

# Research Training Fellowships for Medical Students

## Program Information

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### **Initial Year of Research Training**

**Application Deadline**

**January 11, 2009**

**Announcement of Awards**

**March 2009**

HHMI

HOWARD HUGHES MEDICAL INSTITUTE

**Office of Grants and Special Programs**

# The Medical, Dental, and Veterinary Student Fellowship Program

The goal of the HHMI Research Training Fellowships for Medical Students (“Med Fellows Program”) 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 education-related expenses incurred as part of the fellowship. 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 2009, HHMI plans to award up to 66 fellowships to medical, dental, and veterinary 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, dental, or veterinary 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.<sup>1</sup>

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

Applicants may have research experience, but it is not required. Applicants with a year of full-time research experience since entering medical, dental, or veterinary 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, dental, or veterinary 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. Applying to both programs will not affect students' opportunity to be selected for either or both programs since there is a separate, independent selection committee for each program.

Information about the HHMI-NIH Research Scholars Program may be found at [www.hhmi.org/cloister](http://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 <sup>3</sup>	Mathematical and computational biology
Biomedical engineering	Microbiology
Biophysics	Molecular biology
Biostatistics	Neuroscience
Cell biology	Pharmacology
Developmental biology	Physiology
Epidemiology <sup>4</sup>	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. The proposed mentor does not have to be an HHMI investigator. 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, dental, or veterinary 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, 2009, and no later than September 1, 2009. 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, dental, or veterinary school coursework, a clerkship, or any graduate school coursework; however, they may receive academic credit for their research.

## Stipend and Allowances

The stipend is \$27,000 for the 2009–2010 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 education-related expenses incurred as part of the fellowship, and for research-related expenses. If the fellow is conducting research at an institution that is not his or her medical, dental, or veterinary school, the fellow's allowance may be used to cover reasonable travel and moving expenses to and from the fellowship institution up to \$1,500. 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 or medically trained researcher, 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 transcripts, and scores on the Medical College Admission Test (MCAT), Dental Admission Test (DAT), or Graduate Record Examination (GRE), 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, dental, or veterinary 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.

## 2010 Meeting of Medical Fellows

All current medical fellows will gather at HHMI headquarters in Chevy Chase, Maryland, in May 2010 for the Meeting of Medical Fellows and Research Scholars. The occasion will provide fellows with an opportunity to share their scientific accomplishments with their peers and to hear scientific talks by a leading physician-scientist and HHMI Early Career awardees.

*All fellows are expected to participate in the meeting and to present either a 10-minute talk or a poster 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/](http://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](http://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
- Application
  - Contact Information*
  - Dean's Contact Information*
  - References' Contact Information*
  - Mentor's Contact Information*
  - Confidential Information*
  - HHMI Affiliations*
  - Education*
  - Demographic information (optional)*
  - Research Experience*
  - Professional Activities*
  - Honors and Awards*
  - Publications (if any)*
  - Personal Statement* (should not exceed 4,000 characters, or approximately one single-spaced page)
  - Project Title* (should not exceed 255 characters, including spaces and punctuation)
  - Research Plan Summary* (should not exceed 1,600 characters including spaces and punctuation, or approximately one-third of a single-spaced page)
  - Research Project Plan* (should not exceed five single-spaced pages)
  - Research Project Plan Citations* (should not exceed two single-spaced pages)

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.*

**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, medical, dental, or veterinary student, in research-participation programs, and ability to make sound judgments. In addition, the dean may describe perti-

ment 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, 2009**, to be considered in the fellowship competition.

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

HHMI will notify applicants by e-mail and letter via U.S. mail of the outcome of their applications in March 2009.

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

Research Training Fellowships  
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# 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, 2009**, 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 you to send HHMI your MCAT scores and transcripts if you have this information on file with the AAMC. HHMI will obtain the scores and transcripts directly from AAMC. If you do not have this information on file with the AAMC, you must request transcripts from your undergraduate institution(s), and you will need to request that your DAT or GRE 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, dental, or veterinary students. Please note that your mentor does not have to be an HHMI investigator.
- Talk with several possible mentors. Confirm that the mentors under consideration have recent publications and sustained external grant support.
- Talk with other medical, dental, or veterinary 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.
- It is in your best interest to submit a statement that is distinct from the one you submitted for your medical, dental, or veterinary school application.

### REFERENCE LETTERS

### PERSONAL STATEMENT

- 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).
- 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 completed one year or more of full-time research, explain how an additional full-time research experience at this time would strongly enhance your future research career, how you would 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).

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