

Howard Hughes Medical Institute
Office of Grants and Special Programs

Undergraduate Science Education Program

Program Announcement 2004

Registration Deadline
June 16, 2003

Proposal Deadline
October 15, 2003

Notification of Awards
Spring 2004

Announcement of Awards
Summer 2004

Grant Term Begins
Summer 2004

Howard Hughes Medical Institute Programs

The Howard Hughes Medical Institute (HHMI) is a nonprofit medical research organization dedicated to basic biomedical research and education. Its principal objectives are the advancement of fundamental knowledge in biomedical science and the application of new scientific knowledge to alleviate disease and promote health. Through its program of direct conduct of medical research, HHMI employs about 330 independent investigators based at laboratories throughout the country. To find out about their research, go to www.hhmi.org.

To complement the research activities of its investigators, HHMI has a grants program committed to strengthening education in the biological and related sciences and supporting research by non-U.S. scientists. Other important objectives of HHMI's grants program are to advance public understanding and appreciation of science and to broaden access to science for all persons, including women and members of underrepresented minority groups. HHMI grants, which are administered by HHMI's Office of Grants and Special Programs, provide funding for pre-K–12 and undergraduate science education, graduate science education and medical student research training, and international research and education.

UNDERGRADUATE SCIENCE EDUCATION PROGRAM

Since 1988, through its undergraduate science education program, HHMI has awarded \$557 million to 236 public and private colleges and universities in 47 states, the District of Columbia, and Puerto Rico. Competitions alternate between institutions classified as baccalaureate and master's ("colleges," last competition in 2000) and research and doctoral ("universities," last competition in 2002).

In addition to its biennial competitions, the undergraduate program has supported National Academy of Sciences (NAS) studies focused on undergraduate science education. In 2003, NAS published a report, funded in part by HHMI, entitled *Bio2010: Transforming Undergraduate Education for Future Research Biologists*, which recommended a comprehensive review of undergraduate science education. The report (available at www.nap.edu) outlines a range of reforms, such as research-based laboratory curricula, new interdisciplinary approaches to biology education using appropriate materials and technologies, and opportunities for undergraduates, including those underrepresented in the sciences, to experience the excitement of scientific discovery through hands-on research.

In 2002, HHMI awarded a grant to the American Society for Cell Biology to publish *Cell Biology Education*, the first peer-reviewed electronic journal on science education (www.cellbioed.org). For more information on the undergraduate program and other HHMI grants initiatives, go to www.hhmi.org/grants.

2004 Undergraduate Science Education Program Competition

The 2004 undergraduate grant competition represents the 11th such competition and the 6th held for colleges. It sustains and builds on previous competitions, which have provided \$186 million to strengthen education in biological sciences at 121 colleges.

This program announcement provides general descriptions of the competition's focus and objectives, eligibility criteria, areas of fundable activities, electronic proposal submission and deadlines, and criteria for proposal evaluation. *Applicants must refer to CompetitionCentral (www.hhmi.org/grants/competitioncentral), HHMI's online system, to obtain detailed information on this competition, to notify HHMI of their intent to participate, to access the application forms, and to submit their applications.*

PROGRAM FOCUS AND OBJECTIVES

HHMI's 2004 Undergraduate Science Education Program will support initiatives that strengthen education in the biological sciences and other scientific disciplines as they relate to biology. Program objectives include the following:

- To develop models that overcome the “research versus teaching” dichotomy by integrating these equally important activities in undergraduate education and by supporting student involvement in faculty research.
- To prepare undergraduates, including women and members of minority groups underrepresented in the sciences, for graduate studies and for careers in biomedical research, medicine, and science education and to increase science literacy for all students, including nonscience majors.

- To bring fresh perspectives to established scientific disciplines and develop novel programs/courses in emerging areas, such as bioinformatics and genomics, by supporting the development of new and current faculty, the development of curricula, and the acquisition of laboratory and technological resources that reflect discoveries in the biological sciences and new teaching approaches.
- To foster linkages among colleges, universities, elementary and secondary schools, community colleges, and other institutions in order to provide young students with early access to science, promote the development of precollege science teachers, and broaden access to science for students for whom such opportunities are limited.

In response to needs identified by HHMI through internal and external discussions, the 2004 competition is adding the following new objectives:

- To foster collaborations among applicant institutions to expand opportunities and resources for all grant participants, including undergraduates, faculty, and precollege teachers and their students. (Collaborations may be based on any element of commonality, including geographic region or complementary activities, and may encompass any of the program areas described below. Applicants should include plans for long-term support to maintain successful collaborations beyond the grant term. Sharing of resources by distance learning technology or other means may be considered.)
- To enable postdoctoral fellows (and graduate students, when applicable) to

complement their research training with substantive teaching and mentoring experiences that prepare them for future roles as educators.

- To develop, as appropriate, approaches that encourage teamwork among faculty, postdoctoral fellows, graduate students, and undergraduates to reflect the nature of contemporary biological research.
- To foster communities of science-active undergraduates by providing mentoring, academic support, and increasingly sophisticated scientific experiences to students over successive years of the undergraduate experience.

ELIGIBILITY CRITERIA

The 2004 competition is open by invitation to 198 institutions classified in 2000 by the Carnegie Foundation for the Advancement of Teaching as baccalaureate colleges (liberal arts and general), master's colleges and universities (I and II), and schools of engineering and technology. The institutions invited to participate in the program have proven records in preparing students for graduate education and for careers in science research and medicine (see Appendix A for list of invited institutions).

PROGRAM AREAS

The undergraduate program provides funding in the following four principal areas:

- Student research and broadening access to science;
- New, current, and future faculty development;
- Curriculum, equipment, and laboratory development; and
- Precollege and other outreach.

Institutions may request support for any or all of these areas, which provide a framework for proposal and budget development and allow for flexible use of funds. While each proposal will naturally reflect the unique mission, strengths, and needs of the applicant institution, proposals should be organized around these program areas. The activities noted below under each program area are provided as *examples only* and are in no way prescriptive. Applicants may find *Bio2010* (available at www.nap.edu) a useful resource for all areas of program development, but they are not restricted to using any particular resources or models. Applicants are encouraged to develop their own approaches to meeting the objectives of this competition.

STUDENT RESEARCH AND BROADENING ACCESS TO SCIENCE

Science education studies have shown that laboratory research, under the guidance of a scientist, can be an effective way to accelerate students' intellectual maturation and mastery of key concepts in modern biology. Moreover, the research experience can stimulate student interest in research or other science-related careers, such as teaching. For nonscience majors, participation in research introduces scientific concepts and brings an understanding of the scientific process.

Initiatives developed under this program component may include the following:

- Laboratory research opportunities either at the student's home institution or off campus at a research-intensive university, private corporation, government agency, or other setting as appropriate. Such opportunities may also involve students from other institutions. Research topics may vary from those in the traditional biological disciplines to those at the interface of biology and other

disciplines (e.g., computational biology, bioengineering, imaging, and biological chemistry).

- International research experiences, mentored by HHMI international scholars, with undergraduates supported by the undergraduate grant. (A list of international scholars can be found at www.hhmi.org/grants/awards/indiv/scholars.)
- Prefreshman laboratory research experiences that could start as early as the prefreshman summer and continue into the academic year.
- Activities to support retention in the sciences, such as fostering communities of undergraduate scientists and providing cohorts of students, including disadvantaged students, with progressively sophisticated scientific experiences, research presentation opportunities, mentoring, academic support, and career advising over successive years of study.
- Activities to expand research and course opportunities for undergraduates through collaborations among applicant institutions.

Institutions requesting support for student research should describe the current research environment, including type of research projects open to students and current level of student involvement. In requesting funds for activities to broaden access and opportunities, institutions should outline current efforts to recruit and retain students and plans to strengthen these existing programs or develop new ones. Efforts to leverage other sources of support to broaden these efforts can be included.

Note: Review panels generally do not recommend direct support for faculty to supervise students in research projects. However, they will support incentives to encourage faculty

to assume leadership roles in the program. Requests may include support for the program director's summer salary or up to that amount for research or other educational activities associated with the program director's summer research.

NEW, CURRENT, AND FUTURE FACULTY DEVELOPMENT

An important avenue to improve the teaching of undergraduate science is through the recruitment and professional development of new, existing, and future faculty. Colleges are uniquely suited to provide high-quality teaching experiences to postdoctoral fellows (and graduate students, where applicable) while affording them opportunities to continue their research. Proposed programs may include the following:

- Activities to prepare postdoctoral fellows (and graduate students) for future teaching roles, including opportunities to serve as instructors in research courses and mentors to undergraduates. Proposals that articulate organized plans designed to help and guide these future faculty in teaching are welcome. (Postdoctoral fellows and graduate students may also be involved in activities under the other three program areas of this competition.)
- Opportunities for the development of faculty teamwork aimed at the delivery of new undergraduate activities. For example, partnerships among faculty from different departments could provide unique research and curricular experiences for students and serve as models for increasing collaboration among scientists. Opportunities may be expanded through collaborations among applicant institutions or linkages with other institutions.

- Activities and resources, such as support for a research technician, that encourage college faculty to remain active in research and more fully integrate their teaching and mentoring with research.
- Opportunities for junior, mid-level, and senior faculty to explore new scientific areas, information-based technologies, and approaches to teaching and to integrate these into their science curricula.
- Start-up support for new faculty to broaden research and curricular development activities for undergraduates and for the institution as a whole. Applicants should take care to consider a feasible workload for a new faculty member, who will need time to set up a laboratory as well as teach and mentor students.

Note: Requests for faculty start-up and technical support must be well justified and include a discussion of the expected impact of the appointments on undergraduate education, as well as specific plans for continuing the position beyond the grant period.

CURRICULUM, EQUIPMENT, AND LABORATORY DEVELOPMENT

Curricula and equipment that reflect new scientific discoveries and teaching approaches are essential for creating a rich learning environment for students. Proposed programs may include the following:

- The enrichment of existing—or the development of new—science courses and programs, such as those that bridge scientific disciplines (e.g., computational biology, bioengineering, imaging) and integrate biology instruction with the teaching of chemistry, physics, mathematics, and computer science.
- The expansion and updating of laboratories and the acquisition of instruments, computers, and other equipment. (The program does not support the acquisition of major equipment for research purposes, requests for endowment support, or the construction of new buildings. The awards are not intended to provide incremental support for other large-scale construction projects or major reconstruction of facilities. Only equipment that is to be used for instructional purposes will be considered. Funds requested for laboratory renovations and equipment must not exceed 50 percent of the total grant request.)
- The development of modules or entire formal research-based courses and laboratories that involve a large number of students, including non-majors, in authentic research in a team setting.
- The development of new types of basic or applied science courses for science and nonscience majors who plan to pursue nonscience careers. Similarly, the development of courses for pre-service science teachers that prepare them to provide meaningful science experiences for their future students. (Partnerships, where appropriate, between the institution's science and education departments may strengthen the science preparation of education majors.)
- The development of educational resources to be made available to the broader science community. For example, an undergraduate research facility or multimedia and course development center could be housed and maintained at one applicant institution, with cost and use shared with other applicants.

Note: Requests for funds to renovate facilities or purchase equipment should indicate how the expenditure will enhance the teaching of science or promote undergraduate research. Requests for funds to develop communication and information resources should include a discussion of how the technologies would supplement laboratory instruction.

PRECOLLEGE AND OTHER OUTREACH

College science departments can provide a critical bridge in science education and training for students and teachers at elementary and secondary schools, community colleges, or other four-year institutions. Programs proposed by individual or collaborating applicants may include:

- Age-appropriate activities, such as summer science camps or summer research for precollege students, that engage the interest of younger students and help older students explore the possibility of a science major and career. Activities may also include those that broaden opportunities for students at two- or four-year institutions.
- Opportunities that encourage science majors to pursue teaching careers and that provide them with preservice classroom and laboratory teaching experience.
- Experiences that enhance the professional development of in-service science teachers, such as faculty-mentored summer research, joint faculty-teacher development of teaching materials, and participation in upper-level science courses. Proposed programs may also include activities that help teachers transfer their newly gained knowledge to their students, such as involvement of undergraduate

or graduate students during the academic year and provision of equipment footlockers.

- Development of shared educational and information technology and the use of communication technology to strengthen interactions among teachers and between teachers and scientists, such as a technology resource center to be shared among teachers participating within a consortium of applicants.
- Activities that build on existing institutional collaborations by supporting research opportunities for undergraduates from other institutions, joint science faculty appointments, development of shared laboratory facilities and science programs, and outreach programs involving faculty and other resources from two or more applicant institutions.

Note: If the applicant proposes precollege or outreach programs involving a collaboration with other institutions, the proposal must include letters from these institutions specifying the extent to which the collaborating institutions are willing and able to participate.

PROGRAM ASSESSMENT AND DISSEMINATION

Assessment

An important part of education in general and science education in particular, assessment can provide valuable information on how grant program activities are meeting their objectives. *The applicant institution should include an assessment plan specifying the evaluation methods to be used.* Objectives whose outcomes can be measured should be included.

In addition, institutions receiving HHMI undergraduate awards are required to track

faculty, students, and others participating in their HHMI-supported programs. Grantees will be expected to provide this information in their annual program reports to HHMI and through HHMI's online faculty tracking system. Grantees will also be expected to conduct long-term tracking of HHMI-supported undergraduate researchers, such as entrance into graduate or medical school and career outcomes. Following notification of their awards, grantees will receive information on the specific tracking data they will be expected to submit to HHMI.

Dissemination

Another important outcome-related grant activity is dissemination. Where appropriate, applicants should provide a national dissemination strategy to extend successes achieved locally to the larger science education community. Publication in science education journals such as the American Society for Cell Biology's *Cell Biology Education* (www.cellbioed.org) can be an effective tool for the dissemination of successful models or science education research from the grant. Digital libraries that may be appropriate for dissemination of grant products may include BEN (BiosciEdNet), a collaborative effort among professional societies (www.biosciEdnet.org), and the National Science Foundation's national science, technology, engineering, and mathematics education digital library (<http://nsdl.org>). Applicants are encouraged to use dissemination vehicles that they determine are most appropriate for delivering their materials and findings.

PROGRAM ADMINISTRATION

HHMI undergraduate grants do not allow for indirect costs; however, up to 10 percent of the award may be budgeted for direct program administration, which typically includes clerical support, preparation and

dissemination of participant recruiting materials, Internet access charges, and the like.

Note: Costs for faculty involvement should be delineated as faculty salaries under each relevant program area rather than included in the program administration category.

PREVIOUS PROGRAM ACCOMPLISHMENTS

The proposal provides applicants with a section to describe accomplishments under previous programs supported by HHMI or, for applicants who have not received HHMI support, accomplishments relevant to the proposed activities that were funded by other sources. HHMI acknowledges that previous grantees will have had outcomes specific to their grants. Therefore, each grantee's outcomes will reflect the unique goals of each of its programs. For example, some grantees may have sought to retain undergraduates in a science major while others may have sought to encourage undergraduates to go on to Ph.D. programs and research careers.

Whatever the projected outcomes, applicants should provide quantitative as well as qualitative evidence of the success of their programs for as long a period as possible and for all program areas.

Note: The review panel pays particular attention to the "Previous Accomplishments" portion of the proposal, which is weighed heavily in the panel's evaluation of a proposal submitted by a previous HHMI grantee. Where appropriate, continuation of previous successful activities is acceptable, although it is of benefit to the panel that applicants distinguish between previous and new activities.

GRANTEE INSTITUTION PROCESS FOR DISTRIBUTION OF FUNDS

Applicant institutions must name a program director who will be responsible for the administration of funds and the establishment of necessary review and evaluation processes for program activities. The program director should have proven leadership in science research and education. Where appropriate, the grantee institution should establish an advisory committee to assist the program director in administration of the program and in the allocation of funds—for example, in selecting students for research opportunities or determining which faculty should receive professional development support.

ELECTRONIC PROPOSAL SUBMISSION AND DEADLINES

Applicants must register and submit proposals via CompetitionCentral, HHMI's Web-based competition system. (Appendix B outlines the steps for accessing the system.) Proposal materials, registration forms, instructions, and this program announcement can be found at www.hhmi.org/grants/competitioncentral. The invitation letter provides each institution with a temporary login ID and password. *We strongly recommend that institutions intending to submit a proposal refer to the material in CompetitionCentral early in the proposal planning process.*

Institutions must register their intent to submit a proposal via CompetitionCentral by June 16, 2003. The deadline for submitting proposals is 5:00 p.m. ET, October 15, 2003.

As they develop their proposals, applicant institutions are encouraged to take advantage of the information on the Grants Office's website (www.hhmi.org/collegecomp), including summaries of the activities of undergraduate program grantees, proceedings of the meetings of

undergraduate program directors, and other resources in science education. If you have questions about the program, call 301-215-8872 or direct e-mail messages to 2004ugcomp@hhmi.org. A toll-free number and online help service will allow applicant institutions to request technical assistance from the Arlington Group, the company providing technical support for the award competition (see Appendix B). Assistance will be available during regular business hours throughout the proposal development period.

CRITERIA AND PROCESS FOR PROPOSAL EVALUATION

A panel of distinguished scientists and educators will review the proposals. On the basis of the review, HHMI staff will make recommendations to HHMI's Trustees, who will then authorize funding. The principal evaluation criteria follow:

Activities Proposed

- The degree to which the proposal addresses one or more of the objectives of this initiative (see page 1).
- The likelihood that the proposed activities will meet the applicant's stated objectives.
- The correlation between the proposed goals and activities and the applicant's overall scientific or educational mission and its capacity to achieve them.
- The degree to which the proposed program will enable the applicant to enhance or expand its ongoing activities or undertake additional initiatives.
- The relationship, if any, of the proposed activities to initiatives already under way at the applicant institution supported either by a previous HHMI award or other external

funding. (Applicants should note the importance of completing the section in the application that pertains to previous grant activities.)

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.

Long-Term Impact

- Evidence of noteworthy innovations or particularly compelling approaches for effecting long-term institutional or departmental change in undergraduate science education.
- Evidence that the program is likely to have a significant impact on the long-term development of relevant science departments.
- Evidence that the applicant has made plans for broad dissemination of any knowledge or product resulting from the grant.
- Evidence of support by the applicant's administration and of substantial involvement of the relevant science faculty in proposed program activities.
- Evidence that responsibilities for program development and administration are distributed among appropriate members of the faculty, administration, and staff.

Applicants should also consult the factors cited in the "Important Points for Applicants" section of the online application.

While there is no requirement that the proposed activities be continued beyond the term of the grant award, it is expected that the applicant institution will make every effort to sustain the successful elements of the proposed program. Plans to sustain collaborations are also important.

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

THE AWARDS

Applicants will be notified of their award status in spring 2004; awards will be officially announced in summer 2004. The four-year awards are expected to range from \$800,000 to \$1.6 million. Grants will be made in four annual payments starting in summer 2004. Grantee institutions will be required to submit annual reports of their program activities and annual financial reports as well as results of long-term assessment of their programs. (*Unresolved issues of report compliance may determine participation in future competitions and distribution of future grant payments.*)

The program is expected to be highly competitive, and only a limited number of requests can be funded. Awards will be based on the quality of proposals received and the availability of funds.

Applicants will not be informed of the progress of their proposals until the official award notification.

Appendix A

2004 AWARD COMPETITION: 198 INVITED INSTITUTIONS

Abilene Christian University, Abilene, Texas	Calvin College, Grand Rapids, Michigan	DePauw University, Greencastle, Indiana
Agnes Scott College, Atlanta, Georgia	Canisius College, Buffalo, New York	Dickinson College, Carlisle, Pennsylvania
Albertson College, Caldwell, Idaho	Carleton College, Northfield, Minnesota	Dillard University, New Orleans, Louisiana
Albion College, Albion, Michigan	Carroll College, Helena, Montana	Drake University, Des Moines, Iowa
Albright College, Reading, Pennsylvania	Centenary College of Louisiana, Shreveport, Louisiana	Drew University, Madison, New Jersey
Allegheny College, Meadville, Pennsylvania	Centre College, Danville, Kentucky	Drury College, Springfield, Missouri
Alma College, Alma, Michigan	Christian Brothers University, Memphis, Tennessee	Earlham College, Richmond, Indiana
Amherst College, Amherst, Massachusetts	City University of New York Brooklyn College, Brooklyn, New York	Fairfield University, Fairfield, Connecticut
Augustana College, Rock Island, Illinois	City University of New York City College, New York, New York	Fisk University, Nashville, Tennessee
Augustana College, Sioux Falls, South Dakota	City University of New York Herbert H. Lehman College, Bronx, New York	Florida A&M University, Tallahassee, Florida
Austin College, Sherman, Texas	City University of New York Hunter College, New York, New York	Franklin & Marshall College, Lancaster, Pennsylvania
Bard College, Annandale-on-Hudson, New York	City University of New York Queens College, Flushing, New York	Furman University, Greenville, South Carolina
Barnard College, New York, New York	Claremont McKenna College, Claremont, California	Gannon University, Erie, Pennsylvania
Bates College, Lewiston, Maine	Colby College, Waterville, Maine	Georgetown College, Georgetown, Kentucky
Beloit College, Beloit, Wisconsin	Colgate University, Hamilton, New York	Goshen College, Goshen, Indiana
Benedictine University, Lisle, Illinois	College of Charleston, Charleston, South Carolina	Goucher College, Towson, Maryland
Bethel College, North Newton, Kansas	College of Saint Benedict, St. Joseph, Minnesota	Grinnell College, Grinnell, Iowa
Birmingham-Southern College, Birmingham, Alabama	College of the Holy Cross, Worcester, Massachusetts	Gustavus Adolphus College, St. Peter, Minnesota
Bowdoin College, Brunswick, Maine	College of Wooster, Wooster, Ohio	Hamilton College, Clinton, New York
Bryn Mawr College, Bryn Mawr, Pennsylvania	Colorado College, Colorado Springs, Colorado	Hamline University, St. Paul, Minnesota
Bucknell University, Lewisburg, Pennsylvania	Concordia College–Moorhead, Moorhead, Minnesota	Hampden-Sydney College, Hampden-Sydney, Virginia
Butler University, Indianapolis, Indiana	Connecticut College, New London, Connecticut	Hampshire College, Amherst, Massachusetts
California State Polytechnic University–Pomona, Pomona, California	Cornell College, Mount Vernon, Iowa	Hampton University, Hampton, Virginia
California State University–Fresno, Fresno, California	Creighton University, Omaha, Nebraska	Hanover College, Hanover, Indiana
California State University–Long Beach, Long Beach, California	Davidson College, Davidson, North Carolina	Harvey Mudd College, Claremont, California
California State University–Los Angeles, Los Angeles, California	Denison University, Granville, Ohio	Hastings College, Hastings, Nebraska
California State University–Northridge, Northridge, California		Haverford College, Haverford, Pennsylvania
		Hendrix College, Conway, Arkansas
		Hiram College, Hiram, Ohio

Hobart and William Smith Colleges,
Geneva, New York

Hope College, Holland, Michigan

Houghton College, Houghton,
New York

Humboldt State University,
Arcata, California

Illinois Wesleyan University,
Bloomington, Illinois

Inter American University of
Puerto Rico, Metropolitan Campus,
Hato Rey, Puerto Rico

John Carroll University,
Cleveland, Ohio

Juniata College, Huntingdon,
Pennsylvania

Kalamazoo College, Kalamazoo,
Michigan

Kenyon College, Gambier, Ohio

Knox College, Galesburg, Illinois

Lafayette College,
Easton, Pennsylvania

Lawrence University,
Appleton, Wisconsin

Lewis and Clark College,
Portland, Oregon

Lipscomb University,
Nashville, Tennessee

Louisiana College,
Pineville, Louisiana

Louisiana State University in
Shreveport, Shreveport, Louisiana

Loyola College in Maryland,
Baltimore, Maryland

Loyola Marymount University,
Los Angeles, California

Loyola University New Orleans,
New Orleans, Louisiana

Luther College, Decorah, Iowa

Lyon College, Batesville, Arkansas

Macalester College,
St. Paul, Minnesota

Manhattan College, Bronx,
New York

Marshall University, Huntington,
West Virginia

Mercer University, Macon, Georgia

Middlebury College, Middlebury,
Vermont

Millsaps College, Jackson, Mississippi

Mississippi College,
Clinton, Mississippi

Morehouse College,
Atlanta, Georgia

Morgan State University,
Baltimore, Maryland

Mount Holyoke College,
South Hadley, Massachusetts

Muhlenberg College,
Allentown, Pennsylvania

Murray State University,
Murray, Kentucky

Nebraska Wesleyan University,
Lincoln, Nebraska

Norfolk State University,
Norfolk, Virginia

North Carolina Agricultural and
Technical State University,
Greensboro, North Carolina

North Carolina Central University,
Durham, North Carolina

Oakwood College,
Huntsville, Alabama

Oberlin College, Oberlin, Ohio

Occidental College, Los Angeles,
California

Ohio Wesleyan University,
Delaware, Ohio

Pacific Lutheran University,
Tacoma, Washington

Pacific Union College,
Angwin, California

Point Loma Nazarene University,
San Diego, California

Pomona College, Claremont,
California

Pontifical Catholic University of
Puerto Rico, Ponce, Puerto Rico

Prairie View A&M University, Prairie
View, Texas

Presbyterian College, Clinton,
South Carolina

Reed College, Portland, Oregon

Rhodes College,
Memphis, Tennessee

Ripon College, Ripon, Wisconsin

Rockhurst University,
Kansas City, Missouri

Rose-Hulman Institute of
Technology, Terre Haute, Indiana

Saint John's University,
Collegeville, Minnesota

Saint Joseph's University,
Philadelphia, Pennsylvania

Saint Olaf College,
Northfield, Minnesota

Samford University,
Birmingham, Alabama

San Jose State University,
San Jose, California

Santa Clara University,
Santa Clara, California

Siena College, Loudonville,
New York

Smith College, Northampton,
Massachusetts

Southern Adventist University,
Collegedale, Tennessee

Southern Nazarene University,
Bethany, Oklahoma

Southwestern Adventist University,
Keene, Texas

Southwestern University,
Georgetown, Texas

Spelman College, Atlanta, Georgia

Spring Hill College, Mobile,
Alabama

St. John's College, Annapolis,
Maryland

St. John's College, Santa Fe,
New Mexico

St. Lawrence University,
Canton, New York

St. Mary's University,
San Antonio, Texas

Swarthmore College,
Swarthmore, Pennsylvania

Texas Lutheran University,
Seguin, Texas

Thomas More College,
Crestview Hills, Kentucky

Tougaloo College,
Tougaloo, Mississippi

Transylvania University,
Lexington, Kentucky

Trinity College, Hartford,
Connecticut

Trinity University,
San Antonio, Texas

Truman State University,
Kirksville, Missouri

Tuskegee University,
Tuskegee, Alabama

Union College, Schenectady,
New York

University of Dallas, Irving, Texas

University of Louisiana at Monroe,
Monroe, Louisiana

University of Minnesota–Morris,
Morris, Minnesota

University of Puerto Rico
Cayey University College,
Cayey, Puerto Rico

University of Puerto Rico, Mayaguez
Campus, Mayaguez, Puerto Rico

University of Puget Sound,
Tacoma, Washington

University of Richmond,
Richmond, Virginia

University of Saint Thomas,
Houston, Texas

University of Scranton,
Scranton, Pennsylvania

University of Texas at San Antonio,
San Antonio, Texas

University of Texas–Pan American,
Edinburg, Texas

University of the South,
Sewanee, Tennessee

Ursinus College, Collegeville,
Pennsylvania

Vassar College, Poughkeepsie,
New York

Villanova University,
Villanova, Pennsylvania

Wabash College,
Crawfordsville, Indiana

Walla Walla College, College Place,
Washington

Wartburg College, Waverly, Iowa

Washington and Jefferson College,
Washington, Pennsylvania

Washington and Lee University,
Lexington, Virginia

Wellesley College,
Wellesley, Massachusetts

Wesleyan University,
Middletown, Connecticut

Western Kentucky University,
Bowling Green, Kentucky

Westmont College,
Santa Barbara, California

Wheaton College, Wheaton, Illinois

Whitman College,
Walla Walla, Washington

Wilkes University,
Wilkes-Barre, Pennsylvania

Willamette University, Salem,
Oregon

Williams College,
Williamstown, Massachusetts

Wittenberg University,
Springfield, Ohio

Wofford College,
Spartanburg, South Carolina

Xavier University, Cincinnati, Ohio

Xavier University of Louisiana,
New Orleans, Louisiana

Youngstown State University,
Youngstown, Ohio

Appendix B

ELECTRONIC PROPOSAL SUBMISSION

Proposals for the 2004 Undergraduate Science Education Program competition will be submitted and reviewed via CompetitionCentral, a password-protected system on the Web. CompetitionCentral will allow grant applicants to prepare and submit their proposals by using secure, easy-to-read electronic forms.

Each invited institution has been assigned a login ID and password for entering CompetitionCentral and registering with HHMI. The invitation letter to the institution's president provides the login ID and password. Upon logging on to CompetitionCentral at www.hhmi.org/grants/competitioncentral, the registrant will be asked to provide contact information (name, title, e-mail address, and other information) and indicate whether the institution intends to submit a proposal for the 2004 competition. The registrant, who is the individual to serve as the principal contact with HHMI during proposal development, should use the assigned login ID and password or a newly generated password when working on the proposal online and when submitting the proposal to HHMI. *The deadline for registering and providing contact information is June 16, 2003.*

The steps for accessing the electronic proposal submission system follow:

1. Enter HHMI's CompetitionCentral system at the following Web address: www.hhmi.org/grants/competitioncentral. (To access CompetitionCentral, you will need one of the following Web browsers: Netscape Navigator 3.0 or higher; Microsoft Internet Explorer 3.02a or higher; or AOL 4.0 or higher.)
2. On the login screen, enter the login ID and password provided in the invitation letter to your president and click the login button.
3. The next page will contain a link to the 2004 Undergraduate Science Education Program Competition System. You may immediately change your password on this page or on any future use of CompetitionCentral. Click on the link.
4. You then go to a screen requesting information on the person at your institution designated as the principal contact with HHMI. Enter the contact information.

We ask you to complete this screen by the June 16, 2003, deadline even if your institution does not intend to submit a proposal.

5. You will see boxes to check indicating your plans to submit a proposal. If you check "No, my institution does not plan on submitting a proposal to HHMI's 2004 Undergraduate Science Education Program Competition," you will be returned to HHMI's grants website. *It is important to note that once your institution has indicated that it will not submit a proposal, it will be unable to gain access to CompetitionCentral.*
6. If you check "Yes, my institution plans to submit a proposal to HHMI's 2004 Undergraduate Science Education Program Competition," the system will take you to HHMI's 2004 Undergraduate Science Education Program Competition main page. Steps 4, 5, and 6 will not be required during future visits to CompetitionCentral.

CompetitionCentral provides detailed instructions for completing the proposal, including important points for preparing proposals, technical instructions, programmatic and budgetary guidelines, and a PDF version of the program announcement, along with electronic forms requesting budget and other data. The forms must be completed in the format provided.

A toll free telephone number (1-877-249-9932) and online help service (ICSSupport@arlgrou.com) will allow the institution to request technical assistance from the Arlington Group. Assistance will be available during regular business hours (9:00 a.m. to 5:00 p.m. ET) throughout the proposal development period.

Each institution must submit seven hard-copy versions of its entire proposal; all sections of the electronic proposal may be printed from CompetitionCentral. **The deadline for submission of the online proposal and receipt of hard copies of the proposal package is 5:00 p.m. ET, October 15, 2003.**

Call Patricia Soochan, program officer, at 301-215-8872 with any inquiries regarding this program, or send an e-mail message to 2004ugcomp@hhmi.org.

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