U.S. institution, have at least five years' experience beyond the doctorate, and possess the linguistic skills appropriate to the host institution. Transportation costs and host institution allowance are provided in addition to a maximum award of \$24,000 per annum.

During the fellowship period at the host institution the applicant is expected to pursue a specific, well-designed project of mutual interest related to his or her ongoing work as well as to that which will be continued upon return. The type of project would be dependent upon the professional discipline of the applicant, such as basic laboratory of clinical research, data collection and analysis, or operational research. The intrinsic technical merit of the project is one of several important factors to be considered in evaluating the totality of an application as to its fulfillment of the basic purposes of the program. The following factors will be given weight in review of an application:

- qualifications of the applicant
- potentiality for career enhancement
- opportunity for close, interpersonal technical interchange
- benefit to the U.S. nominating institution
- benefit to the foreign host institution
- technical merit and significance of the project.

Applications cannot be considered as fulfilling the purposes of the program where there is not a sufficient period of time for indepth interaction by the applicant with the host institution or where the

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This program will be supported under authority of Section 307, International Health Act, Public Law 86-610.

benefit is primarily for only one of the parties. Thus applications having any of the following as the major feature cannot be accepted:

- visits to multiple institutions for brief periods
- attendance at conferences
- attendance in formal training courses
- provision of full-time clinical or teaching services
- completely independent study.

Application kits will be available in May and are sent to applicants only upon request from the offices of Deans or responsible institutional officials. In addition to a project description and other supporting material, applications require nomination by the U.S. institution and a letter of invitation by a foreign host institution. The deadline for applications is October 1, 1979, with final selection by March 1980.

Further information may be obtained from:

Senior International Fellowship Program  
Scholars and Fellowships Program Branch  
Fogarty International Center  
National Institutes of Health  
Bethesda, Maryland 20205

Dr. Donald M. Pitcairn  
Telephone: (301) 496-1653

MODIFICATION OF ACTIVITY OF DEFINED CEREBRAL

NEURONAL POPULATIONS BY

APPLIED ELECTRICAL FIELDS,

NATIONAL INSTITUTE OF NEUROLOGICAL AND COMMUNICATIVE

DISORDERS AND STROKE

**ANNOUNCEMENT**

The Fundamental Neurosciences Program of the National Institute of Neurological and Communicative Disorders and Stroke is seeking research grant applications involving modification of activity of defined cerebral neuronal populations by applied electrical fields [legislative authority is found in Section 301 of the Public Health Service Act (P.L. 78-410, 42 USC 241); Catalog of Federal Domestic Assistance number is 13.854]. It is expected that the research resulting will provide knowledge useful in the development of neural prostheses.

BACKGROUND

Most neural prostheses presently being investigated subject neural tissue to electric fields generated by remote electrodes. It is assumed that these fields depolarize neural membranes causing the generation and propagation of neural activity. In the case of prostheses that utilize stimulation of peripheral nerves, such as in the electrophrenic respirator, the effectiveness and extent of stimulation can be readily monitored by observing the contractions of the diaphragm. However, little is known about the effects of stimulating currents from cerebral electrodes on central nervous system (CNS) neurons. An increased understanding of the interaction of external fields with individual CNS neurons would be of value in the design of electrode arrays, in understanding the basis of the motor and perceptual effects of stimulation, and in delineating stimulation parameters that optimize the desired effects while minimizing the deleterious effects.

It is anticipated that initial studies would include intracerebral electric field plots of the electrodes to be tested over the range of anticipated stimulus parameters. Using extracellular and intracellular recording techniques the spatial extent of direct versus synaptic excitation and/or inhibition would be determined. The temporal unit firing characteristics including the latency of activation and possible afterdischarges are important in estimating information transfer rates.

The long-range feasibility of certain types of sophisticated neural prostheses will most likely depend on the successful development of safe and effective intracerebral stimulating electrodes. Several investigators have used microstimulation techniques and have made estimates on the extent of neuronal activation. These studies need to be repeated with intracerebral electrodes suitable for prostheses and results compared with those obtained with cortical surface stimulating electrodes. It is known that the charge required to stimulate cortical neurons decreases as the electrode

size is reduced and the electrode is moved closer to the neurons. However, the current density and charge density required for stimulation increase with the smaller size. This can cause undesirable electrode oxidation-reduction reactions. The exact relationships involved in this trade-off need to be studied.

The techniques developed for this work would also be applicable to further understanding of the effects of electrical stimulation on cerebellar neurons and spinal neurons which are two other central nervous system areas currently being used as sites for neural prostheses. Extension to these areas will depend on results from the cerebrum.

#### SCOPE OF RESEARCH

The proposed studies should be carried out in mammals utilizing monopolar, bipolar, and concentric electrode configurations. A number of different sizes of electrodes should be employed with different geometries appropriate for activating specific neuronal populations. Stimulus parametric sets must be carefully chosen to be physiologically effective but to produce little or minimal damage when applied over a long period of time. Correlation of experimental findings with theoretical models may be desirable.

The effectiveness of various electrode geometries and stimulus parametric sets needs to be evaluated in terms of:

1. the location and extent of affected neuronal populations
2. the size and type of cells activated
3. the part of the cells where initial activation occurs
4. whether direct or synaptic excitation or inhibition occurs or whether mean firing rates are increased or decreased on a statistical basis
5. the spatial and temporal characteristics of any after-discharge induced by the stimulation, and
6. the input-output relationships of the activated cell populations.

#### METHOD OF APPLYING

Applications should be submitted on form PHS 398 in the same manner as with any research grant application. Forms are available in the institution's application control office or may be obtained from:

Grants Inquiries Office  
Division of Research Grants  
National Institutes of Health  
Room 448, Westwood Building  
Bethesda, Maryland 20205

The phrase "PREPARED IN RESPONSE TO NINCDS ANNOUNCEMENT ON RESEARCH GRANTS INVOLVING MODIFICATION OF ACTIVITY OF DEFINED CEREBRAL NEURONAL POPULATIONS BY APPLIED ELECTRICAL FIELDS" should be typed across the top of the first (face) page of the application. The original and six copies of the application should be sent or delivered to:

Application Receipt  
Division of Research Grants  
National Institutes of Health  
Room 240, Westwood Building  
Bethesda, Maryland 20205

One additional copy is to be sent to the address below.

Receipt dates are the same as for other new research project grant applications: July 1, November 1, and March 1.

#### APPLICATION REVIEW

Applications will be reviewed for scientific merit by the appropriate DRG Study Section in accord with NIH policy and procedures on peer review. Final review will be by the National Advisory Neurological and Communicative Diseases and Stroke Council.

For further information applications should contact:

W. Watson Alberts, Ph.D.  
Health Scientist Administrator  
Fundamental Neurosciences Program  
NINCDS, National Institutes of Health  
Room 120, Federal Building  
Bethesda, Maryland 20205

Telephone: (301) 496-1447

REQUEST FOR RESEARCH GRANT APPLICATIONS: RFA

NIH-NINCDS-CD-79-1

NATIONAL INSTITUTE OF NEUROLOGICAL AND  
COMMUNICATIVE DISORDERS AND STROKE

**ANNOUNCEMENT**

TITLE: PROGRAM PROJECT FOR SPEECH MOVEMENT RESEARCH  
UTILIZING AN X-RAY MICROBEAM TRACKING SYSTEM (MBT)

*Application receipt date, September 15, 1979.*

INTRODUCTION

This RFA announces the availability of program project grant support from the National Institute of Neurological and Communicative Disorders and Stroke (NINCDS) for the development and support of a speech production research program utilizing an X-ray microbeam tracking system (MBT) for the study of oral articulator movements during speech in normal and pathological conditions. Applications for MBT should be submitted to the Division of Research Grants, NIH, Bethesda, Maryland, by close of business September 15, 1979, for review by an initial review group and the National Advisory Neurological and Communicative Disorders and Stroke Council at its meeting in January 1980.

The NINCDS intends to provide support for a five year program of research conducting studies of articulatory movement during normal and disordered speech production utilizing an X-ray microbeam movement tracking system. The research program will meet the following objectives:

1. Development of a speech research program aimed at studying articulator movement in normal speech and selected speech production disorders utilizing an X-ray microbeam tracking system.
2. Improvement and demonstration of the capabilities of the X-ray microbeam system, similar to that presently utilized by the University of Tokyo, for conducting valid and reliable studies of speech movements.
3. Development of the ability to conduct acoustic, electromyographic and aerodynamic studies in conjunction with X-ray microbeam tracking studies and integrate the data gathered with each.

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This program is described in the Catalog of Federal Domestic Assistance, 13.851, and will be supported under authority of Public Health Service Act, Section 301 (c) and 433; P.L. 78-410, as amended; 42 U.S.C. 241.

4. Provide facilities for speech scientists from other regions in the United States for conducting a variety of studies aimed at determining the movement and neurophysiological characteristics of the oral articulators during speech production.

#### BACKGROUND

Improved understanding of the coordinated movements of the tongue, lips, pharynx, larynx, soft palate, and jaw during speech production is needed. This research is presently not possible technologically in the U.S. without radiation exposure risks to subjects and laborious frame by frame analysis of cineradiographic films. The X-ray microbeam tracking system provides unique capabilities for the study of tongue, lip, palate, and jaw movement during continuous and rapid speech production without the insertion of intrusive appliances in the oral cavity. The only system in the world is in Japan and accessible to only a few U.S. scientists. Such a system is needed in the U.S. located in a center for speech production research.

A computer controlled X-ray microbeam samples the movements of pellets placed on the tongue, palate, velum, lips, teeth, and jaw. The system has the following features:

1. It provides opportunities for the noninvasive study of tongue movements during continuous speech articulation. Except for cineradiography, there is no method available for studying tongue movements during speech without devices which disrupt normal patterns of speech production.
2. The microbeam system has a fast sampling rate, as great as 120 to 150 samples per second, which provides a high degree of resolution for the study of rapid movements during speech production.
3. With MBT, data from all the articulators can be integrated during automatic real time data processing to study the coordinated adjustments made between the various articulators during speech sound production.
4. Finally, the system has very low radiation exposure, making it feasible for use with both normal and patient populations. It can be estimated that for one 10 minute study of speech production, the maximum possible amount of exposure to 1 mm of tissue would be 9 milliRads (.009 Rads) which is less than 1/220th of the yearly allowable exposure level.

#### GOALS AND SCOPE

The goal is to utilize the capabilities of an X-ray microbeam tracking system in a program of speech production research. This will require improvement of the capabilities of the Tokyo system particularly in terms of scanning efficiency, the real time processing of the data, and integration with data acquired from other systems of study (e.g.



aerodynamics). When combined with other methods of study in a center for speech production research, a clear understanding of tongue movements and their relationship to speech signals, muscle action, and airflow may be gained using the X-ray microbeam tracking system.

The research will require a multidisciplinary team of investigators who have expertise in speech production research and in the radiological, engineering, and computer aspects of the MBT development. An advisory committee, independent of the parent institution and investigator team, needs to be available to advise the investigatory team both in the development of the MBT and its utilization in speech physiology research.

#### REVIEW CRITERIA

The essential elements of an investigative effort utilizing MBT are:

1. An investigator team with the interest and expertise necessary for conducting speech movement research utilizing an X-ray microbeam speech movement tracking system.
2. Scientific merit of the research plan aimed at implementing speech movement research with the X-ray microbeam movement tracking system.
3. Affiliation with a university or laboratories providing expertise in engineering, radiology, computer hardware, physics, electronics, speech science, computer programming, otolaryngology, and neurophysiology which will assist with the research.
4. Access to an appropriate unit with expertise suitable for constructing components for the X-ray microbeam system.
5. Experience and competence of the proposed technical coordinator and staff for implementing and improving the X-ray microbeam tracking system.
6. Access to patients with a variety of communicative disorders.
7. Willingness to assist other investigators from around the United States who request use of the X-ray microbeam tracking system.

#### FUNDING PLANS

Funds are available for the support of the biomedical research effort of the research team to assist in: the establishment of an X-ray microbeam tracking system and for its operation as appropriate to the needs of the speech science research effort; the improvement of the speech physiology research laboratories as appropriate to the needs of the speech science research effort; and the purchase or improvement of the necessary computer equipment and its operation. Only 1 (one) award is anticipated and will be made in accordance with the scientific excellence of the speech science research program, the competence of the investigator team for meeting the goals of the project, and institutional participation in the establishment and support of the research facility.

METHOD OF APPLYING AND INQUIRIES

A. Letter of Intent

The NINCDS should receive a letter of intent not later than the close of business on June 15, 1979, from prospective applicants. The Institute requests such letters in order to have a reasonable estimate of the number of applications to be expected and to begin planning for the review. A letter of intent is not binding and will not enter into the review of any proposal subsequently submitted. The letter should describe in broad outline the research resources required (e.g. personnel, facilities, etc.); the research questions to be addressed; the institutional, administrative, and fiscal arrangements being considered for support and operation of the research facility; and plans for making the resources of the facility available to other investigators.

Letters should be sent to:

Christy L. Ludlow, Ph.D.  
Communicative Disorders Program, NINCDS  
Room 1C-13, Federal Building  
7550 Wisconsin Avenue  
Bethesda, Maryland 20205

B. Meeting with Potential Applicants

The proposal for implementing a research program utilizing MBT is unique and extremely challenging. The NINCDS will hold a meeting of those intending to apply to enable applicants to question program staff directly concerning appropriate approaches to this request. This meeting will be held on June 21, 1979, in Bethesda, Maryland. Inability to attend this meeting will not prejudice the application of an investigator.

C. Format for Applications

Proposals for MBT should be submitted on form PHS 398 with any modifications which the applicant deems necessary. Instructions are available from the CDP, NINCDS. Applications can be obtained from the institution's application control office or from the Division of Research Grants, NIH.

D. Application Review

The Division of Research Grants will arrange for scientific merit review by a special review group. Final review will be by the National Advisory Neurological and Communicative Disorders and Stroke Council.

E. Application Procedure

Applications must be received by September 15, 1979. Proposals judged nonresponsive to this RFA by the DRG and NINCDS will be returned, as will applications received after September 15, 1979. The DRG will not accept an application in response to this announcement that is the same as one concurrently being considered by any other NIH awarding unit. The completed application and copies should be sent or delivered to:

Division of Research Grants  
National Institutes of Health  
Room 240, Westwood Building  
5333 Westbard Avenue  
Bethesda, Maryland 20205

All material should be clearly identified as a proposal for SPEECH MOVEMENT RESEARCH UTILIZING AN X-RAY MICROBEAM TRACKING SYSTEM. A covering letter should accompany the application indicating that it is submitted in response to this announcement. A copy of the covering letter should be sent to:

Christy L. Ludlow, Ph.D.  
Communicative Disorders Program, NINCDS  
Room 1C-13, Federal Building  
7550 Wisconsin Avenue  
Bethesda, Maryland 20205

Telephone: (301) 496-5061