About the National Institutes of Health

Begun as the one-room Laboratory of Hygiene in 1887, the National Institutes of Health (NIH) today is one of the world’s foremost biomedical and behavioral research centers and the federal focal point for health research in the United States.

Mission and Goals

The NIH mission is science in pursuit of fundamental knowledge about the nature and behavior of living systems and the application of that knowledge to extend healthy life and reduce the burdens of illness and disability. The goals of the agency are to

- foster fundamental creative discoveries and innovative research strategies and their applications as a basis for advancing significantly the nation’s capacity to protect and improve health;
- develop, maintain, and renew scientific resources—both human and physical—that will ensure the nation’s ability to prevent disease;
- expand the knowledge base in medical and associated sciences in order to enhance the nation’s economic well-being and ensure a continued high return on the public investment in research; and
- exemplify and promote the highest level of scientific integrity, public accountability, and social responsibility in the conduct of science.

NIH works toward meeting those goals by providing leadership, direction, and grant support to programs designed to improve the health of the nation through research into the

- causes, diagnosis, prevention, and cure of human diseases;

About the National Institute on Drug Abuse

The National Institute on Drug Abuse (NIDA), one of the research institutes that comprise the National Institutes of Health, was established in 1974 as the Federal focal point for research, treatment, prevention and training services, and data collection on the nature and extent of drug abuse. NIDA’s mission is to lead the nation in bringing the power of science to bear on drug abuse and addiction. This charge has two critical components. First, NIDA supports and conducts research across a broad range of disciplines to explore the biomedical and behavioral foundations of drug abuse. Second, NIDA ensures that the results of research are rapidly and effectively disseminated so that the scientific findings can be used to improve drug abuse and addiction prevention, treatment, and policy.

NIDA is the world’s leading supporter of research on the health aspects of drug abuse and addiction. NIDA-supported science addresses the most fundamental and essential questions about drug abuse, ranging from the molecule to managed care, and from DNA to community outreach research. When NIDA was founded, many people incorrectly viewed drug abuse as a problem of people with character flaws and weak wills. Today, thanks to the research accomplishments of hundreds of scientists, those simplistic ideologies are being replaced by a better understanding of the complex biological, behavioral, social, and public health aspects of drug abuse. Scientists have shown that while initial experimentation with drugs may be voluntary, continuing drug abuse changes the brain in fundamental and long-lasting ways. These brain changes trigger the compulsive drug-seeking and drug-taking behaviors that are the hallmarks of drug addiction. NIDA’s scientists have clearly shown that drug abuse is a preventable behavior and drug addiction is a treatable brain disease. Among the many and diverse accomplishments over the past three
• processes of human growth and development;
• biological effects of environmental contaminants;
• understanding of mental, addictive, and physical disorders; and
• collection, dissemination, and exchange of information in medicine and health, including the development and support of medical libraries and the training of medical librarians and other health information specialists.

Organization

Composed of 27 separate institutes and centers, NIH is one of eight health agencies of the Public Health Service within the U.S. Department of Health and Human Services. NIH encompasses 75 buildings on more than 300 acres in Bethesda, Md., as well as facilities at several other sites in the United States. The NIH budget has grown from about $300 in 1887 to more than $30 billion in 2009.

Research Programs

One of NIH’s principal concerns is to invest wisely the tax dollars entrusted to it for the support and conduct of this research. Approximately 82 percent of the investment is made through grants and contracts supporting research and training in more than 2,000 research institutions throughout the United States and abroad. In fact, NIH grantees are located in every state in the country. These grants and contracts make up the NIH Extramural Research Program.

Approximately 10 percent of the budget goes to NIH’s Intramural Research Programs, the more than 2,000 projects conducted mainly in its own laboratories. These projects are central to the NIH scientific effort. First-rate intramural scientists collaborate with one another regardless of institute affiliation or scientific decades, NIDA-supported research has
• identified the molecular sites in the brain where every major drug of abuse—opioids, cocaine, PCP, and THC (the active ingredient in marijuana)—has its initial effect. These discoveries, together with computer-aided drug design, are paving the way to development of novel medications to break the cycle of addiction.
• produced a neurobehavioral model to explain drug-taking behavior to improve treatment and rehabilitation methods.
• supported the development of three medications, LAAM, buprenorphine, and naltrexone, through the approval process by the FDA for the treatment of opiate addiction.
• supported the development and evaluation of pharmacologic treatment for newborns withdrawing from exposure to narcotics.
• defined nicotine addiction and the scientific basis for therapy using nicotine gum and skin patches.
• pioneered innovative community-based research on AIDS prevention efforts that showed that drug users will change AIDS risk behaviors, which can reduce their susceptibility to HIV infection and AIDS.
• demonstrated that participation in methadone treatment significantly reduces HIV seroconversion rates and decreases high-risk behaviors.
• demonstrated that successful drug abuse treatment reduces criminality as well as relapse to addiction.
• demonstrated the value of treating the depression and other mental disorders of people who abuse drugs to improve the
discipline and have the intellectual freedom to pursue their research leads in NIH’s own laboratories. These explorations range from basic biology to behavioral research, to studies of treatments for major diseases.

**Grant-Making Process**

The grant-making process begins with an idea that an individual scientist describes in a written application for a research grant. The project might be small, or it might involve millions of dollars. The project might become useful immediately as a diagnostic test or new treatment, or it might involve studies of basic biological or behavioral processes whose clinical value may not be apparent for many years.

Each research grant application undergoes peer review. A panel of scientific experts, primarily from outside the government, who are active and productive researchers in the health sciences first evaluates the scientific merit of the application. Then, a national advisory council or board, composed of eminent scientists as well as members of the public who are interested in health issues or the biomedical or behavioral sciences, determines the project’s overall merit and priority in advancing the research agenda of the particular NIH funding institutes and centers.

About 38,500 research and training applications are reviewed annually throughout the NIH peer-review system. At any given time, NIH supports 35,000 grants in universities, medical schools, and other research and research training institutions, both nationally and internationally.

**The Nobelists**

The roster of people who conducted NIH research or who have received NIH support over the years includes some of the world’s most illustrious scientists and physicians. Among them are 115 winners of Nobel Prizes for achievements as diverse as deciphering the genetic code and identifying the causes of hepatitis. You can learn more about Nobelists

- measured the positive impact of comprehensive research-based community drug prevention strategies that involve the media, schools, families, neighborhoods, and the workplace.
- demonstrated that science education about drug abuse and the brain improves student achievement in science.
- used advanced imaging techniques to identify in awake humans the specific brain circuits that are involved in craving, euphoria, and other sequela of drug addiction. These exciting studies are providing the foundation for the development of new, targeted medications to block individual aspects of drugs.
- used molecular genetic technologies to clone the genes for the major receptors for virtually every abusable drug, thus providing scientists with the tools necessary to study in fine detail how drugs of abuse exert their many behavioral effects.
- produced genetically engineered animals in which a particular drug receptor had been eliminated, or “knocked out.” These animals are providing unprecedented insight into how drugs exert their many effects in the brain and produce addiction.
- demonstrated that prenatal exposure to cigarettes has long-term effects on cognitive performance.
- successfully immunized rats against the psychostimulant effects of cocaine, thus opening up the possibility of developing a vaccination against cocaine addiction.

The results of these and other achievements through NIDA-funded research offer this country’s best hope for solving the medical, social, and public health problems of drug abuse and...
who have received NIH support at http://www.nih.gov/about/almanac/nobel/index.htm.

Impact on the Nation’s Health

Through its research, NIH has played a major role in making possible many achievements over the past few decades, including these:

- Mortality from heart disease, the number one killer in the United States, dropped by 36 percent between 1977 and 1999.
- Improved treatments and detection methods increased the relative five-year survival rate for people with cancer to 60 percent.
- With effective medications and psychotherapy, the 19 million Americans who suffer from depression can now look forward to a better, more productive future.
- Vaccines protect against infectious diseases that once killed and disabled millions of children and adults.
- In 1990, NIH researchers performed the first trial of gene therapy in humans. Scientists are increasingly able to locate, identify, and describe the functions of many of the genes in the human genome. The ultimate goal is to develop screening tools and gene therapies for the general population for cancer and many other diseases.

Science Education

Science education by NIH and its institutes and centers contributes to ensuring the continued supply of well-trained basic research and clinical investigators, as well as the myriad professionals in the many allied disciplines who support the research enterprise. These efforts also help educate people about scientific results so that they can make informed decisions about addiction.

The need for greater knowledge of drug abuse continues to grow. Ever-changing drug use patterns, the continuing transmission of HIV infection among people who abuse drugs, and the need to develop new and effective treatment and prevention methods underscore the importance of research in finding new and better ways to alleviate the pain and devastation of addiction. NIDA’s goals for the future include

- to design and develop new medications for marijuana and stimulant (such as cocaine and methamphetamine) addiction by building on the recent molecular discoveries that have uncovered the basis for addiction in the brain.
- to develop techniques to detect subtle effects of drug exposure in children of drug-using parents so that early preventive or clinical interventions can be instituted.
- to broaden research on women and addiction to determine the biological and behavioral differences that need to be addressed in effective drug abuse prevention and treatment.
- to reduce the spread of HIV infection through improved drug abuse interventions and better understanding of the interactions of drugs of abuse and the body’s immune system.
- to apply state-of-the-art neuroimaging techniques to the problems of drug abuse prevention and treatment.
- to design, develop, and test new behavioral therapies and promote their use for appropriate patient populations.
- to study the treatment of special clinical problems presented by people who abuse drugs and have HIV, tuberculosis, hepatitis, and other infections.
their own—and the public’s—health.

This curriculum supplement is one such science education effort, a collaboration among four partners: the NIH National Institute on Drug Abuse, the NIH Office of Science Education (OSE), Biological Sciences Curriculum Study, and Videodiscovery, Inc.

OSE learning tools support teachers in training the next generation of scientists and scientifically literate citizens. These materials cover information not available in standard textbooks and allow students to explore biological concepts by using real world examples. In addition to the curriculum supplements, OSE provides a host of valuable resources accessible through the OSE Web site (http://science.education.nih.gov/home2.nsf/feature/index.htm).

We welcome your comments about existing resources and suggestions about how we may best meet your needs. Feel free to write us at https://science.education.nih.gov/mfeedback.nsf/feedback?OpenForm.

For more about NIH, visit its Web site at http://www.nih.gov.

- to understand the organization and financing of drug abuse treatment and its benefits to the larger healthcare system.
- to identify the protective and resiliency factors that prevent drug use in those individuals with multiple risk factors so more effective prevention techniques can be developed.
- to strengthen the research infrastructure, by providing additional opportunities for research training and career development for clinical researchers and improved mechanisms for training and mentoring minority researchers.
- to expand the use of scientific information to educate the public about the real nature of drug abuse and addiction and the hope and promise for more effective prevention and treatment.
- to broaden the dissemination of research findings and improve drug abuse prevention and treatment practice and policy.
- to counter the growing abuse of prescription medications, including opioid analgesics (such as painkillers), stimulants (such as ADHD medications), and CNS depressants (such as sleep and anxiety medications).