

# NIH GUIDE

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NOTICES

NIDDK/DDDN DIGESTIVE DISEASE CENTER DIRECTORS MEETING

P.T. 42; K.W. 0715085, 0710095

National Institute of Diabetes, Digestive and Kidney Diseases

Staff members of the Division of Digestive Diseases and Nutrition will meet with the Center Directors to discuss issues of current concern in the Centers Program.

Dates: January 11-12, 1990

Location: Yale University School of Medicine  
Hunter Radiation Building  
Entrance off Cedar Street  
First Floor  
Courtney Bishop Conference Room  
New Haven, Connecticut

The second day of the meeting will be held at the Albert Einstein College of Medicine (January 12, 1990). will be available to the Albert Einstein College of Medicine.

Contact: Tommie S. Tralka  
Program Director  
Digestive Diseases Centers Program  
Telephone: (301) 496-9717

DATED ANNOUNCEMENTS (RFPs AND RFAs)

HAZARDOUS MATERIALS AND WASTE WORKER HEALTH AND SAFETY TRAINING

RFA AVAILABLE: ES-90-1

P.T. 34; K.W. 0725020, 0503016

National Institute of Environmental Health Sciences

Letter of Intent Receipt Date: February 9, 1990  
Application Receipt Date: March 16, 1990

The National Institute of Environmental Health Sciences seeks grant applications from non-profit organizations experienced in delivering worker health and safety training to develop and administer health and safety education programs for hazardous materials or waste workers. Current grantees may submit competitive supplemental applications for program expansion.

Target populations for this training include those workers covered by requirements of the Federal Occupational Health and Safety Administration (Code of Federal Regulations, Title 29, Part 1910.120), the U.S. Environmental Protection Agency and other agencies. These populations include workers and supervisors engaged in:

1. Handling and processing by generators and treaters at active and inactive hazardous waste treatment, storage and disposal facilities;
2. Clean-up, removal, containment or remedial actions at hazardous waste sites;
3. Hazardous materials emergency response;
4. Hazardous waste disposal site risk assessment and investigation, remedial actions or clean-up by State and local personnel; and
5. Transportation of hazardous materials.

Your written request for copies of the Request for Applications should be addressed to:

Denny Dobbin  
Program Administrator  
Worker Training Grants Program  
Division of Extramural Research and Training  
National Institute of Environmental Health Sciences  
P.O. Box 12233  
104 Alexander Drive  
Research Triangle Park, North Carolina 27709-2233  
Telephone: (919) 541-0752

### ONGOING PROGRAM ANNOUNCEMENTS

#### TASTE SYSTEM PLASTICITY: DEVELOPMENT, MAINTENANCE, AND REGENERATION

P.T. 34; K.W. 0710085, 1002004, 1002008, 0775000, 0790000

National Institute on Deafness and Other Communication Disorders

#### PURPOSE

The National Institute on Deafness and Other Communication Disorders (NIDCD) encourages both new and established investigators in a broad range of disciplines to submit applications related to the mechanisms of the generation cycle of taste cells and trophic interactions between taste receptor cells, taste nerves, and other cells during early development and later life. New opportunities for understanding the mechanism of this plasticity and its development have been provided by advances in the concepts, approaches, and methods of contemporary neurobiology, for example, cell and molecular neurobiology.

#### BACKGROUND

Taste cells renew themselves through life in a continuous turnover process that requires reconnections with the afferent nerves. Taste cells degenerate upon denervation and regenerate after reinnervation. Treatments such as radiation and chemotherapy also affect the cycle of regeneration. Thus, the taste system offers opportunities for studying receptor systems that are renewed and remodeled through life.

The development of the concepts, approaches, and methods of modern neurobiology has provided the opportunity to learn more about the mechanisms of regeneration and neurotrophic actions in the taste system. For example, the continued development of cell and tissue culture techniques will contribute to knowledge about these mechanisms. Monoclonal antibodies and other molecular probes may provide markers for specific taste cell types and developmental stages. Techniques for long-term recordings from the innervation of developing or regenerating taste buds provide an opportunity to study restoration of taste function after trauma or medical treatment. High voltage electron and temporal video microscopy can be utilized to visualize cellular elements during development.

#### REFERENCE

National Institute on Deafness and Other Communication Disorders. A Report of the Task Force on the National Strategic Research Plan. April 1989.

#### RESEARCH GOALS AND SCOPE

Studies of regeneration and neurotrophic actions in the taste system are important for understanding the normal development of gustation, its plasticity, and the response to injury, disease or therapy, and age-related conditions. This knowledge is important for developing therapeutic approaches for repairing damage to the system. Certain broad areas of interest in taste system plasticity are analogous to those of other senses and include, but are not limited to: cell birth, migration, differentiation, maturation, and death. Examples of topics related to these areas are:

- o Interactions between nerve, mesenchyme and epithelium that organize and maintain taste papillae and taste buds.
- o Relative specificity of taste nerves versus other sensory nerves in taste bud development, maintenance and regeneration.
- o Role of cell surface or extracellular molecules in establishing the peripheral taste system.

- o Mechanisms of activation and deactivation of degeneration and regeneration.
- o Origin of different types of taste cells.
- o Quantitative relations between taste stem cells and progeny.
- o Ultrastructural and biochemical characterization of taste cell types during regeneration and development.
- o Identification of trophic factors related to the generation cycle of taste buds cells, including molecular mechanisms of maintenance of taste buds.
- o Relations between specific types of taste cells and innervation by single taste nerve fibers.
- o Similarities and differences in development and maintenance of taste cells and auditory or vestibular hair cells or olfactory neurons.
- o Effects of conditions such as age or nutritional status on initial development and regeneration of taste buds.

The list of topics above is not complete; investigators are encouraged to study those or other topics that meet the objectives of this announcement.

#### MECHANISMS OF SUPPORT

Support mechanisms include the individual research project grant (R01), First Independent Research Support and Transition Award (R29), Research Career Development Award (K04), Clinical Investigator Development Award (K08), Individual National Research Service Award (F32) and Senior Fellowship National Research Service Award (F33). The NIH policies that govern the programs will prevail. Funding is contingent upon receipt of proposals of high scientific merit, responsiveness to this announcement, relevance to the program, and availability of appropriated funds.

#### APPLICATION SUBMISSION AND REVIEW PROCEDURES

Use the standard application forms (PHS 398, rev. 10/88) as instructed in the application kits. These kits are available from the business offices or the offices of sponsored research of most institutions, or from the Division of Research Grants, National Institutes of Health. Type "Taste System Plasticity: Development, Maintenance, and Regeneration" in Item #2 of the application face page and check the "Yes" box. Applications should be responsive to the Program Announcement and the Abstract of the Research Plan should contain a clear statement relating the proposed research to gustation, which is of interest to NIDCD.

Use the mailing label in the kits to mail the applications to the Division of Research Grants. Applications should be submitted according to the receipt dates identified in the application kits. The applications will be reviewed as specified in the schedules of the application kits. In the event of questions, investigators are encouraged to call or write:

Jack Pearl, Ph.D.  
 National Institute on Deafness  
 and Other Communication Disorders  
 National Institutes of Health  
 Federal Building, Room 1C-14  
 Bethesda, Maryland 20892  
 Telephone: (301) 496-5061

This program is described in the Catalog of Federal Domestic Assistance No. 13.854, Biological Basis Research in the Neurosciences and Communicative Sciences, and No. 13.853, Clinical Basis Research in the Neurosciences and Communicative Sciences. Awards will be made under the authority of the Public Health Service Act, Title IV, Section 301 (Public Law 78-410, as amended; 42 USC 241) and administered under PHS grant policies and Federal Regulations 42 CFR Part 52 and 45 CFR Part 74. This program is not subject to Health Systems Agency Review.

## VESTIBULAR SYSTEM: BIOCHEMISTRY AND PHARMACOLOGY

P.T. 34; K.W. 1003002, 0710100, 0790000, 0715050

National Institute on Deafness and Other Communication Disorders

The Division of Communication Sciences and Disorders of the National Institute on Deafness and Other Communication Disorders (NIDCD) encourages the submission of individual research grant applications related to biochemical and pharmacological studies that will elucidate the structure and function of the vestibular system.

### BACKGROUND

The development of techniques in the fields of cell and molecular biology and biophysics offers new approaches for studying the biochemistry and pharmacology of balance. The techniques include isolated cell preparations and tissue culture, new organ culture techniques, patch clamping, laser interferometry, microspectrofluorometry, and high voltage electron and video microscopy.

Biochemical insights have been achieved with immunocytochemical probes and modern methods of analytical chemistry. Recent advances in molecular biology technology and protein sequencing methods provide powerful tools to address questions in the vestibular field at the molecular level. Application of these techniques is needed in biochemical and pharmacological studies of balance.

### REFERENCE

National Institute on Deafness and Other Communication Disorders. A Report of the Task Force on the National Strategic Research Plan. April 1989.

### RESEARCH GOALS AND SCOPE

The ultimate goal of this biochemical and pharmacological research is effective prevention or treatment of diseases and disorders of balance. The achievement of that goal requires a broad range of biochemical and pharmacological studies aimed at gaining further understanding of the structure and function of the vestibular system. Studies may address the areas below, which are not limiting:

- o Novel approaches to identify the peripheral afferent neurotransmitter and characterize its release, reuptake, and inactivation are needed. The process of afferent-efferent interaction needs to be defined in terms of chemical, metabolic, and neuromodulatory phenomena.
- o The neurotransmitter receptors and receptor subtypes in all acousticolateralis tissues need to be characterized. The role of second messengers and their subcellular targets needs to be analyzed.
- o The biochemical changes that underlie the adaptive plasticity of the neural circuitry need to be defined.
- o An understanding of the mechanisms of ion transport and fluid homeostasis is of clinical relevance for medical conditions such as Meniere's disease and ototoxicity. Advances in measuring labyrinthine blood flow allow assessment of pharmacological manipulations of labyrinthine physiological chemistry. The relation between endocrine substances and labyrinthine function needs to be determined.
- o The techniques of molecular biology and genetics offer the opportunity to examine the pharmacological basis of degenerative and congenital disorders of balance.
- o The central vestibular system neurotransmitters and neuromodulators need to be characterized with biochemical, pharmacological, and immunocytochemical approaches. For example, quantitative immunocytochemical studies provide a detailed localization of transmitters and modulators. The steady development of immunological markers facilitates progress in this area. Combinations of these approaches would help to determine the roles of central vestibular neurotransmitters.

- o Qualitative and quantitative changes in central neurotransmitters and neuromodulators need to be identified in conditions such as vestibular nerve deafferentation, aging, and development. Such changes may be indicative of the plasticity of neuronal responses after peripheral vestibular damage. The neurotransmitters, their synthesis, release and inactivation, and their postsynaptic receptors may be markers of discrete neuronal changes.

#### MECHANISMS OF SUPPORT

Support mechanisms include, but are not limited to, the individual research project grant (R01), First Independent Research Support and Transition Award (R29), Research Career Development Award (K04), Clinical Investigator Development Award (K08), Individual National Research Service Award (F32), and Senior Fellowship National Research Service Award (F33). The NIH policies that govern the programs will prevail. Funding is contingent upon receipt of proposals of high scientific merit, responsiveness to this announcement, relevance to the program, and availability of appropriated funds.

#### APPLICATION SUBMISSION AND REVIEW PROCEDURES

Use the standard application forms (PHS 398, rev. 10/88) as instructed in the application kits. The kits are available from the business offices or the offices of sponsored research of most institutions, or from the Division of Research Grants, National Institutes of Health.

Type "VESTIBULAR SYSTEM: BIOCHEMISTRY AND PHARMACOLOGY" in Item #2 of the application face page and place a checkmark in the "YES" box. Applications should be responsive to the announcement, and the Abstract of the Research Plan should contain a clear statement relating the proposed research to the objectives of this announcement.

Use the mailing label in the kits to mail the applications to the Division of Research Grants. Submit applications in accord with receipt dates identified in the application kits. The applications will be reviewed as specified in the schedules of the application kits. For more information, investigators are encouraged to call or write:

Jack Pearl, Ph.D.  
National Institute on Deafness  
and Other Communication Disorders  
National Institutes of Health  
Federal Building, Room 1C-14  
Bethesda, Maryland 20892  
Telephone: (301) 496-5061

This program is described in the Catalog of Federal Domestic Assistance No. 13.854, Biological Basis Research in the Neurosciences and Communicative Sciences, and No. 13.853, Clinical Basis Research in the Neurosciences and Communicative Sciences. Awards will be made under the authority of the Public Health Service Act, Title IV, Section 301 (Public Law 78-410, as amended; 42 USC 241) and administered under PHS grant policies and Federal Regulations 42 CFR Part 52 and 45 CFR Part 74. This program is not subject to Health Systems Agency Review.

#### RESEARCH GRANTS ON THE NEUROLOGICAL BASIS OF COGNITION

P.T. 34; K.W. 1002030, 0414005, 0705010

National Institute of Neurological Disorders and Stroke

This program announcement, issued by the Division of Fundamental Neurosciences of the National Institute of Neurological Disorders and Stroke (NINDS), is designed to encourage the submission of applications for research grants dealing with the neurological basis of cognitive processes.

#### I. BACKGROUND

The 1990s have been designated as the Decade of the Brain. We will witness the discovery of important insights into how the brain performs some of its important cognitive activities. The 1980s saw a burgeoning of research into how the two hemispheres of the mammalian brain differ in anatomy and in their contributions to cognitive functions; it can be expected that sophisticated physiological investigations will provide a more thorough understanding of mechanisms that underlie asymmetrical brain functions. Recent studies have indicated a system of structures in the human brain supporting mechanisms of attention; different components of attention will likely be found to be

associated with different neural systems. Sex differences have also been reported in some areas of research into brain function underlying cognitive processes, but the possible reasons for these phenomena are quite speculative.

In recent years research on cognitive processes have become more prominent in the United States. This increased interest is partly the result of impressive advances in neurobiology that have shed light on some factors in cognitive functions. The explosive growth of research in the neurosciences is, to some degree, a result of a desire on the part of scientists to seek a better understanding of what is done especially well by the human brain. The purpose of this announcement is to encourage these research trends, with the hope that more comprehensive integration and insights will develop as new types of investigations are designed and employed.

## II. SCOPE

The Division presently supports some research into the nature of the neurological basis of cognition, some of which was generated in response to an announcement on the "Neurophysiology of Cognition" issued a decade ago. The present announcement supersedes the earlier one and is meant to expand this area of research.

### Examples of research areas:

Some of the types of investigations envisioned by this announcement will depend on ingenious developments of present lines of research and some on expansion into unexplored lines. They could include the following:

- o Investigation of localization of function with brain scanning devices, using reliable methods of assessing such functions as imagery, closure, autobiographical memory, different facets of attention and problem solving.
- o Neurophysiological and noninvasive neuropsychological research on nonhuman primates engaged in language-relevant communication, including the use of numbers. If, as in the human being and certain birds, there is asymmetrical function, tracking the localization as it develops can provide further insight into the nature of the mechanisms.
- o Comprehensive analysis of gender differences in the effects of circumscribed static neurological lesions upon well-standardized cognitive measures, with attention to comparing patients with either anterior or posterior locations of lesions, subcortical or cortical locations, right or nonright handedness, etc.
- o Neurophysiological measures obtained from nonhuman primates engaged in repetitive event-related activities. Certain theories about brain function during event-related potentials might be profitably tested in primates or other nonlissencephalic animals. Noninvasive methods could be used with the more rare and endangered species.
- o The distinction between episodic memory and semantic memory (and other similar, or identical, types, depending on the theorist) could perhaps benefit from research that would lead to biologically based distinctions.

## III. MECHANISM OF SUPPORT

The support mechanism for grants in this area are the individual research grant (R01), the program project (P01), and the FIRST award (R29). Under these mechanisms, the principal investigator and any participating investigators will plan, direct, and perform the research.

## APPLICATION AND REVIEW PROCEDURES

Applications must be prepared on form PHS 398 (Rev. 10/88) using the instructions included in the application kit. These kits are available from the Office of Sponsored Research of most institutions, from the Division of Research Grants, National Institutes of Health, Westwood Building, Room 449, Bethesda, MD 20892, or from the NINDS address cited below. Additional application guidelines for NINDS P01 applications should be obtained from the Scientific Review Branch at the NINDS address, Room 9C10A.

Receipt dates for new research project grant and FIRST award applications are February 1, June 1, and October 1.



To identify responses to this announcement, check "yes" and put "Research Grants on the Neurological Basis of Cognition" under item 2 of page 1 of grant applications submitted in response to this program announcement. Use the mailing label provided in the application kit and mail the signed original and six exact copies to:

Division of Research Grants  
National Institutes of Health  
Westwood Building, Room 240  
Bethesda, Maryland 20892\*\*

Research project grant and FIRST award applications will be reviewed for scientific and technical merit by an appropriate study section in the Division of Research Grants. Secondary review may be by the National Advisory Neurological Disorders and Stroke Council. Applications judged to be within the purview of other Institutes of NIH will be assigned accordingly.

For further information, potential applicants are encouraged to call or write to:

Herbert C. Lansdell, Ph.D.  
Division of Fundamental Neurosciences  
National Institute of Neurological Disorders and Stroke  
Federal Building, Room 916  
7550 Wisconsin Avenue  
Bethesda, Maryland 20892  
Telephone: (301) 496-5745

The NIH urges applicants to give added attention (where feasible and appropriate), to the inclusion of women, as well as men, and minorities in the study of populations for all clinical research efforts. If women and minorities are not to be included, a clear rationale for their exclusion should be provided.

This program is described in the Catalog of Federal Domestic Assistance No. 13.854, Biological Basic Research in the Neurosciences. Awards will be made under the authority of the Public Health Service Act, Section 301 (42 USC 241) and administered under PHS grant policies and Federal Regulations 42 CFR Part 52 and 45 CFR Part 74. This program is not subject to review by a Health Systems Agency.

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Bethesda, Maryland 20816