

Research Training Fellowships for Medical Students

Program Information

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Initial Year of Research Training

Application Deadline

January 11, 2006

Announcement of Awards

March 2006

HHMI

HOWARD HUGHES MEDICAL INSTITUTE

Office of Grants and Special Programs

The Medical and Dental Student Fellowship Program

The goal of the HHMI Research Training Fellowships for Medical Students is to strengthen and expand the nation's pool of medically trained researchers. The fellowships provide funds to support fellows and meet their research- and education-related expenses. HHMI awards the fellowships through an annual competition.

The fellowship provides support for one year of full-time research training in fundamental biomedical research. It includes a stipend, a research allowance to meet a fellow's research-related expenses, and a fellow's allowance to be used for health care and tuition and fees. Fellowship research must be conducted at an academic or nonprofit research institution in the United States, excluding the National Institutes of Health (NIH) in Bethesda, Maryland.

In 2006, HHMI plans to award up to 60 fellowships to medical and dental students who show the greatest promise for future achievement in biomedical research and who have demonstrated superior scholarship as undergraduates and during their initial medical or dental school training.

To ensure continued excellence and diversity among applicants and awardees, HHMI welcomes applications from all qualified students and specifically encourages applications from women and members of minority groups underrepresented in the sciences.¹

1. Blacks, Hispanics, Alaska Natives, American Indians, and Native Pacific Islanders.

Fellowship Support for Research Training

Eligibility

Applicants must be currently enrolled in a medical or dental school program in the United States. Students may apply during any year of their medical or dental studies, but applicants in the last year of medical or dental school must defer graduation until completion of the fellowship year. These fellowships are not available to students enrolled in M.D./Ph.D., Ph.D., or Sc.D. programs or to those who have completed a Ph.D. or an Sc.D. in a laboratory-based science.²

Applicants may have research experience, but it is not required. Applicants with a year of full-time research experience since entering medical or dental school must show how further full-time research experience at this time would strongly enhance their future research careers.

There are no citizenship requirements for application, but those who are not U.S. citizens must have and maintain an appropriate visa. HHMI will not handle visa matters for applicants.

Medical or dental students may apply to *both* the Research Training Fellowships for Medical Students Program and the HHMI-NIH Research Scholars Program through the same online application system. Information about the HHMI-NIH Research Scholars Program may be found at www.hhmi.org/cloister.

Area of Research

Fellowship research should probe basic biological processes or disease mechanisms. Examples of eligible fields of research include the following:

Biochemistry	Immunology
Bioinformatics ³	Mathematical and computational biology
Biomedical engineering	Microbiology
Biophysics	Molecular biology
Biostatistics	Neuroscience
Cell biology	Pharmacology
Developmental biology	Physiology
Epidemiology ⁴	Structural biology
Genetics	Virology

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2. The eligibility of applicants with a doctoral degree in a science that is not laboratory based will be determined by HHMI on a case-by-case basis.
 3. Research directed toward developing new approaches and tools for using large databases of biological information, such as nucleotide sequence and protein structure, or for analyzing complex biological systems. For purposes of fellowship eligibility, health services research, such as computerized diagnosis or treatment algorithms, is not included in bioinformatics.
 4. Research directed toward an understanding of biological factors relevant to disease distribution in populations or of associations with biological factors that may suggest causal influence and/or prevention strategies.

Research Mentor and Research Plan

The applicant is responsible for selecting a research mentor at an academic or nonprofit research institution in the United States and for making arrangements to work in that person's laboratory. HHMI will not make these arrangements. The designated mentor must be the faculty member who will directly supervise the proposed research. *A mentor may have no more than two applicants in any one competition year.* An applicant may have a co-mentor if her or his research interests cross areas of expertise.

Selection of a mentor is a key step in the application process and a particularly important element in evaluation of the application by the review panel. In selecting a mentor, the applicant should seek a scientist who has recent publications in the area of research, experience in the research techniques to be used, external grant support from NIH or other major agencies, and the time and interest to train the applicant. Location in a department that will provide a stimulating research environment is an additional factor to consider in selecting a mentor. Applicants are encouraged to consult with several individuals, including deans, senior faculty, and members of the laboratory under consideration, before making a final choice of mentor. (See “Application Tips,” page 8.)

The research plan should be suitable for a one-year research-training period. The project should ask a specific and substantive question about basic biological processes or disease mechanisms. In general, applicants should avoid limiting the project to working out details of a laboratory technique. In addition, they should avoid projects that involve a single

protocol for the fellowship term with no opportunity to devise experiments based on data from initial experiments. (See “Application Tips,” page 8.)

Extensive discussion between the applicant and the proposed mentor is expected in order to identify an appropriate research project—one that is up-to-date, instructive, and feasible in a one-year fellowship period—and to craft the research plan. It will be assumed that the applicant has written the plan after discussion with the mentor. By submitting the Web-based Mentor's Endorsement part of the application, the mentor indicates that he or she has read and approved the plan as submitted.

Those who have selected a mentor at a distant institution should note that in past years reviewers have found that some of these applications did not reflect an appropriate level of interaction with the mentor. These applicants especially must allow sufficient time to develop the research plan fully and to make evident the quality of the expected working relationship.

Location of Study

Fellows must choose an academic or nonprofit research institution in the United States (excluding NIH) as their fellowship institution. Research may be conducted at an institution outside the United States as long as the fellow's mentor is affiliated with the U.S. fellowship institution. The fellowship institution need not be the student's medical or dental school. Fellows are responsible for making all arrangements for attendance at their chosen institution.

A fellow may engage in research away from the fellowship institution (including a non-U.S.

research institution) during the fellowship term if, in the research mentor's judgment, such an arrangement would further the fellow's training.

Fellowship Term

The fellowship term may begin no earlier than June 1, 2006, and no later than September 1, 2006. The term of the fellowship is 12 consecutive months.

Fellows must engage in research full time during the fellowship term. Fellows may not undertake medical or dental school coursework, a clerkship, or any graduate school coursework; however, they may receive academic credit for their research.

Stipend and Allowances

The stipend is \$25,000 for the 2006–2007 fellowship year. There are no allowances for dependents. HHMI provides funds to the fellowship institution, which in turn pays the stipend to the fellow.

A fellow may not supplement the stipend through private employment or consulting work or receive funds from another external fellowship, scholarship, or similar award. However, the fellow's institution may supplement the stipend in accordance with its usual policy for comparable students.

Fellowship institutions receive an annual research allowance of \$5,500 on behalf of each fellow. The allowance may be used for supplies and equipment for the fellow's research, a computer and computer-related expenses, travel to professional meetings, journal subscriptions,

and similar research-related expenses. Disposition of the allowance will be at the discretion of the fellow's mentor.

HHMI also provides fellowship institutions with an annual fellow's allowance of \$5,500 on behalf of each fellow. The first priority for use of this allowance is health insurance for the fellow. If the fellow chooses, the allowance may also be used for tuition and registration fees and for research-related expenses. The remainder may be used at the discretion of the fellowship institution.

Evaluation and Selection

Fellowships are awarded on the basis of the applicant's ability and promise for a research career as a physician-scientist and the quality of the training that will be provided. The applicant's ability and promise are assessed in terms of items such as the proposed research plan, letters of reference, undergraduate and medical or dental school transcripts, and scores on the Medical College Admission Test (MCAT) or Dental Admission Test (DAT), if available. The quality of the training is evaluated on the basis of the research plan and the information provided in the mentor's endorsement, including the mentor's curriculum vitae, a list of current funding, a list of trainees, and a statement of plans for training the applicant.

Applications will be reviewed by a panel of distinguished biomedical scientists with expertise in the eligible fields of research. The panel convened by HHMI will evaluate each applicant's demonstrated scholarship and promise for future achievement in biomedical research.

The panel will also consider the appropriateness of the designated mentor and the research project for training in the proposed area of research, the quality of the training environment, and the mentor's stated plans for training the applicant. The review panel will evaluate how the research experience would further the applicant's development in relation to the level of any previous research experience.

The final selection of awardees will be made by HHMI, taking into account the evaluations of the review panel and the program goals. *Evaluations of the review panel are not made available to the applicant.*

Conditions of Appointment

Appointment of a fellow is contingent on satisfactory completion of the academic year in which the fellowship application was submitted. Fellows will be required to engage in research full time and may not undertake any medical or dental school coursework, a clerkship, or any graduate school coursework during the fellowship term. During that year, fellows may not be enrolled in a Ph.D. or an Sc.D. program.

After an award has been made, a change of fellowship institution or mentor or a major change in the research plan requires HHMI approval for continuation of the fellowship.

Fellows are expected to conduct research according to the highest scientific and ethical standards and in compliance with all applicable laws, regulations, and policies regarding protection of human research subjects, humane

care and use of laboratory animals, and laboratory safety. Fellows are responsible for the conduct of research and the preparation of research results for publication within the established guidelines of their fellowship institutions. HHMI assumes no responsibility for a fellow's research findings or their interpretation.

2007 Meeting of Medical Student Fellows

All current research fellows will gather at HHMI headquarters in Chevy Chase, Maryland, in May 2007 for the Meeting of Medical Student Fellows. The occasion will provide fellows with an opportunity to meet one another and to hear scientific talks by a leading physician-scientist and other fellows.

All fellows are expected to participate in the meeting and to present 10-minute talks on their research projects.

This publication sets forth only the most basic program information. All fellowships are subject to further provisions contained in the booklet *Information for Medical Student Fellows and Fellowship Institutions* (which will be mailed to awardees and posted on the HHMI website at www.hhmi.org/grants/for_grantees/) and any further documentation provided by HHMI.

Application Materials

Application for initial awards is via HHMI's Web-based competition system at www.hhmi.org/competitions. Submission of all applicant, mentor, dean, and reference forms must be via the Web.

A complete application has three sections.

Section 1: The applicant's portion

- Registration
- Profile:
 - Contact Information*
 - Confidential Information*
 - Education*
 - Honors and Awards*
 - Prior Research*
 - Publications*
 - Dean's Contact Information*
 - References' Contact Information*
- Application:
 - Demographic Information* (optional)
 - Personal Statement* (should not exceed 700 words, or approximately one single-spaced page)
 - Research Plan Title* (should not exceed 255 characters, including spaces)
 - Research Plan Summary* (should not exceed 250 words, or approximately one-third of a single-spaced page)
 - Research Plan* (should not exceed 2,100 words, or approximately three single-spaced pages)
 - Research Plan Citations* (should not exceed 700 words, or approximately one single-spaced page)

In addition to the Web-based submission above, the applicant is responsible for

- Providing the mentor, co-mentor (if applicable), dean, and references with the information necessary for them to submit the required letters and other information. After the applicant registers and initiates the Web-based application system, he or she will be able to submit the names and contact information for the mentor, co-mentor (if applicable), dean, and references. Once the names have been submitted, e-mails generated by the Web-based system will provide them with login instructions. *It is the applicant's responsibility to make sure that the mentor (co-mentor, if applicable), dean, and references have provided all required information by the application deadline.*
- Obtaining academic transcripts, including those for undergraduate, medical or dental school, and other postbaccalaureate studies.

Section 2: The mentor's endorsement (and co-mentor's, if applicable)

The endorsement includes information on the mentor's plans for training the applicant, training experience, grant support, a brief curriculum vitae, and an evaluation of the applicant.

Web access for the mentor will be initiated by the applicant (see Section 1 above).

Section 3: Letters of reference

- Dean's endorsement. By writing a letter on your behalf, the dean must indicate that you will be allowed to participate in the program, *if selected*. The dean will be asked to comment on your potential for scholarly achievement,

elaborating, where appropriate, on such matters as scientific knowledge, performance as an undergraduate or graduate student in independent study or in research-participation programs, and ability to make sound judgments. In addition, the dean may describe pertinent personal characteristics such as perseverance, persistence in the face of obstacles, creativity, independence, and motivation.

- Two letters of reference from persons (other than the mentor or co-mentor on this application or dean) who are familiar with the applicant's talents and abilities and could comment on the applicant's promise and potential, especially as a physician-scientist.

Web access for the dean and references will be initiated by the applicant (see Section 1 above).

Application and Award Dates

All components of the application must be submitted to HHMI for **receipt by January 11, 2006**, to be considered in the fellowship competition.

Applicants should retain copies of the application materials they have completed. Application materials will not be returned.

HHMI will notify applicants by letter of the outcome of their applications in March 2006.

Please contact us if you have questions or need additional information.

Research Training Fellowships
for Medical Students
Howard Hughes Medical Institute
Office of Grants and Special Programs

Telephone: (800) 448-4882, ext. 8889
Fax: (301) 215-8888
E-mail: fellows@hhmi.org
Website: www.hhmi.org/medfellowships

Application Tips

While all aspects of the application are evaluated, the proposed mentor and the research plan are extremely important. In addition, reviewers place considerable weight on the plans for training the applicant and on reference letters.

APPLICATION FORMS

- Observe the **January 11, 2006**, submission deadline (via the Web).
- Proofread carefully; do not rely on spell check.
- Read and follow the instructions.
- Follow the guidelines for number of pages. Be brief when so requested.
- There is no need for medical students to include MCAT scores with the application. HHMI will obtain the scores directly from AAMC. Dental students will need to go to the ADA website (www.ada.org/prof/ed/testing/dat/Online) and request that their DAT scores be sent directly to HHMI.
- Before submitting your application online, print a copy for your records.

RESEARCH EXPERIENCE

- Present the topic of your research in a way that makes clear why it is of interest. Be sure to place your work in the context of the relevant scientific field.
- Do not focus on techniques. Emphasize the scientific question you addressed, the general approach you took, and your findings and conclusions.
- Clearly describe the contributions you made in the laboratory.

SELECTING A MENTOR

- Seek advice from faculty and deans for research and scientific training. They can help guide you to productive laboratories with interest and experience in training medical students.
- Talk with several possible mentors. Confirm that the mentors under consideration have recent publications and sustained external grant support.
- Talk with other medical students, graduate students, and postdoctoral researchers who have been in the laboratory you are considering. Confirm that the laboratory is a reasonable working environment and that the mentor is likely to spend significant time with you.

RESEARCH PLAN

- It is expected that your mentor's ideas will be in your plan, but restate them yourself. Do not borrow extensively from your mentor's grant proposal text. Reviewers want to read your presentation of the issues and approaches, and it is usually obvious when parts of the plan are taken directly from a grant proposal.
- Allow time for discussion with your mentor and for feedback on your drafts. Ask the mentor to consider not only technical aspects but also the feasibility of the project. Is it suitable for a one-year experience? Is it a good training vehicle?
- Be sure to specify your role and that of your mentor (and others) in the development of the plan.

- Emphasize the scientific (and possibly medical) importance of the question and the experimental approach you plan to take. Do not dwell on experimental details.
- Anticipate potential problems in the research and present alternative strategies.
- Explain why the experimental system (e.g., organism, gene, or protein) was selected for study of the question proposed.

PERSONAL STATEMENT

- It is understood that you may not yet have definite career goals. Explain the options you are considering at this point.
- If you have little or no research experience, explain what led you to the fellowship program and what you hope to get out of the research experience.
- If you have had a fair amount of experience, explain why the proposed year of research would be to your benefit and what you hope to learn from the experience.
- Use Personal Statement as the place to explain not only your intellectual motivation but also any personal motivations (for example, inspiration by a key mentor).
- Use Personal Statement also to note extenuating circumstances that resulted in atypical test scores or grades, why a research mentor was not asked to submit a reference letter (see next section), or why a “file copy” letter is used (see last bulleted item in next section).

REFERENCE LETTERS

- Provide your references with a résumé of your education and research experience. It may also be helpful to provide a copy of your research plan.
- If you have had a significant research experience but choose not to submit a reference letter from your supervisor, explain why (in Personal Statement). Reviewers may question why it is absent.
- Some applicants request letters from prominent scientists who do not know them well. General letters of this type are not effective. Request letters from individuals who can evaluate your potential as a scientist.
- If at all possible, avoid using a “file copy” of an old reference letter. If you must do so, explain why (in Personal Statement).

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