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HHMI Offers \$86.4 Million to Universities

While most Americans were dropping last-minute tax returns in the mail, FedEx envelopes bearing good news headed for more than 200 research universities. The Howard Hughes Medical Institute (HHMI) was inviting them to compete for \$86.4 million in grants to strengthen undergraduate science education in the United States.

Science is a team endeavor, and the Institute is encouraging teamwork, collaboration, mentoring, and dissemination as it searches for innovative undergraduate science education proposals. HHMI also is seeking programs that broaden access to science for women, underrepresented minorities, and non-science majors.

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— **Peter J. Bruns**

Each university selected will receive a four-year grant ranging from \$1.2 to \$2.2 million. Universities may propose programs that provide undergraduate research opportunities and broaden access to science for majors and non-majors. The grants may also support new courses in emerging fields such as computational biology, genomics, and bio-imaging; mentoring programs; current and future faculty development; laboratory equipment; and cooperative programs with elementary and secondary schools.

"We want to see teamwork among faculty, postdoctoral fellows, graduate students and undergraduates, and we encourage collaborations that expand opportunities for all participants, including undergraduates, faculty members, precollege science teachers, and their students," said Peter J. Bruns, HHMI vice president for grants and special programs. "We also encourage activities that help prepare postdoctoral fellows and graduate students to be outstanding teachers as well as research scientists."

In the new competition, the sixth that HHMI has sponsored for research universities, the Institute is adding three new objectives:

To encourage collaborations among applicant institutions. To provide opportunities and resources for faculty members to improve their teaching skills and course materials. To help faculty, postdoctoral fellows, graduate students and undergraduates learn to mentor effectively.

HHMI wants the teamwork to extend beyond the walls of the grantee institutions. Accordingly, Bruns and his colleagues will be looking for programs that emphasize dissemination of lessons learned. "We are looking for a national dissemination strategy to extend local successes to the larger science education community," Bruns said.

Through its undergraduate science education program, HHMI has awarded more than \$606 million to 241 public and private colleges and universities in 47 states, the District of Columbia, and Puerto Rico. Winners of previous research university competitions have launched a broad variety of programs to improve undergraduate science education. For example, the University of Arizona arranges international research experiences for undergraduates. Duke University developed a cross-disciplinary genomics and bioinformatics curriculum to prepare undergraduates for the new frontiers of science; Indiana University at Bloomington used teams of graduate students and undergraduate teaching interns to help develop introductory biology courses; and the University of California at Berkeley established a teaching internship for a life-sciences graduate student or postdoctoral fellow.

The Institute also supports HHMI professors—leading research scientists who want to bring the excitement of research into the undergraduate classroom—and the Exceptional Research Opportunities (EXROP) program, which pairs students from disadvantaged backgrounds with HHMI scientists for mentored summer research. One HHMI professor recently published a scientific journal article co-authored by 138 undergraduates from his research course. Another developed a mentoring course to prepare graduate students to be better teachers and mentors. EXROP students have gone on to graduate school, medical school, and M.D.-Ph.D. programs at Harvard, Stanford, Johns Hopkins, and other leading universities.

The deadline for grant proposals is October 18, 2005. A panel of distinguished scientists and educators will review the proposals. Awards will be announced in August 2006.