

2010

Grants for Research Universities

Registration deadline: May 14, 2009

Proposal deadline: October 1, 2009

Awards notification: May 2010

Grant term begins: September 2010

HHMI
HOWARD HUGHES MEDICAL INSTITUTE

Undergraduate Science Education Program

HOWARD HUGHES MEDICAL INSTITUTE

The Howard Hughes Medical Institute, a nonprofit medical research organization that ranks as one of the nation's largest philanthropies, plays a powerful role in advancing biomedical research and science education in the United States. HHMI's program in biomedical research rests on the conviction that scientists of exceptional talent, commitment, and imagination will make fundamental biological discoveries for the betterment of human health if they receive the resources, time, and freedom to pursue challenging questions.

The Institute's grants program supports initiatives with the power to transform education in the life sciences for all students. Our objectives are to recruit and develop talented students who will be the future leaders of science and to promote science literacy among all students. Just as today's researchers solve complex questions by working across scientific disciplines and integrating tools from those disciplines, HHMI seeks to support undergraduate science education by integrating a variety of different tools and approaches that will engage students as they make critical decisions about which career path to pursue.

www.hhmi.org



Undergraduate Science Education Program

HHMI's Undergraduate Science Education Program is announcing its seventh competition for research universities. Since 1988, through its undergraduate science education program, HHMI has awarded more than \$750 million to 259 public and private colleges and universities in 47 states, the District of Columbia, and Puerto Rico.

The mission and needs of each institution vary widely. HHMI grants therefore support a range of activities that engage students in research; create courses that convey the excitement of contemporary science; develop new, current, and future faculty members; and broaden access to science careers through outreach activities that extend to elementary, high school, and community college faculty and students. Through this competition, HHMI seeks to support the very best initiatives in undergraduate science education and develop innovative ways to energize and reform science education at research universities.

Eligibility

The competition is open by invitation to 197 institutions that serve undergraduates and were classified in 2005 by the Carnegie Foundation for the Advancement of Teaching as research universities (very high- and high-research activity). These institutions provide an environment in which research-active faculty and students are engaged in excellent, peer-reviewed science. Successful applicants should effectively engage research-active faculty in science education activities. The list of invited institutions can be found on the HHMI website at www.hhmi.org/universities.

Program Areas

Core Grants: The undergraduate science education program enables institutions to develop effective ways to enhance the success of all students, including persons from groups that are underrepresented in science. The core grant will provide funding in four components:

- Student Research
- Faculty Development
- Curriculum Development
- Outreach and Transitions

We expect to fund core grants up to \$2.2 million over four years.

Experiment Grants: For this competition, HHMI plans to provide additional support in a new component: Experiments in Undergraduate Science Education. The aim of the Experiments component is to encourage science faculty to try innovative ideas in science education. Because many of these experiments may be considered risky, the application and review of the Experiments will be separate from the core grant proposal. An Experiment is eligible for funding for up to \$600,000 over four years in addition to the core grant.

Program Objectives

HHMI's 2010 undergraduate grant program will support initiatives that strengthen science education by a variety of strategies to:

- integrate research and teaching in undergraduate education;
- engage students in inquiry-based science;
- prepare undergraduates, including women and members of minority groups underrepresented in the sciences, for graduate studies and careers in biomedical research, medicine, and science education;
- promote science literacy among all students;
- support new and high-quality approaches and techniques in science teaching;
- enhance precollege education by connecting university science departments with education majors, preK–12 teachers, students and schools;
- provide substantive teaching and mentoring experiences to prepare postdoctoral fellows and graduate students for future roles as educators;

- provide opportunities and resources for faculty members to improve their teaching skills, course materials, and mentorship;
- encourage collaborations and partnerships that expand opportunities and share resources, including partnerships between the applicant institution and other institutions that serve important constituencies;
- disseminate successful science education approaches and tools.

Core Grant Program Approaches

Applicants are encouraged to develop their own approaches to meet the objectives of this competition on the basis of their institutional mission and needs. The following are meant to illustrate, and not prescribe, the kinds of approaches applicants may wish to consider for their proposals.

Student Research

- Interdisciplinary research experiences that engage students in the excitement of scientific discovery early in their college careers.
- Activities that regularly bring together participating students and faculty for research presentations, seminars, mentoring, academic support, and career advising.
- Broadening access to science through mentored research experiences, including those for non-science majors.

Faculty Development

- New faculty appointments that result in the scholarship of science education as an integral part of a science department.
- Mentored experiences for postdoctoral fellows to enable them to develop their teaching skills while continuing to contribute to research activities.
- Participation in workshops and other activities to enhance faculty teaching skills.

Curriculum Development

- Acquisition of laboratory and technological resources to integrate new discoveries, ideas, and approaches into biological sciences education.
- Collaborations among biology, mathematics, engineering, computer science, and other science departments that result in new courses, including courses that replace the traditional discipline-specific introductory curriculum.

Outreach and Transitions

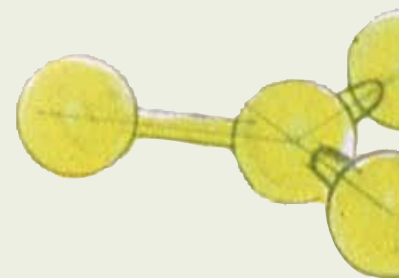
- Science activities for precollege students or students at community colleges or four-year colleges that provide learning opportunities otherwise unavailable to them.
- Programs for pre- or in-service teachers to help them deliver contemporary science.
- Bridge and mentoring programs that enhance the success of entering and continuing students.

Experiments in Undergraduate Science Education

In this competition, HHMI will consider additional support for scientists to engage in innovative experiments in undergraduate science education. We seek proposals that try nontraditional ways to address challenges in science education—even if the outcome of the experiment is uncertain or there is a significant risk of failure. The proposed experiment should be hypothesis-driven, with a rationale based on sound interpretation of available data, and include a careful description of how the results of the experiment will contribute to the understanding of the problem even if the hypothesis is disproved. The proposal should include review of relevant prior research, specific strategies for assessing the outcomes of the experiment, and plans for dissemination of findings. All Experiment proposals must accompany a proposal for a core grant, but an Experiment is not required for an institution to participate in this competition. Experiments will be evaluated separately, and only a small number will be funded. Thus, the Experiments can augment a core grant but the core program proposal should not depend on the Experiment.

Proposal Submission

Applicants must register and submit proposals using HHMI's online competition system. Each invited institution is provided with instructions on accessing the system. Institutions must register their intent to submit proposals by May 14, 2009. The deadline for submitting proposals is 2:00 p.m. ET, October 1, 2009. Each invited institution is limited to one core grant proposal and one experiment proposal.



Proposal Evaluation

A panel of distinguished scientists and educators will review the proposals. Panel members will be looking for programs that offer innovative strategies and those that build on proven success. (Note: Half of the grants awarded in the 2008 competition were not direct renewals, and a quarter of the 2008 grants were made to first-time HHMI grantees.)

The principal evaluation criteria are:

Proposed Activities

- The degree to which the proposal addresses one or more of the initiative's objectives;
- The likelihood that the proposed activities will meet the applicant's stated objectives;
- The commitment of the institution to the proposed goals and activities;
- The degree to which the proposed program will enable the applicant to enhance or expand its ongoing activities or to undertake new initiatives;
- The relationship of the proposed activities to initiatives already under way at the applicant institution supported either by a previous HHMI award or other external funding.

Budget and Administration

- The effectiveness of the plan for management and administration of the program, including distribution of grant funds;
- The appropriateness of the budget to activities specified in the proposal;
- Evidence that the grant will enable new or expanded activities and not simply be budget relief for the institution.

Long-Term Impact

- Evidence of effective assessment of previous HHMI-funded activities or other activities related to the proposal's goals;
- Evidence of an outcomes-based plan to assess the proposed activities;
- Evidence that the applicant has a strategy for broad dissemination of effective practices and products resulting from the grant to extend successes achieved locally to the larger science education community;
- Evidence of compelling approaches for effecting long-term institutional change in undergraduate science education;
- Evidence of support by the applicant's administration;
- Evidence of substantial involvement of science faculty, particularly research-active faculty, in proposed program activities;
- Evidence that responsibilities for program development and administration are distributed among appropriate members of the faculty, administration, and staff.

Information

For information about this competition, including a list of invited institutions and descriptions of programs funded in previous competitions, go to www.hhmi.org/universities.

Detailed information about proposal development and submission is available in HHMI's password-protected Web-based competition system. The URL and access code will be sent to each invited institution.

For inquiries, contact Andrew Quon, program officer, or Billy Biederman, program assistant, at (301) 215-8895, or e-mail ugradcomp@hhmi.org.

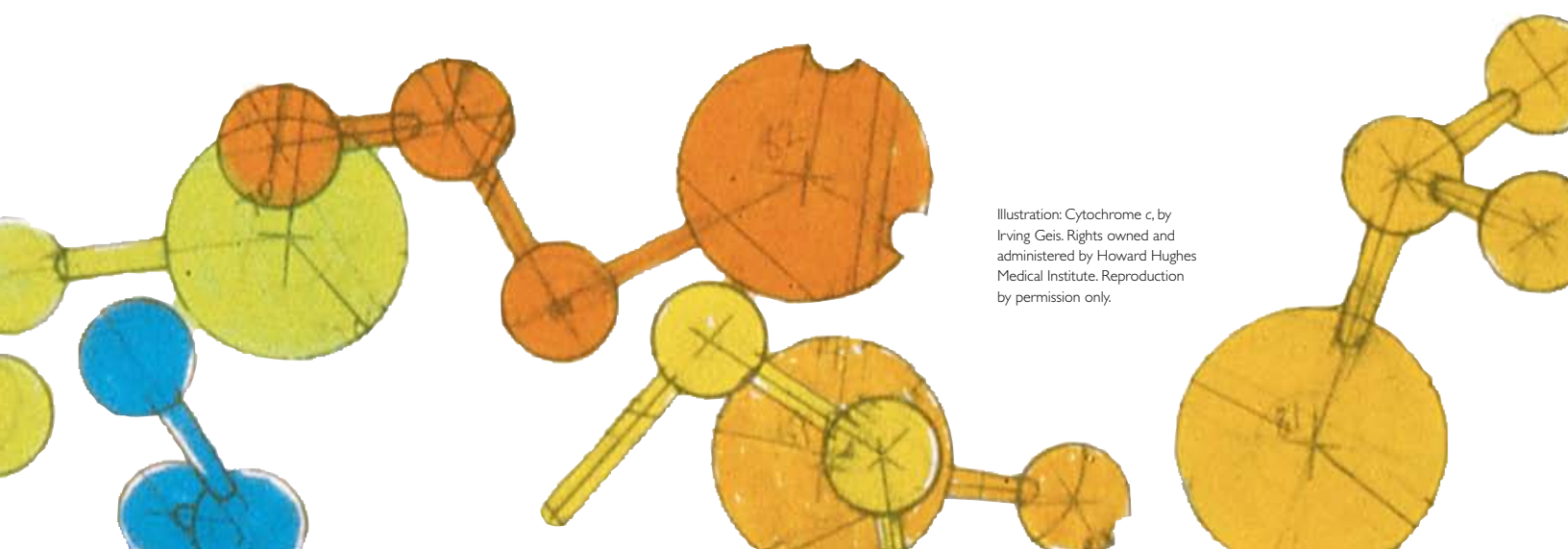


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For more information about this competition:
www.hhmi.org/universities