



HOWARD HUGHES MEDICAL INSTITUTE

GRANTS FOR PRECOLLEGE SCIENCE EDUCATION

Biomedical Research Institutions

2007

Program Announcement

Five-year grants for precollege science education projects

Intent to submit a proposal: June 13, 2006

Proposal submission: September 12, 2006

Awards announcement: June 2007

Projects start: September 2007

HHMI

HOWARD HUGHES MEDICAL INSTITUTE

Precollege Science Education Program

GRANTS FOR PRECOLLEGE SCIENCE EDUCATION

Research institutions are well placed to address the ongoing challenge of science education reform by drawing on their unique resources to stimulate interest in science, particularly among young people. These resources include up-to-date research facilities, the ability to provide authentic research experiences, and cutting-edge scientific knowledge.

This initiative encourages research institutions to engage in outreach efforts aimed at kindergarten through high school. Proposed programs should target teachers, students, families, or other community members.

An important objective of this initiative is to advance public understanding and appreciation of science and to broaden access to science for people of all ages, including women and members of underrepresented minority groups.

GRANT AWARDS

HHMI has committed \$22.5 million to fund five-year grants to about 30 institutions. Annual budgets may be up to \$150,000. Grants begin in September 2007.

ELIGIBILITY

Approximately 300 nonprofit institutions have been invited to apply. They are Association of American Medical Colleges–accredited medical schools, academic health centers, independent research institutions, or schools of veterinary medicine, dentistry, or public health. In addition, these institutions have significant peer-reviewed research support, are located in the United States or its territories, and employ permanent, year-round staffs. To be invited, institutions did not need to have outreach projects already in place.

PROGRAM OVERVIEW

Proposals should clearly identify the target population(s) that will be served and any partners, schools, or other collaborators that will be involved. Applicants are encouraged to consider designing districtwide programs rather than programs that reach only a subset of local schools.

Applicants may partner with an institution that has a well-developed outreach capability in order to stimulate new and innovative connections between researchers and community-based institutions. The outreach provider could be another biomedical institution that has outreach programs, a school system, a science center, or another appropriate institution that is well-versed in reaching students and families with either formal or informal programs.

Applicants must describe the appropriateness of the project and how it fits into the institution's overall mission. While HHMI's primary mission is in the life sciences, proposed projects need not focus solely on this area but may serve broader issues in science education.

Proposed activities should in general include one or more of the following components.

Student Activities

Projects can be aimed at nurturing children's fascination with the natural world and fostering a sustained interest in science and discovery. Wherever possible, age-appropriate activities should be included that promote scientific discovery using techniques such as problem identification, experimental design, data collection, and analysis. Projects might focus on teaching students to observe, hypothesize, interpret, theorize, and develop methods to generate their own knowledge. Multidisciplinary projects may be appropriate.

Examples:

- Pairing children with older students or scientists for mentoring activities
- Involving students in a variety of independent research experiments
- Providing at-home science enrichment for children and their parents and caregivers

Teacher Professional Development

A key element in improving science education is supporting preservice and in-service teacher professional development. Teachers, as pedagogical experts, can act as translators of scientific knowledge and discovery for their students. To best accomplish this, they need an understanding of contemporary science: what is being learned and how it is learned. Programs aimed at helping teachers create and deliver hands-on, inquiry-based activities are welcome.

Examples:

- Training teachers in methods that emphasize student exploration and inquiry
- Fostering the creation of a professional learning community for teachers
- Providing loans of materials and equipment that teachers have been trained to use with students in their classrooms

Outreach to Family and Community

Parents and caregivers play a crucial role in the education of children. Studies have shown a positive correlation between a student's level of science proficiency and the importance accorded to science outside school. It is important that parents and community members enhance their scientific literacy and confidence in dealing with science and health issues. Programs may involve parents, families, teachers, and others in the community.

Examples:

- Reinforcing the role of parents and the community in the science education of children and youth
- Providing opportunities to parents and caregivers (such as after-school program directors) to be involved in learning science and the process of scientific discovery with children
- Bringing institutional resources to families and youth groups in rural and urban areas with limited science-teaching resources

Postsecondary Students and Postdoctoral Fellows

Students training to become scientists can bring cutting-edge science to the K–12 community and have much to gain from experiences that expand their teaching and communication skills. Undergraduate and graduate students, as well as postdoctoral fellows, can be formally involved in programs.

Examples:

- Pairing graduate students with classroom teachers to teach students
- Incorporating participation in an outreach program into a graduate program's requirements
- Working with the public to increase understanding of science

Multicomponent and Other Activities

Activities that bridge two or more areas or that are difficult to categorize may also be proposed. Because curriculum development projects often involve multiple audiences, they are typically placed here.

Examples:

- Engaging scientists more fully in educational outreach
- Identifying or disseminating proven teaching materials and resource kits
- Developing significant technology-intensive resources, such as an interactive website

PROJECT ASSESSMENT

Each institution must include an assessment plan to evaluate the ongoing progress of its project and provide feedback that will help maximize the project's success.

PROGRAM DIRECTOR

A program director must be named to direct the project, manage the grant funds, and submit a yearly report on the progress of the project to HHMI.

APPLICATION PROCESS

Only one proposal may be submitted by each invited institution. Invited institutions will receive instructions for submitting an application on HHMI's Web-based competition system (www.hhmi.org/competitions). Additional important information about the competition is provided online.

Proposals will be reviewed by a panel of distinguished scientists, educators, and other qualified evaluators. Principal evaluation criteria include:

- The degree to which the proposal addresses the objectives of the initiative
- The correlation between the proposed goals and activities and the applicant institution's overall educational and scientific capabilities to achieve them

- The experience or potential of the applicant institution, program director, and key staff to carry out science education projects that serve schools, youth organizations, families, or community groups
- The likelihood that the design of the proposed activities will meet the programmatic objectives identified by the applicant institution
- The methods used to determine if the programmatic objectives have been met
- The commitment of the institution to the success of the project through, for example, cost sharing, planning for the long-term institutionalization of the project, and committing resources, such as space

Please note that some projects whose objectives are to achieve educational diversity and provide opportunities for women and underrepresented minorities have been subjected to legal challenges. The Institute is firmly committed to these objectives and believes that such projects can be designed and conducted so as to comply with applicable law. The Institute relies, however, on applicant institutions to design and conduct their projects in compliance with applicable law.

INFORMATION

For inquiries, contact program staff at grantprc@hhmi.org.

HOWARD HUGHES MEDICAL INSTITUTE

www.hhmi.org

The Howard Hughes Medical Institute is a medical research organization dedicated to biomedical research and education. Its principal objectives are the advancement of fundamental knowledge in the biomedical sciences and the application of that knowledge to alleviate disease and promote human health.

Through its grants and special programs, HHMI seeks to strengthen science education and biomedical research by supporting current and future leaders to advance scientific knowledge, develop educational products, and implement outstanding educational practices.

HHMI's precollege grants program seeks to strengthen science education for preschool through high school students. The 2007 competition sustains and builds on two previous competitions that awarded 96 grants totaling \$33 million.