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NIH GUIDE

for GRANTS and CONTRACTS

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

Vol. 4, No. 11, November 24, 1975

NIH RESEARCH CAREER DEVELOPMENT AWARD PROGRAM

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

The NIH is currently accepting applications in the Research Career Development Award Program. Awards in this program are for individuals with outstanding research potential who require additional training and experience in a productive scientific environment in preparation for careers in independent research. Institutions may apply for awards on behalf of individuals who have had three or more years of relevant postdoctoral experience. The candidate must be a citizen or non-citizen national of the United States or have been lawfully admitted as a permanent resident. An individual who has achieved professional recognition as a leader in his/her field, as evidenced by publications in professional journals and/or attainment of senior academic rank or its equivalent, is usually considered to have already achieved the objectives of this program and therefore to be ineligible.

An RCD Award is limited to a single support period of 5 years. The salary must be based on a full-time 12-month staff appointment. It must be consistent both with the established salary structure of the institution and with salaries actually provided by the institution from its own funds to other staff members of equivalent qualifications, rank, and responsibility in the department concerned. The maximum NIH contribution to the salary is \$25,000 per year.

Applications must be received at the NIH no later than February 1, 1976, with notification of final action in October 1976.

Application material may be obtained by writing to Grants Inquiries, Division of Research Grants, National Institutes of Health, Bethesda, Maryland 20014. If a self-addressed gummed label is enclosed in the request for kits, it will expedite handling.

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.

NATIONAL INSTITUTE OF
GENERAL MEDICAL SCIENCES

NATIONAL RESEARCH SERVICE AWARDS

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

The provisions of this announcement are subject to any changes which may be necessary as a result of Congressional action on pending legislation extending basic authorization for the program. Such awards will be contingent upon availability of funds.

INSTITUTIONAL NATIONAL RESEARCH SERVICE AWARDS

The National Institute of General Medical Sciences is currently accepting applications from eligible institutions to provide for support of selected predoctoral and postdoctoral individuals who seek biomedical research training in the areas specified below.

It is the Institute's goal in the predoctoral programs to encourage increased breadth while not sacrificing the standards of depth and creativity of the best Ph.D. programs. Cooperative involvement of faculty from several departments would be considered evidence for such breadth.

Programs for the post-Ph.D. candidate should be focused on an advanced and specialized area of research and, where appropriate, offer exposure to clinical problems. Programs for the post-M.D.^{1/} candidate should provide at least two years of rigorous research training, which is usually best accomplished in basic science departments.

Separate applications for support of predoctoral and postdoctoral research training are required. In general, institutions will be limited to one award in each of the nine areas listed below. Further information regarding dates of application and notification, tenure, stipends, trainee eligibility, and required payback provisions may be found in the *NIH GUIDE FOR GRANTS AND CONTRACTS*, Vol. 4, No. 10, October 24, 1975.

For general information about these institutional NRS Award Programs, contact Dr. Margaret Carlson, Training Officer, National Institute of General Medical Sciences, Bethesda, Maryland 20014, telephone (301) 496-7585. For additional information and guidelines pertaining to each specific area, call the indicated appropriate program staff of the Institute.

^{1/} Where the M.D. degree is mentioned or implied in this announcement, it refers also to other medical, professional degrees such as D.D.S., D.O., D.V.M.

NIGMS AREAS OF SUPPORT

Predoctoral Institutional National Research Service Awards

1. Cellular and Molecular Biology

Programs should be of a cross-disciplinary nature in cellular and molecular sciences. The research training offered should incorporate components of two or more Ph.D.-degree programs (such as anatomical sciences, biochemistry, biophysics, genetics, microbiology, and pathology) with training directed by representative faculty capable of providing guidance and offering thesis research opportunities at the cellular and molecular level. (Dr. Russell Hilmoe: [301] 496-7463)

2. Genetics

Training should focus on the principles and mechanisms of genetics, drawing upon a number of disciplines and research areas such as chemistry, biochemistry, cell regulatory processes, and developmental biology. In addition, the program goals include a better understanding of population and behavioral aspects of heredity, and of genetic disease. (Dr. Dorothea Miller: [301] 496-7137)

3. Pharmacological Sciences

Training should emphasize the acquisition of competence in the broad fields of pharmacology and toxicology to conduct research on drug actions and effects in living cells, in animals, and in man - ranging from the chemical to the clinical level, with thesis opportunities also included in such areas as biochemistry, physiology, medicinal chemistry, pharmacogenetics and behavioral pharmacology and other cognate fields, via collaborating departments. (Dr. Raymond Bahor: [301] 496-7707)

4. Systems and Integrative Biology

Research training should bring together the varied resources and approaches of such disciplines as physiology, bioengineering, biomathematics, nutrition, and the behavioral sciences into combinations that will build broad research competence to investigate organ systems and integrative functions of higher organisms. (Dr. Frederick Ferguson: [301] 496-7253)

5. Medical Scientist

Interdisciplinary programs of integrated medical and graduate research training required for investigation of diseases in man. These programs assure highly selected trainees a choice of a wide range of pertinent graduate programs in the biological, chemical, physical, and social sciences as well as medicine. (Dr. Vincent Price: [301] 496-7021)

Postdoctoral Institutional National Research Service Awards

1. Basic Pathobiology

Advanced interdisciplinary training for post Ph.D.'s from basic biological, biochemical, and biophysical sciences toward gaining added knowledge and capacity for research on fundamental problems of disease; and to provide post-M.D.'s with an in-depth knowledge of the principles and approaches of basic science needed for research at the cellular and molecular level in both normal and diseased states. (Dr. Edward Hampp: [301] 496-7563)

2. Genetics (with emphasis on Medical Genetics)

Advanced and special research training in genetics, utilizing and applying the principles and fundamental mechanisms of genetics toward the understanding of human genetic disease. Postdoctoral trainees to be drawn from diverse basic biological and medical backgrounds for research study with faculty representing various approaches to genetic research - ranging from biochemical genetics to human population genetics. Preference will be given to applications presenting training opportunities in medical genetics. (Dr. Dorothea Miller: [301] 496-7137)

3. Clinical Pharmacology

Advanced research training in basic and clinical pharmacology and planned studies to acquire fundamental scientific knowledge and research techniques in areas such as chemistry, biochemistry, physiology, genetics, certain behavioral science subdisciplines and clinical research specialties for individuals holding the M.D. or Ph.D. degree to investigate, in depth, the effects and the mechanisms of drug actions in humans. (Dr. Raymond Bahor: [301] 496-7707)

4. Trauma and Burn Research

Multidisciplinary research training for postdoctoral scientists to enhance their capability of advancing our knowledge of the body's complex reactions to trauma and burn injuries. The supervisory staff should include trauma surgeons and/or burn specialists as well as basic scientists; the program is expected to emphasize research training in fields such as physiology, biochemistry, immunology, and microbiology. (Dr. Emilie Black: [301] 496-7373)

INDIVIDUAL NATIONAL RESEARCH SERVICE AWARDS

Postdoctoral individual National Research Service Awards may be applied for in the following areas:

1. Cellular and Molecular Biology

Awards are provided to enable individuals holding the Ph.D. degree in the biological or physical sciences to acquire special advanced research

training toward developing necessary cross-field knowledge for a research career in cell sciences - in areas such as membrane structure and function, cell motility, differentiation, enzyme catalysis and regulation, and proteins and other macromolecules, which are essential for an understanding of living systems at the cellular-molecular level. The program also enables individuals holding the M.D. degree to obtain the requisite background and skills in basic research to bring new knowledge at the subcellular and molecular level into medicine. (Dr. Russell Hilmo: [301] 496-7463)

2. Basic Pathobiology

Advanced interdisciplinary training for post Ph.D.'s from basic biological, biochemical, and biophysical sciences who wish to do research on the fundamental aspects of problems in the study of disease; or programs to provide post-M.D.'s with an in-depth knowledge of the principles and tools of basic science for research at the cellular and molecular levels in both normal and diseased states. (Dr. Edward Hampf: [301] 496-7563)

3. Genetics (including Medical Genetics)

Awards are made for advanced research training focusing on the principles and fundamental mechanisms of genetics and related fields. The aim is further understanding of genetic processes in general and of human genetic disease. Applicants may propose research and study with investigators representing various approaches to genetics - ranging from biochemical genetics to human population genetics. (Dr. Dorothea Miller: [301] 496-7137)

4. Pharmacological Sciences (including Clinical Pharmacology)

Training should emphasize the acquisition of competence in the broad fields of pharmacology and toxicology to conduct research on drug action and effects on cells, animals, and man. Proposals may range from the chemical to the clinical level of study and include training opportunities in such areas as biochemistry, physiology, medicinal chemistry, genetics, and other cognate fields. (Dr. Raymond Bahor: [301] 496-7707)

5. Systems and Integrative Biology (Physiology and Bioengineering)

Support for research training is offered to individuals holding the M.D. or Ph.D. degree who seek to apply engineering, physical and/or mathematical principles to biological and medical problems. Support is also available to individuals seeking competence in the in-depth and quantitative study of organs and systems involved in integrated physiological functions of animals and man. (Dr. Frederick Ferguson: [301] 496-7253)

6. Anesthesiology

Research training support is offered to individuals with the M.D. degree and special interest in anesthesiology who seek to acquire fundamental

knowledge and competence in an appropriate basic science field.
(Dr. Emilie Black: [301] 496-7373)

7. Behavioral Science Related to Medicine

Research training support is offered to individuals with the Ph.D. degree who seek competence to apply the knowledge and methods of such disciplines as psychology and sociology to medical problems, or to individuals with backgrounds in medicine or the fundamental biomedical sciences who seek appropriate training in behavioral sciences. The training should prepare individuals to conduct research in such developing fields as behavioral genetics, the behavioral aspects of trauma and its treatment, or pain research. (Dr. William Taylor: [301] 496-7048)

8. Epidemiology

Research training for individuals holding the M.D. degree who seek broad competence to study epidemiology. The range of problems in epidemiology has now become so wide that rigorous preparation and increased specialization are required to advance this field.
(Dr. Margaret Carlson: [301] 496-7585)

9. Trauma and Burn Research

Multidisciplinary research training for postdoctoral scientists to enhance their capability of advancing our knowledge of the body's complex reactions to trauma and burn injuries. The supervisory staff should include trauma surgeons and/or burn specialists as well as basic scientists; the program is expected to emphasize research training in fields such as physiology, biochemistry, immunology, and microbiology.
(Dr. Emilie Black: [301] 496-7373)

10. Clinical Laboratory Sciences

Research training for individuals holding the Ph.D. degree in a basic biomedical science who seek to apply this knowledge to the development of clinical laboratory sciences such as chemistry, microbiology, or hematology. Individuals with a medical background who seek research training in depth in a basic biomedical science with the goal of applying this knowledge in clinical laboratory medicine are also eligible.
(Dr. Frederick Ferguson: [301] 496-7253)

For general information about the individual National Research Service Awards, contact Dr. Roger Fuson, Fellowships Officer, National Institute of General Medical Sciences, Bethesda, Maryland 20014: telephone (301) 496-7368. For more specific information, call the appropriate program staff of the Institute, as indicated.

In addition, the National Institute of General Medical Sciences offers individual National Research Service Awards under its Minority Access to Research Careers (MARC) Program. For further information, contact Mr. Elward Bynum, Director, MARC Program, National Institute of General Medical Sciences, Bethesda, Maryland 20014: telephone (301) 496-7357.

CHANGE IN APPLICATION RECEIPT
DATES AND REVIEW SCHEDULE

NOTICE

In the *NIH GUIDE FOR GRANTS AND CONTRACTS*, Vol.4, No. 7, August 8, 1975, a revised review schedule for competing applications was published. A number of questions have resulted some of which will hopefully be clarified by a re-publication of the schedule with additional information.

The review schedule below is for competing grant applications in the extramural programs of the National Institutes of Health. Applications for other Agencies in the Public Health Service (e.g., ADAMHA, FDA, etc.) that are submitted to the Division of Research Grants, NIH, for review are also included.

Although the new schedule becomes effective on January 1, 1976, it is recognized that some modification of the schedule by NIH may be necessary during a transitional period. For example, for 1976 only the institutional and individual National Research Service Awards will be received on January 2 rather than February 1. Special provision will be made for their review and award within Fiscal Year 1976. While there will be no regularly scheduled advisory council meetings in the future in June, during the transition NIH will use special measures to avoid any lapse in grant support - including, as necessary, special review meetings and extensions of grant periods. Advice should be sought from the NIH awarding component if any hardship or inconvenience to an on-going project is anticipated.

Added to the previously published schedule is information about the earliest probable beginning dates on which grants might be activated.

SEE PAGE 8 FOR TABLE

REVISED REVIEW SCHEDULE - <u>EFFECTIVE JANUARY 1, 1976</u>			
Receipt Date	Study Section Meeting	Council Meeting	Earliest Probable Start Date
Feb. 1 ^{1/} / Mar. 1 ^{2/}	<u>June</u>	<u>September</u> (3rd and 4th weeks) <u>October</u> (1st and 2nd weeks)	December 1
June 1 ^{1/} / July 1 ^{2/}	<u>October - November</u> (4th week of October - 1st to 3rd weeks of November)	<u>January</u> (4th week) <u>February</u> (1st week)	April 1
Oct. 1 ^{1/} / Nov. 1 ^{2/}	<u>February - March</u> (4th week of February - 1st to 3rd weeks of March)	<u>May</u> (3rd and 4th weeks)	July 1
<p>^{1/}Receipt date for renewals (all competing renewals) and new applications for institutional and individual National Research Service Awards, Research Career Development Awards, program projects and centers.</p> <p>^{2/}Receipt dates for new and supplemental research project grant applications.</p>			

Other than such exceptions as mentioned above, the new review cycle will become effective January 1, 1976, making February 1 and March 1 the first receipt dates for competing applications in 1976. These applications will be reviewed by initial review groups in June 1976, and by National Advisory Councils in September-October 1976. The review cycles will continue as indicated above.

REFERENCE REPORTS AND
THE PRIVACY ACT OF 1974

NOTICE

The Privacy Act of 1974 (PL 93-579) became effective September 27, 1975. One of the provisions of the law is that an individual may gain access to information in Federal records pertaining to him.

While the Act permits certain exceptions to an individual's right to access his records, no exceptions are permitted concerning the fellowship records of NIH. Those persons providing reference reports to NIH concerning applicants for National Research Service individual awards (fellowships) and Research Career Development Awards are reminded that applicants may have access to such references.

REQUEST FOR RESEARCH GRANT APPLICATIONS: RFA A N N O U N C E M E N T

TITLE: *LUNG TISSUE CULTURE*

The Division of Lung Diseases of the National Heart and Lung Institute is inviting research grant applications to study the physiologic, biosynthetic and cellular processes of the lung by the use of the tissue culture technique.

This type of solicitation (the RFA) is utilized when the Division wishes to stimulate investigator interest in a particular research area that is important to the National Program. Unlike the RFP (Request for Contract Proposals), the RFA identifies the scope of the Division's interest but does not require that the proposal conform to the specified research requirements. Moreover, the RFA is supported through the customary NIH grant-in-aid and is governed by the policies for regular research grants. However, the RFA solicitation represents a single competition, with a specified deadline for receipt of applications. All applications in response to the RFA will be reviewed at the same time by an ad hoc review panel. Approved applications that receive grant awards will be administered in the same fashion as regular research grants.

Applications should be prepared in accordance with the aims and requirements which are described in the following sections.

I. PROGRAM SPECIFICATIONS

- A. The Pathophysiology Branch
- B. Background and Program Objectives
- C. General Requirements
- D. Research Scope
- E. Mechanism of Support

II. METHOD AND CRITERIA FOR REVIEW

- A. Review Procedures
- B. Review Criteria

III. METHOD OF APPLYING

- A. Letter of Intent
- B. Application Format
- C. Application Procedure

If you have questions relating to this announcement, you should contact Dr. Suzanne S. Hurd at (301) 496-7332.

We hope that this RFA and participation in the program will be of interest to you.

LUNG TISSUE CULTURE*

I. PROGRAM SPECIFICATIONS

A. The Pathophysiology Branch

The Pathophysiology Branch of the Division of Lung Diseases sponsors fundamental and clinical research grants and contracts related to normal and abnormal function of the lung. This request for applications is to encourage submission of individual research grant proposals designed to apply the techniques of tissue culture for in vitro maintenance of lung tissue with histotypic architecture intact and to use this technique to study the physiological, biochemical, metabolic and cellular processes in the lung.

B. Background and Program Objectives

In addition to its role as a gas exchanger, the lung is now recognized as an important metabolic organ. Studies with lung tissue slices and whole perfused lung have demonstrated that the lung plays an active part in the production and metabolism of vasoactive amines, hormones and phospholipids. It has also been shown that the lung is a cellularly heterogeneous organ composed of over forty different lung cell types, with many different cellular and metabolic functions. In the past few years, techniques have been developed to isolate and culture some of the individual cell types. As a result of these investigations, significant knowledge has already been gained regarding the specific metabolic role of some of the individual cell types.

*For the purpose of this request, the term "tissue culture" does not include monolayer cell culture or suspended cell culture. Frequently, the term used for the approach to be followed in response to this announcement is "organ culture."

Tissue culture, an experimental technique which establishes conditions for the maintenance in vitro of normal states of cell differentiation, has been applied to tissues from many organs, including the lung. Unlike the technique of culturing individual cells, where cell multiplication and the growth of a uniform population of cells are the dominant interest, the tissue culture technique provides an opportunity to study mechanisms of cellular interaction under conditions in which the organizational features of tissues are maintained, and cell growth and proliferation proceed at rates which more closely approximate those observed in vivo. The primary advantage of tissue culture is that it permits analysis of tissue and cellular regulatory mechanisms and adaptive responses to tissue environmental changes under conditions in which the extracellular environment (the culture medium) is defined. It is anticipated that the application of the tissue culture technique to lung tissue will add another dimension to our understanding of the metabolic and cellular processes in the lung since this technique would permit studies of cell-cell interaction and biosynthesis of protein, nucleic acids, carbohydrates and lipids in a controlled extracellular environment.

Thus, the specific aim of this program is to establish conditions for the maintenance of physiologic and metabolic integrity of lung fragments in culture. Once developed, this culture system should be used to study the physiological, biochemical, metabolic or cellular processes of the lung.

C. General Requirements

1. Source of Material - The culture technique may be applied to tissue samples at any stage of development and from animal or human lung tissue. Tissue segments isolated from any portion of the lung, such as pleura, blood vessels and airways may be used. Although the primary objective of this program is to evaluate the processes which occur in the normal and pathological lung, proposals on studies of carcinoma of the lung will not be accepted in response to this announcement.
2. Methodology - Specific details should be given for the proposed explantation techniques and culture conditions. Each proposal should include plans to evaluate the morphologic integrity of the preparation by light and electron microscopy. In addition, in order to demonstrate that physiologic and metabolic processes are functioning in the culture preparation, each proposal should include plans to evaluate the physiologic integrity by such measurements as response to stimuli or pressure-volume characteristics and metabolic integrity by such means as oxygen consumption, redox state or glucose utilization.

D. Research Scope

The research topics presented below are intended to provide a perspective of the scope of research that would meet the goals of this program. Investigators are encouraged to consider other relevant

approaches but they must be related to the use of the tissue culture technique to study the biochemical, metabolic and cellular processes in the lung. Research on transformations in malignant cells would not be responsive, nor would studies which evaluate the effects of chemicals of a possible carcinogenic nature.

1. Secretion - Aspects of cellular secretion which need to be investigated include the secretion of surfactant by the pulmonary epithelium, secretion of mucous and other components of the mucociliary blanket by the bronchial glands and mucous cells, collagen production and formation by fibroblasts, secretion of immune complexes from lymphocytes and plasma cells and degranulation of mast cells. The effects of hormones, neurotransmitters or drugs upon secretion may be evaluated, including studies of their mechanism of action (for example, cell-ligand interactions or the role of cyclic AMP or GMP).
2. Biosynthetic Processes - Recent studies have shown that the lung is very active in terms of biosynthetic activity. There is good evidence that dipalmitoyl lecithin and other phospholipids are synthesized in type II cells. However, many details of this process remain open for investigation including the precise pathways of phospholipid synthesis, other potential sites of synthesis, the mechanism of storage and intracellular and extracellular transport. The mechanism of degradation of the phospholipid is also relatively unexplored. Mucopolysaccharides, collagen and elastin production occurs in the lung, but further information is required regarding control mechanisms for regulating biosynthetic activity and cellular sites of synthesis and degradation. Studies on the biosynthesis of prostaglandins and biotransformation of bradykinin and angiotension are also relevant.
3. Response to Injury and Repair - Several patterns of lung response to injury have been described in the literature. The acute inflammatory reaction consists of an infiltration of blood cells associated with focal lung edema and hemorrhage with consolidation. This acute state might be followed by necrosis or destruction. The factors responsible for each of these patterns of injury remain to be investigated. Responses to injury in the bronchi include atrophy, ciliary destruction, hypertrophy of mucous glands, and bronchoconstriction which may be in response to immunologic or irritative agents. In the alveolus of the lung, hyperplasia of type II cells is a frequently observed effect of lung injury. The mechanism of response requires further investigation. The effects of toxic agents including environmental hazards (ozone, hyperbaric oxygen and other oxidants), viral and bacterial agents of infection, sensitizing drugs and anesthetic agents require evaluation.

The topics cited above are examples presented for illustrative purposes only; other approaches to meet the goals of this program are encouraged. However, the application must apply the technique

of tissue culture to segments isolated from the lung and include a research project to use the preparation to study metabolic processes. Each research application should clearly define the rationale, background, specific scientific goals and detailed methods of procedure for the projects.

E. Mechanism of Support

The support mechanism for this program will be the traditional NIH grant-in-aid; successful applicants will plan and execute their own research program. Upon initiation of the program, the Division of Lung Diseases will sponsor periodic workshops to encourage exchange of information between investigators who participate in this program.

Although this program is included and provided for in the financial plans for Fiscal 1976, award of grants pursuant to this request for grant applications is contingent upon ultimate receipt of appropriate funds for this purpose. A variety of approaches would represent valid responses to this announcement. Accordingly, it is anticipated that there will be a range of costs among individual grants awarded. Applicants are requested to furnish their own estimates of the time required to achieve the objectives of the proposed research project; however, the total project period of this proposal must not exceed five years. At the end of the project period, renewal proposals may be submitted for competitive review.

Unless stated to the contrary, the regulations (Code of Federal Regulations, Title 42, Part 52 and, as applicable to State and local governments, Title 45, Part 74) and the current policies which govern the research grant programs of the NIH will prevail.

II. METHOD AND CRITERIA FOR REVIEW

A. Review Procedures

Upon receipt, applications will be reviewed by the Division of Research Grants (DRG) and NHLI staff for responsiveness to this announcement. If an application is judged unresponsive, the applicant will be given an opportunity to withdraw the application or to submit it for consideration in the traditional grant program of NIH. Applications judged responsive will be reviewed initially for scientific merit by the DRG, utilizing the Special Study Section mechanism, and secondly by the National Heart and Lung Advisory Council in June 1976.

B. Review Criteria

The factors considered in evaluating each application will be:

- o The significance of the application to the goals of this program announcement.

- o The scientific merit of the research design, approaches and methodology.
- o The research experience and competence of the staff to carry out the proposed investigations.
- o Adequacy of time (effort) to be devoted to the project by investigators and technical staff.
- o The adequacy of the organizational arrangements for scientific direction.
- o The evidence of institutional commitment to the program.

III. METHOD OF APPLYING

A. Letter of Intent

Prospective applicants should submit a one-page letter describing the proposed research program not later than December 15, 1975, to:

Dr. Samuel Schwartz
Associate Director for Review
Division of Extramural Affairs
National Heart and Lung Institute
Room 554, Westwood Building
Bethesda, Maryland 20016

The Institute requests such letters only to provide a perspective of the number and the scope of applications. A letter of intent is not binding, and it will not enter into the review of any proposal subsequently submitted.

B. Format for Applications

Applications should be submitted on Form NIH-398, the application form for the traditional research grant. The conventional presentation for research grant applications should be utilized; the points identified under the Review Criteria must be fulfilled.

C. Application Procedure

The original and twenty-four (24) copies of the application must be received before 5:00 p.m. Eastern time on February 1, 1976. Applications should be sent or delivered to:

Division of Research Grants
National Institutes of Health
Room 240, Westwood Building
Bethesda, Maryland 20016

A brief covering letter should accompany the application indicating that it is in response to the Program Announcement-NHLI Program on Lung Tissue Culture. A copy of the covering letter should be sent to the Associate Director for Review, Division of Extramural Affairs, National Heart and Lung Institute, Room 554, Westwood Building, Bethesda, Maryland 20016, to indicate that the application has been submitted.

APPLICATION ACKNOWLEDGMENT SYSTEM

NOTICE

In the past, application kits for Public Health Service research and research training support have contained a two-part postcard: one part returned to the investigator, program director, or candidate to acknowledge receipt of the application and the other retained within the Division of Research Grants for reference purposes.

The Public Health Service has now introduced a three-part card to be substituted in the application kits. The third part will be returned to the investigator, program director, or candidate to notify him or her of the assignment of the application for initial review. Any correspondence between the applicant and the Public Health Service should be addressed to the executive secretary whose name and address are included on the card. This requirement is especially important for those applications which require personal references for the review. Applicants for Research Career Development and individual fellowship support are advised to have references forwarded directly to the executive secretary who is handling the review.

It is recognized that many application kits already available to the scientific community will not have the three-part card. During the transition period while new kits are being supplied, the former two-part card may be used. It is not necessary for applicants to request the new version.

CANCER RESEARCH EMPHASIS GRANTS
(CREG)

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

TITLE - IN VITRO CHEMICAL CARCINOGENESIS

SCIENTIFIC PROGRAM REQUIREMENT The National Cancer Institute (NCI) is accepting applications for support of research projects in the area of in vitro carcinogenesis. The objective of this research is to study the interaction of chemical carcinogens and mammalian cells in vitro with particular emphasis on the following problems:

- (1) the development of new systems for neoplastic transformation in cell culture induced by chemical or physical agents including consideration of the use of human and non-human primate cells;
- (2) the development and/or refinement of methodology for the early identification and quantitation of neoplastic transformation of cells in culture using new biochemical, cytological or immunological markers (relative to identification of transformation) in established systems;
- (3) the development and characterization of new approaches for metabolic activation systems for carcinogens and procarcinogens which can be applied to existing in vitro neoplastic transformation systems; and
- (4) the identification or development of biochemical or immunological systems which may serve as early in vitro indicators of transformation processes.

SIGNIFICANCE TO NCI PROGRAM GOALS A goal of the In Vitro Chemical Carcinogenesis Program is to develop new approaches that can lead to reducing the effect of carcinogenic agents by detecting and identifying chemical carcinogens using in vitro cell systems and by studying their mode of action and possible inhibition.

Since limitations exist with present in vitro methodologies, it is anticipated that the above studies may provide more effective and efficient in vitro systems. It is necessary that continuing efforts be directed toward achieving approaches and methodologies which can define in vitro systems that are more applicable to the basic problems of prevention, inhibition and reversal of carcinogenesis in man.

APPLICATION REQUIREMENTS

1. ELIGIBILITY Nonprofit organizations and institutions, State and local governments and their agencies, authorized Federal institutions, and individuals according to NIH grant policies.

2. THE APPLICATION Applicants should propose an individual project. Applicants may elaborate on the purposes, objectives, rationale, and significance stated in this announcement and must complete portions of the applications pertaining to procedural details, the investigator's related experience, facilities, available budgets, and biographical information for key professional personnel. The application should also state the duration of time for which the support is requested. It is anticipated that the project period will not exceed three years and that the level of effort per year should not exceed 2-3 man years in the category of professional personnel.

3. SUBMISSION Use application form NIH-398. In both the covering letter and at the top of the space provided for an abstract on page 2 of the application, identify this CREG announcement by its title and number DCCP 16 and the date of publication as the one to which the application responds. Mail the application and letter to Division of Research Grants, National Institutes of Health, Bethesda, Maryland 20014. If your institution cannot supply you with form NIH 398, it may be requested from the Division of Research Grants.

4. RECEIPT DATE Applications received on or before June 1, 1976, will be processed for study section review in October 1976, and for the National Cancer Advisory Board review in January 1977.

REVIEW

Upon receipt, applications will be reviewed by the Division of Research Grants (DRG) and NCI staff for responsiveness to this announcement. If an application is judged unresponsive, the applicant will be given an opportunity to withdraw the application or to submit it for consideration in the traditional grant programs of NIH. Applications judged responsive will be reviewed initially for scientific merit by DRG study sections and secondly by the National Cancer Advisory Board.

DRG will not accept an application in response to a CREG announcement that is identical to one concurrently being considered by NCI or other NIH awarding units.

For further information, potential applicants may contact either Dr. Robert Depue (301) 496-6271 or Dr. Virginia C. Dunkel (301) 496-5988, Project Director, Division of Cancer Cause and Prevention, National Cancer Institute.

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THE PRIVACY ACT OF 1974

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REQUEST FOR RESEARCH GRANT APPLICATIONS: RFA

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- C. Application Procedure

If you have questions relating to this announcement, you should contact Dr. Suzanne S. Hurd at (301) 496-7332.

We hope that this RFA and participation in the program will be of interest to you.

LUNG TISSUE CULTURE*

I. PROGRAM SPECIFICATIONS

A. The Pathophysiology Branch

The Pathophysiology Branch of the Division of Lung Diseases sponsors fundamental and clinical research grants and contracts related to normal and abnormal function of the lung. This request for applications is to encourage submission of individual research grant proposals designed to apply the techniques of tissue culture for in vitro maintenance of lung tissue with histotypic architecture intact and to use this technique to study the physiological, biochemical, metabolic and cellular processes in the lung.

B. Background and Program Objectives

In addition to its role as a gas exchanger, the lung is now recognized as an important metabolic organ. Studies with lung tissue slices and whole perfused lung have demonstrated that the lung plays an active part in the production and metabolism of vasoactive amines, hormones and phospholipids. It has also been shown that the lung is a cellularly heterogeneous organ composed of over forty different lung cell types, with many different cellular and metabolic functions. In the past few years, techniques have been developed to isolate and culture some of the individual cell types. As a result of these investigations, significant knowledge has already been gained regarding the specific metabolic role of some of the individual cell types.

*For the purpose of this request, the term "tissue culture" does not include monolayer cell culture or suspended cell culture. Frequently, the term used for the approach to be followed in response to this announcement is "organ culture."