Fulfilling the Promise

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Tomorrow's Doctors, Tomorrow's Cures®

The Disease of Addiction

Nearly 4 million Americans a year receive treatment for substance abuse and addiction. Almost 20 million more need treatment but do not receive it.

U.S. medical schools and teaching hospitals, together with the National Institutes of Health (NIH), are working to better understand the disease of addiction and develop more targeted strategies for its prevention and treatment.

The following examples of recent NIH-funded research advances achieved at the nation's medical schools and teaching hospitals hold promise for individuals struggling with addiction:

2006

Researchers discovered a key receptor for a brain chemical involved in addiction, obesity, and other neurological processes, the first study to find evidence for specific cocaine- and amphetamine-regulated transcript peptide receptor binding.
Emory University School of Medicine

Research in animals showed that vaccines against cocaine and methamphetamine are possible and effective. A vaccine to block the effects of these drugs in the brain may be a method of alleviating addiction.
Baylor College of Medicine
Michael E. DeBakey Veterans Affairs Medical Center
Ben Taub General Hospital

Repeat offenders of Driving Under the Influence (DUI) violations are much more likely to qualify for the classification of "drug dependence disorder" if their first DUI was before the age of 21. These offenders are also more likely to have adolescent onset of substance use disorders, reinforcing the importance of early intervention in adolescent drinking and substance use.
Harvard Medical School
Cambridge Health Alliance

Nicotine exposure at a young age may alter the brain's "hard-wiring" that occurs during adolescence and young adulthood. Researchers found that nicotine induces molecular and metabolic changes in the brain that result in nerve cell membrane breakdown, especially in men. This finding establishes a biological basis for previous observations that individuals who smoke early in life are more susceptible to addiction and to becoming life-long smokers than those who begin smoking later in life.
University of Pittsburgh School of Medicine

A population-based study on twins found that genetic factors may play an important role in a person's use/misuse of or dependence on illicit drugs like marijuana, opiates, and cocaine.
Virginia Commonwealth University School of Medicine

In a study on monkeys, researchers discovered that RTI-336, a compound that mimics the effects of cocaine by inhibiting dopamine transporters, eliminates the need for self-administration of cocaine. This compound holds promise for effectively treating cocaine addiction. This finding will be tested in humans, beginning at two sites in 2007, as part of the National Institute on Drug Abuse's large-scale effort to move cocaine addiction treatments to human clinical trials as quickly as possible.
Emory University School of Medicine

Pathological gamblers respond to treatment with a drug that negates the rush addicted gamblers feel and curbs their craving. Pathological gambling is a psychiatric condition in which gambling and the need to gamble cripples a person's ability to function.
University of Minnesota Medical School

In the first clinical study to explain why more men than women abuse amphetamines, researchers found that amphetamines have a greater effect on men's brains than women's brains. Men's brains show evidence of up to three times the amount of the chemical activator dopamine as in women's brains when exposed to amphetamines.
Johns Hopkins University School of Medicine

2005

Researchers found that the anticonvulsant drug valproate reduces drinking (both frequency and quantity) in bipolar patients when combined with a patient's regular treatment program. Bipolar disorder with alcoholism is a common but difficult combination to treat.
University of Pittsburgh School of Medicine

Women with a serious caffeine habit and a family history of alcohol abuse are more likely to ignore advice to stop using caffeine during pregnancy. This research validates caffeine dependence as a clinically significant phenomenon, particularly for pregnant women. It suggests genetic vulnerability reflected in a family history of alcoholism may be at the root of one's inability to stop caffeine use.
Johns Hopkins University School of Medicine

2004

People with mutation of the gene Epac are more likely to start smoking and become addicted to nicotine than people without the gene. A study of twins linked variants in the gene with an individual's tendency to become nicotine dependent.
Virginia Commonwealth University School of Medicine
Wayne State University School of Medicine

Researchers discovered a protein called Arc that may be a culprit in drug addiction. The protein contributes to long-term memory-based behaviors and helps the brain remember things for longer than an hour or two.
Johns Hopkins University School of Medicine

Researchers discovered Mpdz, a gene that makes individuals susceptible to alcohol and barbiturate dependence.
Oregon Health & Science University
Oregon Veterans Administration Medical Center

Some people may be born to smoke. For people with aggressive personalities, nicotine triggers significant brain activity in the areas that help control social response, thinking, and planning. Non-hostile people showed no brain activity increases at all to nicotine.
University of California, Irvine, College of Medicine

Researchers using structural magnetic resonance imaging and computational brain mapping revealed structural abnormalities in the brains of chronic methamphetamine users.
David Geffen School of Medicine at UCLA

Drug addiction affects men and women differently. Women develop more medical and employment problems and major depression, but fewer personality disorders than men.
Johns Hopkins University School of Medicine

2003

Researchers discovered a genetic variant, involving the endogenous opioid system that results in increased euphoria from alcohol. This endophenotype of alcoholism shows improved response to naltrexone treatment. This finding has the potential to be the first example of genomic medicine in psychiatry.
University of Pennsylvania School of Medicine
Philadelphia Veterans Affairs Medical Center

For more information about how medical schools and teaching hospitals are fulfilling the promise of medical research, go to: www.aamc.org/ftp