



## The Nation's Medical Research Team: America's Medical Schools, Teaching Hospitals, and The National Institutes of Health

### **The National Institutes of Health: An Unrivaled Network of Researchers**

The NIH is the primary federal agency conducting and funding medical research to improve the public's health. With an annual budget of \$29 billion (FY07), the NIH budget supports:

- **Intramural Research** -- About 10 percent of the NIH budget funds research by nearly 6,000 scientists in its own laboratories, most of which are on the NIH campus in Bethesda, Md.
- **Extramural Research** -- Approximately 85 percent of the NIH's budget supports a total of nearly 50,000 competitive grants (including research project grants, research centers, and other types of grants) to more than 325,000 researchers at over 3,000 medical schools, teaching hospitals, universities, and other research institutions. Physicians and scientists at the nation's medical schools and teaching hospitals conduct more than half of the NIH's extramural research.
- The remaining NIH funds, about 5 percent, go to research management and support, cancer prevention and control, the National Library of Medicine, extramural construction, buildings and facilities, and the Office of the Director.

The nation's medical schools and major teaching hospitals are the research engines of the U.S. health system. As major centers of medical discovery, they are awarded more than half of all NIH grants to scientists across the country through its extramural research program.

For more than 60 years, the teamwork between the NIH and academic medicine has pioneered many of medicine's most remarkable advances, including life-saving vaccines; new and better treatments for diabetes, cancer, and heart disease; and advanced technology to improve quality of life, from artificial hips to minimally invasive techniques. Recent examples of this extraordinary collaboration include the identification of the gene for basal cell carcinoma – a form of skin cancer that affects about 750,000 Americans each year, the development of the first FDA-approved cardiac stent, and the discovery of the hormone resistin, which promotes type 2 diabetes and is resistant to insulin.

### **Better Health Care Through Teamwork**

With an annual budget of \$29 billion (FY07), the NIH is the primary source of federal funding for medical research. In 2006, the NIH invested over \$13 billion in research at U.S. medical schools and teaching hospitals, supporting the work of distinguished physicians and scientists. These researchers apply for NIH funding through a highly competitive peer-review process that identifies and funds only the most promising and highest-quality research. Today, the NIH receives more than 40,000 research project grant applications a year, with about one in five receiving support through its extramural research program.

Medical school and teaching hospital faculty who receive NIH grants can be divided into two groups:

- **Basic science**—typically Ph.D. and M.D. researchers who pursue laboratory research, teach medical students the basic sciences, and train graduate students.
- **Clinical science**—most often M.D. physician-scientists who conduct research with patients and healthy volunteers and who teach and train medical students and residents.

The advances pioneered in medical school laboratories are further developed and tested through clinical research programs. Some are funded by NIH grants at the nation's major teaching hospitals (hospitals affiliated with one of America's medical schools), while others are funded by pharmaceutical companies, medical device manufacturers, and other industries. Medical schools and teaching hospitals also frequently serve as sites for clinical trials to advance treatments for cancer, cardiovascular diseases, diabetes, and neurological and orthopedic disorders. Often, successful results from these research endeavors are further developed by private companies into commercial products, such as new drugs and diagnostic tests.

Patients are the ultimate beneficiaries of the collaboration between the NIH and the nation's medical schools and teaching hospitals. Because of their teamwork, the public has access to advances in medical research and the very best health care.

The nation's 125 medical schools and nearly 400 major teaching hospitals are the foundation of the nation's health care system. Together, they pursue their multiple missions to educate tomorrow's doctors and scientists, find tomorrow's cures and provide the most advanced patient care available today.

### **Training Tomorrow's Scientists**

Medical schools and teaching hospitals across the country also work with the NIH to prepare the next generation of biomedical researchers, individuals working to earn doctorates in scientific disciplines. Graduate programs at U.S. medical schools train more than half of all biomedical science Ph.D.'s. In 2005, approximately 32,000 students were enrolled in biomedical science graduate programs at the master's and doctoral level, with 6,368 Ph.D. degrees awarded in these disciplines.

Dual M.D./Ph.D. programs are an important example of the collaboration between the nation's medical schools and the NIH to train the nation's scientists. The start of this effort can be traced to 1964 when the NIH launched the Medical Scientist Training Program (MTSP) with funding to three medical schools. During the last decade, the budget for NIH research training increased, along with the number of training positions. Today, the NIH funds 933 training positions in 40 programs involving 45 degree-granting institutions.

### **Improving Health, Saving Lives**

The collaboration between the NIH and the nation's medical schools and teaching hospitals has been enormously successful and remains essential to fulfilling the promise of medical research. It has been the driving force behind many of the medical breakthroughs achieved over the past 60 years. Because of this critically important teamwork, our nation stays at the forefront of progress in medical research that improves the public's health and provides hope to the millions of Americans who suffer from disease and disability.

To learn more about how medical schools, teaching hospitals, and the NIH are working together to fulfill the promise of medical research, go to [www.aamc.org/ftp](http://www.aamc.org/ftp).