

# FEDERALLY FUNDED RESEARCH ADVANCES HEALTH

# LIFE-SAVING MEDICAL ADVANCES

The National Institutes of Health (NIH) is the largest supporter of biomedical research in the world. Thanks in part to NIH funding, life expectancy in the United States has increased by about 30 years. NIH continues to fund research that lays the groundwork for development of drugs and treatments that improve health and save lives.

## ■ Trastuzumab (Herceptin)

NIH-funded research at the University of Pennsylvania School of Medicine led to development of Herceptin, which is effective in treating 20-30 percent of breast cancer cases and cuts the risk of recurrence by 40 percent for women whose tumors are genetically matched to this drug.

## ■ Fluoxetine (Prozac)

NIH-funded research led to discoveries indicating the biological roots of depression. This allowed the development of a new class of drugs, such as Prozac, that did not cause the unwanted side effects associated with earlier antidepressants.

## ■ Insulin

Researchers learned from an NIH-funded study that rapid-acting, bioengineered human insulin could control blood sugar in Type 1 diabetics more effectively than the previously used animal-derived insulin. Further NIH-funded studies have shown that Type 2 diabetes can be delayed or prevented by lifestyle changes.

## ■ Donepezil (Aricept)

NIH-funded research has advanced our knowledge of the mechanisms and risk factors associated with Alzheimer's disease. This has expanded approaches for developing new treatments. One drug based on NIH-funded research is Donepezil, which treats the symptoms of Alzheimer's.



## ■ (Tissue Plasminogen Activator)

NIH-funded research is largely responsible for the 70-percent drop since 1950 in the U.S. age-adjusted stroke mortality rate, and for more than six million people in the U.S. surviving a stroke. For example, in addition to studying risk factor management, NIH-funded researchers discovered tPA, the first and only FDA-approved treatment for acute ischemic stroke, in which blood supply to the brain is decreased. tPA reduces the risk of disability and maximizes the potential for patient recovery.

## ■ Buprenorphine (Buprenex)

NIH-funded research has revealed how drugs of abuse, such as heroin or morphine, act in the brain. This has allowed scientists to develop effective strategies for preventing addiction, as well as drugs to treat dependence on opioids such as oxycodone. Buprenorphine enables heroin- and other opiate-addicted individuals to discontinue the misuse of opioids without experiencing withdrawal symptoms.

## ■ AZT (Retrovir)

In 1996, NIH-funded researchers discovered a class of drugs that, when used in combination with other AIDS drugs, could extend the lives of those with HIV. Collaboration between Burroughs Wellcome and NIH's National Cancer Institute led to the screening of AZT, a new drug therapy for AIDS. NIH researchers continue to research new drug "cocktails" to keep patients' infections under control and extend infected people's lives. Today NIH-funded researchers are working to develop an AIDS vaccine.

## ■ Statins (e.g. Lipitor), Aspirin, Beta-Blockers

The NIH-funded Framingham Heart Study in the late 1940s led to development of the concept of risk factors for heart disease and to the discovery of specific risk factors. Since then, the death rate for heart disease has dropped by more than 60 percent, as the understanding of risk factors has produced more effective treatments and techniques for opening blocked arteries and preventing heart attacks. An estimated 44 percent of the reduction in heart disease deaths from 1980 to 2000 was a result of prevention through the reduction of risk factors.

## ■ Flu Vaccinations (FluMist)

Influenza is a major threat to public health. NIH-supported researchers have developed several new diagnostic technologies that rapidly detect influenza antibodies in human samples. NIH-supported research is also largely responsible for flu vaccinations such as FluMist, a nasal spray flu vaccine that is an alternative to flu shots. NIH-funded researchers are working on a universal flu vaccine that could eliminate the need for annual flu shots.

