Americans for Medical Progress is a nonprofit organization that promotes public understanding of and support for the humane use of animals in medicine.

Animal-based research has led to important advances in the prevention and treatment of many diseases, including cancer, HIV/AIDS, heart disease, and diabetes. Millions of lives have been saved due to these advances, and further innovations in the coming generations will do even more to improve the quality of life for all.

Despite claims by animal rights activists, it is undeniable that animal-based research has contributed to significant improvement in the length and quality of our lives. Following are just a few specific cases in which the use of laboratory animals has been a vital component of medical progress.

Indeed, wherever one might stand on the issue, we all benefit from the use of laboratory animals in biomedical research!

Innovations in Cancer Treatments

New cancer drugs account for 50-60 percent of the gains we have made in cancer survival rates since 1975. Overall, these medicines have contributed a remarkable 10.7% of the increase in life expectancy at birth in the United States. Until recently, surgery, radiation therapy and chemotherapy were the dominant treatments for cancer. But now, thanks in large part to animal-based research, there is a new molecular and genetic understanding of tumor biology, leading to treatments that set out to more directly kill cancer cells, which are molecularly different from normal cells. Use of this knowledge to design drugs that focus on those abnormalities is called rational drug design, and is seen by many as the currently emerging future reality of cancer treatment—of "kinder and gentler" cancer therapies that only target abnormal cells.

- Breast Cancer—According to the Carol M. Baldwin Breast Cancer Research Fund, “This year, approximately 182,800 women in the United States will be diagnosed with invasive breast cancer, and approximately 40,800 women will die from breast cancer.” Her son, actor Alec Baldwin, who serves on the advisory board of the Fund and received PETA's Humanitarian Award in 2005, has broken with PETA over the value of animal research in developing treatments for breast cancer. In March 1998, he told USA Today, “One cannot be 'single issue' when it comes to medical research.” He's right. Animal research was essential for the development of Herceptin and Tamoxifen, two medicines that have saved the lives of thousands of women and men with breast cancer.

- Childhood Leukemia—Once a virtual death sentence, acute lymphoblastic leukemia (ALL) is the most common of childhood cancers. When St. Jude Children’s Research Hospital, founded by actor Danny Thomas, opened in Memphis in 1962, the survival rate was four percent. St. Jude’s revolutionized leukemia therapy and today 80 percent of the children survive. Now, scientists are working to develop even more effective and less-toxic drugs through genetic identification of the major subtypes of childhood ALL.

- Chronic Myeloid Leukemia—A discovery that a combined protein caused leukemia in mice led to the development of Gleevec, the first molecularly targeted drug against cancer. It was approved by the FDA in May 2001 for treatment of CML, which affects 5,000-8,000 people a year. It is also used to treat a rare, previously incurable form of stomach cancer known as gastrointestinal stromal tumor (GIST).
• Lung Cancer—Lung cancer is the leading cause of cancer death for both men and women in the United States, killing more people than breast, prostate, colon and pancreas cancers combined. A 2001 report from the National Cancer Institute stressed the dire need for research relying on mouse models of lung cancer and focusing on understanding, preventing, and detecting lung cancer and developing novel targeted therapies for treating the disease.

**Advancements in HIV/AIDS Therapies**

A cure has not yet been found for HIV/AIDS, but with new therapies HIV has become a chronic disease, and infected persons are living normal lives for many years. Research, including work with animal models, continues to develop new medicines with fewer side effects, as well as to create vaccine candidates that may one day make HIV infection preventable.

• Combination drug therapy—Thanks to the approval in 1995 of protease inhibitors—and further advancements in new medicines and combination therapies in the decade since—the AIDS death rate in the United States has fallen by 70 percent.

• Pediatric AIDS—There are more than 9,000 cases of AIDS in children (diagnosed before age 13) in the United States. There are many more children living with HIV. According to the Elizabeth Glaser Pediatric AIDS Foundation, about 2.1 million children are living with HIV worldwide, and there are 1,350 AIDS deaths in children every day. Effective anti-viral therapy given to the mother during pregnancy and labor and to the child can reduce transmission to five to eight percent or even less. Scientists are continuing their work with animals to gain a better understanding of mother-to-infant HIV transmission.

**Major Progress in Heart Disease and Stroke Treatment and Prevention**

The progress made in reducing death rates from heart disease and stroke is saving the lives of over one million Americans each year.

• Statins—Millions of people take a statin pill once a day to control their high cholesterol and reduce their risk of heart disease. Statins were introduced in 1987. Doctors believe that if all patients at risk took statins according to guidelines, heart disease would no longer be the number one killer of Americans.

• “Clot-busting agents”—In 2003, the American Stroke Association recommended the administration of rt-PA immediately following a stroke. Patients thus treated are more likely to have minimal or even no disability following a stroke.

• Nutrition—Much of what doctors know about the role of the foods we eat in preventing heart disease and high cholesterol comes from animal studies.

Scientists have been able to produce and grow a dopamine-producing cell line and test it in mouse models of Parkinson’s disease.

**Further Innovations**

**Diabetes** 18.2 million people—6.3 percent of the U.S. population—have diabetes, which is a leading cause of death and disability. Diabetes also affects animals and has been diagnosed in virtually every breed of dog and cat. Several new treatments and medicines, including development of quick-acting and long-acting insulins, islet transplantation for type 1 diabetes, and new drugs to treat type 2 diabetes are helping patients manage their disease. Research involving animal models continues to improve treatments for chronic complications including blindness, kidney disease, heart disease and stroke.
**Parkinson's Disease** According to the Michael J. Fox Foundation for Parkinson's Research, "In the past few years, Parkinson's research has advanced to the point that halting disease progression and even preventing Parkinson's are considered realistic goals."

- **Stem Cells**—One of the most promising avenues of research is stem cell therapy. Scientists have been able to produce and grow a dopamine-producing cell line and test it in mouse models of Parkinson's disease. Now, a second cell line is being developed for testing in laboratory animals that seeks to advance understanding of the process by which dopaminergic neurons are generated.

- **Neurotrophic Factors**—In animal studies, this family of proteins has revived dormant brain cells, caused them to produce dopamine, and prompted dramatic improvement of symptoms. Human trials are now underway.

**Hepatitis C** Just over 20 years ago, the hepatitis C virus was identified. Since then, the first steps have been taken toward treatments that can apply to and help the majority of patients. Approximately 80 percent of people infected with acute hepatitis C virus develop a chronic infection, which can lead to severe liver problems, such as cirrhosis—permanent scarring of the liver. Cirrhosis is the seventh leading cause of death by disease, and kills approximately 27,000 Americans each year. Patients with cirrhosis are at risk for developing liver cancer and, eventually, liver failure. In fact, about five percent of all people with hepatitis C will eventually need a liver transplant as a result of liver cancer or liver failure. The current standard therapy for hepatitis C, with Interferon and Ribavirin, does not work in every patient and can be fraught with troublesome side effects. Researchers are at work now on a new class of therapies, involving protease and polymerase inhibitors, which may ultimately produce a vaccine and/or a cure for hepatitis C.

Animal studies will continue to play a necessary role in neuroscientists' efforts to understand and treat seizure disorders.

**Birth Defects** Every three and a half minutes, a baby is born with a birth defect in the United States.

- **Folic Acid**—Studies with animals determined that folic acid, a B vitamin, helps prevent serious birth defects of the brain and spinal cord when taken before conception and early in pregnancy. Since this discovery, a public education campaign launched in 1992 has prevented thousands of such birth defects.

- **Surfactant Therapy**—One in eight babies in the United States is born too soon. The lungs in many of these premature children are not fully developed. Surfactant is a detergent-like substance produced in the lungs that aids in breathing. Since surfactant therapy became widespread in the 1980s, infant deaths due to respiratory distress syndrome have dropped by over two-thirds. Research supported by the March of Dimes and others continues to seek new, more effective therapies.

**Bioterrorism Medical Countermeasures** Animal research is a key component of work underway to address the threat that terrorists may one day use a biological agent in the United States. Currently, there are vaccine candidates in various stages of development for anthrax, plague, Ebola virus, hantaviruses, botulinum neurotoxins, and nearly a dozen other agents. Research on treatments focuses on the development of new antimicrobials and antitoxins, as well as the screening of existing antimicrobial agents to determine whether they would be effective against organisms that might be used by terrorists.

**Animal Studies Continue to Play a Significant Role**

**Epilepsy** 2.7 million Americans have an active seizure disorder. Doctors estimate that only about half of
all people battling epilepsy have their seizures under control and are able to live normal lives. People with epilepsy are counting on biomedical research to improve their well-being. People and animals share many basic brain structures and both are subject to epilepsy. Thus, for the foreseeable future, animal studies will continue to play a necessary role in neuroscientists' efforts to understand and treat seizure disorders.

- New Medicines—In the past decade, nine new medicines for treating epilepsy have become available to patients, and eight treatments are in the pipeline to offer better control of seizures, with fewer side effects.
- Improved Surgical Techniques—Advanced neurosurgical procedures, first developed in animals, are able to help some patients to become seizure-free or decrease the number and severity of their seizures. Vagus nerve stimulation has proven to be a crucial tool in controlling the seizures of other patients.

**Spinal Cord Injuries** The Christopher and Dana Reeve Paralysis Foundation notes that amazingly, more research progress has been achieved in the past five years than in the previous fifty. Now that the age-old dogma that the spinal cord could not be repaired has been debunked, scientists feel they are on the threshold of major discoveries that will lead to new treatments. Animal models are used for exploring repair and recovery of the spinal cord. The search for a cure for paralysis could also yield advances in the treatment of other neurological disorders, such as multiple sclerosis, Parkinson's, Alzheimer's, Huntington's and the aftereffects of stroke.

**Cystic Fibrosis** Advances in medical treatment have greatly improved the quality of life and life expectancy of children diagnosed with this inherited disease that affects breathing and digestion. While at one time CF almost invariably killed babies, most of those affected now survive to their mid-30s, though some die in childhood and others live to age 40 or beyond. The abnormal gene that causes CF was discovered in 1989. A number of new drugs that aim to prevent or treat infections in those with CF are currently being tested. However, there is still no cure. Research, including the use of animal models, must continue if a cure is to be found.

### Further Readings

#### Books


**Periodicals and Internet Sources**


- Peter Mansell "Research Funders Call for Closer Attention to Guidelines on Reporting Animal Studies,"


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