DEPARTMENT OF HEALTH AND HUMAN SERVICES

NATIONAL INSTITUTES OF HEALTH

Fiscal Year 2012 Budget Request

Witness appearing before the

Senate Subcommittee on Labor – HHS – Education Appropriations

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INTRODUCTION

Good morning, Mr. Chairman and distinguished Members of the Subcommittee. I am Francis S. Collins, M.D., Ph.D. and I am Director of the National Institutes of Health (NIH).

It is a great honor to appear before you today to present the Administration's program level request of $31.987 billion for NIH in FY 2012, and to discuss the contributions that NIH-funded biomedical research has made in improving human health. NIH is the largest supporter of biomedical research in the world, providing funds for more than 40,000 competitive research

grants and more than 325,000 research personnel at more than 3,000 research institutions and small businesses across our nation's 50 states. I also want to offer a vision of how NIH will catalyze innovation in basic and translational sciences, and will ensure future U.S. economic strength and global competitiveness.

On behalf of NIH and the biomedical research enterprise, I want to thank you as Members of the Senate for sparing NIH from deeper cuts in the final FY 2011 Continuing Resolution (CR). We know that, even as Congress and the Administration wrestled with cuts of more than three percent to the Labor-HHS portion of the CR, NIH received a one percent, or $321.7 million, cut from the FY 2010 level, while other programs and functions were cut more deeply.

NIH's mission is to seek fundamental knowledge about the nature and behavior of living systems and to apply that knowledge to enhance human health, lengthen life, and reduce the burdens of illness and disability. I can report to you that NIH continues to believe passionately in that mission and works tirelessly to achieve it.

Due in large measure to NIH research, our nation has gained about one year of longevity every six years since 1990. A child born today can look forward to an average lifespan of nearly 78 years – nearly three decades longer than a baby born in 1900. And not only are people living longer, but their quality of life is improving: in the last 25 years, the proportion of older people with chronic disabilities has dropped by almost one-third.

NIH research has enabled new techniques to prevent heart attacks, newer and more effective drugs for lowering cholesterol and controlling blood pressure, and innovative strategies for dissolving blood clots and preventing strokes. As a result, the U.S. death rate for coronary disease is 60 percent lower and for stroke, more than 70 percent lower than three generations ago. Better treatment of acute heart disease, better medications, and improved lifestyle behaviors – all underpinned by NIH research – account for as much as two-thirds of these reductions.

In recent years, largely as a result of NIH research, we have succeeded in driving down mortality rates for cancer in the United States. This progress comes despite the fact that cancer is largely a disease of aging and our population is growing older. Over the 15-year period from 1992 to 2007, cancer death rates dropped 13.5 percent for women and 21.2 percent for men. According to an American Cancer Society report released in July 2010, the continued drop in overall mortality rates over the last 20 years has saved more than a quarter of a million lives.[1] And in cancers that strike children we have made miraculous progress – the five-year survival rate for children with the most common childhood cancer, acute lymphocytic leukemia, is now 90 percent.[2]

I would also like to offer a shining example of the Senate's strong and consistent support of biomedical research at NIH by noting that we are celebrating a significant anniversary. This year marks the 10th anniversary of the establishment of the Dale and Betty Bumpers Vaccine Research Center (VRC) at NIH. Groundbreaking research performed at the VRC is making great progress toward developing a universal flu vaccine that confers long-term protection against seasonal and pandemic influenza strains.

[1] http://pressroom.cancer.org/index.php?s=43&item=252
[2] http://seer.cancer.gov/csr/1975_2008/browse_csr.php?section=28&page=sect_28_table.08.html

Today, scientists have to make an educated guess about the make-up of the coming winter's influenza viruses. These educated guesses become the basis for the manufacture of each year's flu shot and mean that everyone has to be immunized in anticipation of next year's strain of flu. Recently, NIH scientists have identified pieces of influenza viral proteins that consistently appear among seasonal and pandemic flu strains. These findings raise the possibility that we might soon develop an influenza vaccine that provides universal protection against a broad range of current and future strains of influenza[3], as well as make yearly flu shots a thing of the past. Most of this exciting work was performed at the VRC. Scientists at that same center are making important strides toward the development of the long-hoped-for vaccine against the human immunodeficiency virus (HIV), the cause of acquired immune deficiency syndrome (AIDS). While after so many frustrations, no one would want to predict success just yet, recent discoveries by VRC scientists about how to encourage production of neutralizing antibodies against HIV have provided renewed hope that this pressing problem may ultimately be solved.

NIH AND ECONOMIC GROWTH

Mr. Chairman and Members of the Subcommittee, I recognize that, given our nation's fiscal situation, and the extraordinarily tough decisions that you will have to make about our nation's finances, you need to be assured that NIH remains a worthwhile national investment. Even as you make these decisions and even as our country recovers from financial recession, I want to offer evidence that NIH and its research provide two strong and ongoing benefits to our economy.

First, NIH research spending has an impact on job creation and economic growth. A new economic impact study by United for Medical Research suggests that in FY2010, NIH research funding supported an estimated 487,900 American jobs, including researchers and staff employment.

Second, NIH research funding has a longer term impact in its role as the foundation for the medical innovation sector. Nearly one million U.S. citizens are employed by the industries and companies that make up this sector of the economy, earning $84 billion in wages and salary in 2008, and exporting $90 billion of goods and services in 2010. NIH support for biomedical research institutions catalyzes business activity in other ways as well. Such institutions constitute reservoirs of skilled, knowledgeable individuals and, thereby, attract companies that wish to locate their operations within such "knowledge hubs."

For example, in the 1990s, federal funding through research grants and the Small Business Innovation Research (SBIR) and the Small Business Technology Transfer (STTR) programs transformed the academic research environment and helped to launch new industrial sectors in Silicon Valley and elsewhere that are flourishing today. Federal funding has been crucial in stimulating the formation of start-up companies and collaborations among academia and the private sector in the development of innovative technology. A prime example is the company Affymetrix.

In the late 1980s, a team of scientists led by Stephen P.A. Fodor, Ph.D., developed methods for fabricating DNA microarrays, called GeneChips, using semiconductor

[3] http://www.niaid.nih.gov/news/newsreleases/2010/Pages/UniversalFluVax.aspx

manufacturing techniques melded with advances in combinatorial chemistry to capture vast amount of biological data on a small glass chip. In 1992, the first of several NIH grants was awarded to Affymetrix, with this and an SBIR grant from the Department of Energy, Dr. Fodor

Georgia. In addition, the DPP Lifestyle Intervention is being used by the Indian Health Service in a large demonstration project on many American Indian reservations.

INVESTING IN BASIC SCIENCE

At NIH, we have always put our greatest percentage of our resources into basic research. This is because the fundamental observations made today become the building blocks of tomorrow's knowledge, therapies, and cures. NIH's history has repeatedly demonstrated that

the NEJM article, between 1990 and 2007, 20 percent of the FDA approvals of novel compounds

we can reengineer the drug development pipeline; creating new approaches and methods that will benefit everyone interested in speeding the delivery of new medicines.

Today, the development of new diagnostics and therapeutics is a complex, costly, and risky endeavor. Only a few of the thousands of compounds that enter the drug development pipeline will ultimately make it into the medicine chest or to the patient's bedside. NCATS will

Biographical Sketch of Francis S. Collins, M.D., Ph.D.

Francis S. Collins, M.D., Ph.D. is the Director of the National Institutes of Health (NIH). In that role he oversees the work of the largest supporter of biomedical research in the world, spanning the spectrum from basic to clinical research.

Dr. Collins, a physician-geneticist noted for his landmark discoveries of disease genes and his leadership of the international Human Genome Project, served as director of the National Human Genome Research Institute (NHGRI) at the NIH from 1993-2008. The Human Genome Projectculminated in April 2003 with the completion of a finished sequence of the human DNA instruction book.

Dr. Collins' own research laboratory has discovered a number of important genes, including those responsible for cystic fibrosis, neurofibromatosis, Huntington's disease, a familial endocrine cancer syndrome, and most recently, genes for type 2 diabetes and the gene that causes Hutchinson-Gilford progeria syndrome, a rare cause of premature aging.

Dr. Collins received a B.S. in chemistry from the University of Virginia, a Ph.D. in physical chemistry from Yale University, and an M.D. with honors from the University of North Carolina at Chapel Hill. Prior to coming to the NIH in 1993, he spent nine years on the faculty of the University of Michigan, where he was a Howard Hughes Medical Institute investigator. He is an elected member of the Institute of Medicine and the National Academy of Sciences. Dr. Collins was awarded the Presidential Medal of Freedom in November 2007 and the National Medal of Science in 2009.