NATIONAL CENTER FOR
RESEARCH RESOURCES
NATIONAL INSTITUTES OF HEALTH
DEPARTMENT OF HEALTH
AND HUMAN SERVICES

High-End Instrumentation Grants

Rapid technological development has led to the production of a new generation of advanced instruments. As the capabilities of these high-sensitivity, high-resolution instruments increases, so does their cost. To meet the investigators' needs for this advanced technology, in FY 2002, NCRR's Division for Biomedical Technology Research and Research Resources began the High-End Instrumentation (HEI) Program, which allows institutions to acquire equipment that costs more than $750,000. The maximum award is $2.0 million. The HEI grant program complements the Shared Instrumentation Grant Program and also uses the S10 funding mechanism.

The National Center for Research Resources ensures that essential tools and research resources are readily available to NIH-supported investigators nationwide. NCRR-supported resources—a comprehensive range of human, animal, technology, and more—enable biomedical research advances.

The program will provide 12-month, nonrenewable awards up to a maximum of $2.0 million. Only one major item of equipment can be requested per application. Supplemental applications will not be accepted. Generally, if the funds requested do not cover the total cost of the instrument, documentation of the availability of the remainder of the funding, signed by an appropriate institutional official, must be submitted to NCRR prior to issuance of an award.

Instrumentation

Examples of key instruments—and their applications—that may be funded by the HEI Grant Program include but are not limited to:

- *Biomedical Imagers:*
  The boundaries of imaging technology have been extended to acquire functional, biochemical and physiological information in intact biological systems including humans. This has led to an increased demand for multinuclear spectroscopy and functional magnetic resonance and PET imaging instruments.

- *Nuclear Magnetic Resonance Spectrometers:*
  There is a significant demand for increased sensitivity and resolution of high-field NMR spectrometers to determine three-dimensional structures of large proteins and protein complexes in extremely small samples. This need is magnified by the extended run time for data collection at lower fields, which limits access to these instruments.

- *Mass Spectrometers:*
  Instruments that combine electrospray ionization with Fourier transform ion

cyclotron resonance (FTICR) mass spectrometry are now available. The FTICR methods provide very high resolution and accurate molecular weight measurement to study large biopolymers and their interactions.

- *Electron Microscopes:*
  The frontier of cell biology now focuses on elucidating the nature and function of cell organelles and the role of complex protein machines. Such studies require intermediate voltage electron microscopes with field emission illumination for high resolution imaging of single molecules. Such microscopes are also needed to perform computer reconstruction at the subnanometer scale for macromolecular assemblies that are too large and complex to study by X-ray crystallography and NMR spectroscopy.

- *Supercomputers:*
  Computational biologists require computers or clusters of computers with high-performance visualization hardware, parallel architectures, and large data storage and transfer capabilities at increased speed.

Eligibility

Applications are accepted from domestic public and nonprofit institutions only. These include health professional schools, graduate institutions, hospitals, health departments, and research organizations. Foreign institutions are not eligible to apply. To be eligible, the application must identify three or more National Institutes of Health (NIH)-funded investigators who will be users of the instrument.

Since the HEI Program interfaces with other NCRR and NIH grant programs, applicants are encouraged to telephone NCRR Program staff at (301) 435-0772 or HEI@mail.nih.gov before applying for a grant.

Guidelines

Depending on the availability of funds, features of the HEI Program are published annually in the *NIH Guide to Grants and Contracts* (http://grants1.nih.gov/grants/guide/index.html). Publication usually occurs in June as a *Request for Applications* (RFA) and includes information on the research objectives, eligibility criteria, application and review procedures, award criteria, and contact information. HEI applications are submitted to NIH on Form PHS 398, *Grant Application*; specific instructions for completing the Form 398 can be found in the RFA.

Review Criteria

Instrument-specific study sections review HEI applications and base their evaluations on a number of criteria, which are listed in the RFA. The application also should show a clear need for the instrumentation by projects supported by multiple NIH peer-review research grants and demonstrate that these projects will require at least 75 percent of the total usage of the instrument.

Funding

Awards are for one year, and matching funds are not required. However, NCRR expects institutions that compete for HEI awards to provide an appropriate level of support for associated infrastructure, such as building alterations or renovations, technical personnel, and post-award service contracts for instrument maintenance and operation.

For further information:

Director, High-End Instrumentation Grant Program
Division for Biomedical Technology Research and Research Resources
National Center for Research Resources
National Institutes of Health
6701 Democracy Boulevard, Room 958
Bethesda, MD 20892-4874
Telephone: (301) 435-0772
Fax: (301) 480-3659
E-mail: HEI@mail.nih.gov

For general NCRR information:
Telephone: (301) 435-0888
Fax: (301) 480-3558
E-mail: info@ncrr.nih.gov
NCRR Web site: www.ncrr.nih.gov

Prepared: December 2003