Driving Innovation Through Federal Investments
U.S. Senate Committee on Appropriations Hearing
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Testimony from the American Institute for Medical and Biological Engineering (AIMBE)

*The **National Institutes of Health (NIH**) is vital to improving health, strengthening the economy, and investigating scientific frontiers. To continue building on the progress made possible by federal investments in biomedical research, we urge Congress to support a doubling of funding for the nation's leading medical research agency. Many of today's medical discoveries that have prolonged lives and help to lower medical costs were once unimaginable less than a decade ago. Now, recent budget cuts and declining priorities in medical innovation and discovery threaten that progress. Without a renewed commitment to medical research, who knows what medical advances will go undiscovered, how many lives will be needlessly cut short, or how large the costs of health care will balloon without new treatments and technologies.*

First and foremost, NIH has paved the way for important discoveries that improve health and save lives. NIH-funded scientists and their studies have played a key role in increasing life expectancy, reducing deaths from cancers, and decreasing rates of disability in the elderly. They have pioneered the development of the MRI, helped us understand how genes affect our health, and discovered new antibodies that protect against the flu virus. Simply put: NIH-supported research drives discovery that transforms medicine, improves treatments, and ensures a healthier nation.

Medical research, especially in medical and biological engineering fields, has produced remarkable achievements in recent years. Yet, despite these advances, more than one million people will suffer heart attacks, 600,000 people will experience strokes, and more than 500,000 people will die from cancer–this year alone. And millions more suffer from Alzheimer's disease and multiple sclerosis. Medical discovery holds the key to decreasing these startling statistics.

Doubling the NIH budget would both improve health and save lives. But if for no other reason, this would bolster the economy. It has been estimated that every $1 of NIH funding generates about $2.21 in local economic growth. NIH plays a pivotal role in the U.S. medical innovation sector, which employs 1 million U.S. citizens, generates $84 billion in wages and salaries, and exports $90 billion in goods and services. NIH spending in 2011 alone produced $62.13 billion in new economic activity. The economic value of gains in U.S. average life expectancy has been estimated to be roughly $95 trillion from 1970 to 2000. Since 1990, our nation has gained about one year of longevity every six years with the help of NIH-

supported research.

The well-known and NIH-funded Human Genome Project, which would not have been possible without advances in medical and biological engineering, led to new approaches to diagnose rare diseases, the use of genetic information to personalize drug prescribing and dosage, and identification of gene variants that could increase the risk of developing certain diseases such as diabetes and obesity. Although federal support totaled $3.8 billion, between 1988 and 2012, the Human Genome Project generated an estimated $965 billion in economic growth–a 178-fold return on investment after adjusting for inflation. As exemplified by this project, investments in genetics and genomics research have resulted in remarkable health advances and economic benefits.

Promising medical advances and clinical breakthroughs are commonplace for NIH. Biomedical engineers supported by NIH successfully restored leg muscle movement to a man paralyzed due to a spinal cord injury, giving hope to 273,000 people living with spinal cord injuries. They have discovered how to increase kidney transplant successes through specific treatment, pioneered less invasive surgery for cancer patients, and genetically engineered fungus that could kill malaria in mosquitos. NIH-supported scientists utilize cutting-edge science and technology to raise the bar in health care and patient outcomes.

Looking to the future, the BRAIN Initiative holds tremendous in inventing and refining technologies to understand the human brain. Our quest for knowledge about the origins of human behavior and disease has finally reached a place where our questions are commensurate with our technological and computational power. This scientific forage into the brain will produce unknown and remarkable results that will help us solve health care's most pressing problems. Cross-collaboration between NIH, the National Science Foundation (NSF), and the Defense Advanced Research Projects Agency (DARPA), as well as strong academic leaders and private sector partners allows for leveraged expertise and unique insight as the NIH works to advance human health.

While medical innovation is clearly the key to U.S. economic and human prosperity in this century, a crisis of historic proportion looms in our country. Our innovation ecosystem is threatened by reduced federal funding for basic research that fails to outpace inflation, as well as misplaced priorities that take away from our potential to expand medical innovation. If Congress doesn't provide steady increases in funding for science, there will be no breakthroughs of tomorrow and the collateral damage will be seen in every sector of the economy.

Doubling the NIH budget will put our nation back on track to lead the world in medical discoveries and innovation and ensure a healthier nation. Above all, this effort requires leadership, commitment and support. It's time to act. We urge you to join us.

The American Institute of Medical and Biological Engineers (AIMBE), founded in Washington, D.C. in 1991, is the consistent, authoritative voice and advocate for medical and biological engineering's value to society. We are a non-profit organization of the top 2 percent of the most elite medical and biological engineers responsible for medical innovation and discovery.

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