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Off to the Lab: Medical, Dental, and Veterinary Students Given a Chance to Make Their Own Discoveries

Even as the academic year winds down, 112 medical, dental, and veterinary students are preparing to meet a new challenge: A year in a laboratory that will hone their scientific skills and prepare them for possible careers in research.

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- Peter J. Bruns

The students, drawn from 44 different institutions around the nation, will work in laboratories at either the National Institutes of Health or a research university they select as part of a \$4 million initiative supported by the Howard Hughes Medical Institute.

"These students may one day help translate scientific discoveries into important new treatments and diagnostic tools," says HHMI President Robert Tjian. "We hope this opportunity to work in a lab will encourage them to choose a career in research."

Over the last 25 years, more than 2,000 medical, dental, or veterinary students have participated in either the HHMI-NIH Research Scholars Program or the HHMI Research Training Fellowships Program. "These programs give the students a chance to immerse themselves in research," says Peter J. Bruns, HHMI's vice president for grants and special programs. "For

many, this will be a pivotal experience that helps them decide whether to pursue a career in research.”

The HHMI-NIH Research Scholars Program and the HHMI Research Training Fellowships Program reflect the Institute’s long-standing commitment to medical education and the specific goal of expanding the cadre of physicians and other professionals who combine clinical activities with laboratory research. Beyond these two initiatives, HHMI provides grants to jump-start the careers of physician-scientist alumni of the programs and supports medical training for basic science graduate students through the Med Into Grad Program.

Researchers who bridge the gap between clinical medicine and basic science are in a unique position to exploit the expanding knowledge of the human genome and other recent advances to make discoveries that will improve human health. The range of possible research areas is immense. Emerging areas include technologies for biomedical imaging; identification and use of markers of disease progression, and discovery of new molecular targets for possible therapeutic agents. Yet the number of individuals who actually pursue careers that combine laboratory research and clinical care has remained flat, despite the unprecedented opportunity for translating basic science discoveries into clinical treatments.

“Students who apply to the scholars and fellows programs recognize the increasing importance of science—and research—for the practicing physician, dentist, or veterinarian,” says William Galey, director of HHMI’s graduate and medical education program.

The programs are open to medical, dental, and veterinary students enrolled in U.S. schools. This year, 359 students applied, most of whom had completed two years in their program. Galey says that working in a lab full time will give the students a chance to experience what biomedical research is like and decide whether they want to pursue a career as a physician-scientist. And many do: Nearly 45 percent of alumni are still doing research 15 years or more after participating in the HHMI scholars or fellows programs.

“The number of alumni who choose to pursue a Ph.D. after participating in the programs is increasing,” Galey says. “A lot of the students probably didn’t have any idea they were going to do research before this experience, and a year in the lab really does build their excitement, but even those who don’t choose to pursue research will be better prepared for 21st century medicine after working in the lab.”

HHMI-NIH Research Scholars Program

The HHMI-NIH Research Scholars Program was established in 1985 to encourage medical students to pursue research by allowing them to take a year off from their medical studies, and the program has since been expanded to include dental and veterinary students. It has brought more than 900 students to work in NIH labs.

Students selected as research scholars often enter the program with only a general idea of what type of research they would like to do. During their first few weeks, they are encouraged to visit several of the more than 1,100 laboratories at NIH before choosing which project to pursue under the guidance of an NIH mentor. The students are sometimes called “cloister scholars” because they live in apartments or dorm-style rooms in a refurbished cloister on the NIH campus in Bethesda.

This year, 42 students from 24 medical schools, two dental schools, and one veterinary school were chosen as research scholars.

HHMI Research Training Fellowships Program The HHMI Research Training Fellowships Program allows medical, dental, and veterinary students to pursue biomedical research at a laboratory anywhere in the United States except the NIH campus in Bethesda. Each student submits a research plan to work in a specific lab with a mentor they have identified. Since 1989, more than 1,100 students have participated.

This year, 70 students from 26 medical schools and one dental school were chosen as research training fellows. While most students elect to stay at their home institution to do their research, this year 10 fellows will work in labs at a different school. Their research topics encompass tuberculosis, breast cancer, and stem cells, among other topics.

For the first time, HHMI has joined in a partnership with the Ben and Catherine Ivy Foundation (www.ivyfoundation.org) to support four HHMI-Ivy research training fellows who are doing research on glioma, a deadly and incurable brain cancer. The Ivy Foundation is focused on developing better diagnostics and treatments for patients with gliomas. “We are partnering where we have overlapping interests: training the next generation of physician scientists,” Bruns says.

Rob Tufel, executive director of the Ivy Foundation, agrees. “This partnership will help train tomorrow’s clinicians and scientists to meet one of the greatest challenges facing researchers today: improving the survival and quality of life for patients with brain tumors.”

HHMI is one of the world's largest philanthropies, with laboratories across the United States and grants programs throughout the world. The Institute is a nonprofit medical research organization that employs hundreds of leading biomedical scientists working at the forefront of their fields. In addition, through its grants program and other activities, HHMI is helping to enhance science education at all levels and maintain the vigor of biomedical science worldwide. Its headquarters are located in Chevy Chase, Maryland, just outside Washington, D.C.