

# Fulfilling the Promise of Biomedical Research

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The signing of our nation's historic health care legislation should be just the beginning of a national discussion on how biomedical research can bend the cost curve of medical care through new therapeutics. Debates leading up to this landmark event were characterized by a paucity of discussion on the potential impact of biomedical research on the health of individuals, our nation, health care costs, and the economy.

There is clear evidence that increases in biomedical research funding by the National Institutes of Health (NIH) have led to reduced mortality rates for chronic diseases including cancer, cardiovascular disease, stroke, AIDS, and diabetes. Today, the average life expectancy at birth in the United States is 78; 80 years ago it was 57. A good part of that increase is related to advances in biomedical science.

Antibiotics, vaccines, cardiovascular drugs, anti-ulcer drugs, anti-inflammatory drugs, and bronchodilators have had major effects on mortality of common diseases. Most recently, anti-retroviral drugs have dramatically reduced deaths resulting from AIDS. Imagine the cost to our health care system if advances in AIDS treatment or cardiovascular disease had not been made. Even more to the point, imagine a health care system without a polio vaccine.

Today, human genetic studies have the potential to transform the way clinical medicine is practiced. Increased knowledge of the molecular pathways underlying disease may reveal novel drug targets, leading to personalized—rather than population-based—approaches to diagnosing, treating, and ultimately preventing human diseases. Robust investments in biomedical research now would bring promising results within the next decade.

We also need a drug-development infrastructure that can handle the acceleration in biomedical research. The pace of approval for new drugs by the U.S. Food and Drug Administration remains unacceptably low. From 1950 to 2008, the agency has approved 1,222 new drugs—with the per annum number remaining flat. Given the promise that biomedical research holds, it is a tragedy that in 2008 only 21 drugs of novel mechanism were approved for use in the United States. This is well below the level required to dramatically enhance human health—and far beneath the scientific community's capacity for drug discovery and development.

In addition to potentially changing the course of human health, the large-scale investments in biomedical research would also stimulate economic growth. A recent study demonstrated that in one year alone, NIH funding for New York State generated nearly 30,000 jobs and over \$4 billion in business

activity. At the national level, more than 1.2 million people are employed in the biosciences, and the Bureau of Labor Statistics projects that employment in biosciences will grow at an annual rate that is 13 percent higher than the overall rate of employment. Additional investments would lead to even greater growth.

If the United States does not increase its investment in biomedical research, the world's center for medical innovation and discovery will shift. In the context of a struggling economy, growing federal deficits, and the challenge of our intractable disease burden, the United States should consider the opportunities that could be generated by a major investment in biomedical research.

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