

## BIOMEDICAL RESEARCH FUNDING

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### INTRODUCTION

A half century of sustained investment by the United States Federal Government in biomedical research has dramatically advanced the health and improved the lives of the American people. The National Institutes of Health (NIH) specifically has had a significant impact on the United State's global preeminence in research and fostered the development of a biomedical research enterprise that is unrivaled throughout the world. As the world's largest supporter of biomedical research, the NIH competitively awards extramural grants and supports in-house research. However, with the continued decline in real dollars allocated to biomedical research each year by the federal government, the opportunities to discover life-changing cures and treatments will drastically decrease.

### BACKGROUND

Federally funded biomedical research is supported through funding to NIH, National Science Foundation, United States Department of Agriculture, Department of Energy, National Aeronautics and Space Administration, Centers for Disease Control and Prevention, and Department of Veterans Affairs. However, the NIH is the leading and sometimes only source of funds for certain types of vitally important clinical and translational research that is not performed in the private sector or other government agencies. Formed in 1887, the NIH comprises 27 institutes and centers and annually invests more than \$30 billion in medical research. More than 80% of the NIH's funding is awarded through almost 50,000 competitive grants to more than 300,000 researchers at over 3,000 universities, medical schools, and other research institutions around the United States and throughout the world.<sup>1</sup>

During the past decade, Congress has shown its support for biomedical research by consistently increasing the budgets of the agencies that support such research. From 1998 to 2003, a commitment was made to double the budget of the NIH from \$13.6 billion to \$27.3 billion, allowing the agency to fund a number of important clinical

trials for chronic conditions, develop tests for earlier cancer detection, and conduct the Diabetes Prevention Program.<sup>2</sup>

### CONSIDERATIONS

Since the doubling of its budget, the NIH has received annual funding increases below the rate of biomedical inflation. As a result, the NIH budget is insufficient to fund all of the research that needs to be done. At present, less than one in five projects can be supported. Further analysis of the NIH budget shows that

- The NIH budget has not kept pace with inflation since 2001.
- The number of research project grants funded by NIH has declined every year since 2004, and the trend is expected to continue in FY 2016 and FY 2017, despite an increase to the NIH budget in the FY16 omnibus.
- Success rates have fallen more than 15 percentage points in the past decade and are projected to decline even further.

Not only does the decline in grants affect the number of scientists who are able to continue their research and discover new treatments and cures, it also has a significant impact on the United States economy. In order to fully understand the importance of maintaining the growth experienced during the doubling period, policymakers must first understand the positive impact that research programs have on the population of the country.

### Increased longevity and improved quality of life

Research funded by federal dollars has resulted in significant advances in the prevention and treatment of some of the nation's most prevalent diseases, at a fraction of the cost of simply managing these conditions. For instance, the Study of Osteoporotic Fractures found that for women, one of the best predictors of fracture is bone mineral density of the hip, resulting in a better method for identifying those at risk for osteoporosis and preventing costly and



## POSITION STATEMENT

debilitating fractures that cost \$18 billion annually in direct care. Studies conducted by the NIH have found that with intensive lifestyle intervention, a patient's risk of getting type 2 diabetes can be reduced by 58%, and that the drug metformin can reduce the development of diabetes by 31%.<sup>3</sup> However, if funding levels for biomedical research do not keep pace with inflation, many of the breakthroughs in medical care that are on the horizon will not be realized.

### Impact on the national, regional, and local economy

Biomedical research funds allocated by the federal government support both basic and translational research, ensuring that the discoveries made in the laboratory become realistic treatment options for patients suffering from debilitating and life-threatening diseases. In addition to improving quality and length of life, these advances in treatment also reduce the health care costs of our nation. With the aging of the Baby Boomer generation, the incidence of costly, chronic conditions will significantly increase, and a large portion of the projected increase in health care costs will be as a result of escalating costs associated with diabetes, Alzheimer's disease, muscular dystrophy, cystic fibrosis, and stroke. In order to prevent and treat these diseases, and save the country billions in healthcare costs, significant investment in biomedical research will be needed. For instance, treatments that delay or prevent diabetic retinopathy save the country \$1.6 billion a year,<sup>4</sup> and primary prevent programs that reduce the risk of developing type 2 diabetes can result in a net savings to Medicare of \$2 billion over 10 years.<sup>5</sup>

In addition to the impact that research has on spending on health care for the nation's population, research funding also has a significant impact on local economies by funding new jobs. For instance, for each dollar of taxpayer investment, UCLA generates almost \$15 in economic activity, resulting in a \$9.3 billion impact on the Los Angeles region. The estimated economic impact of Baylor on the surrounding community in Houston is more than \$358 million, generating more than 3,300 jobs.<sup>6</sup> Without federal research funding, the revenue injected into local and regional economies would be lost, significantly impacting not only those individuals directly involved in research, but also affecting industries that depend on the downstream revenue.

### Continued dominance in science and the global economy

As the amount of real dollars allocated to federal research funding declines, so too do the opportunities

for researchers. As a result, scientists are often forced to find other careers or move to other countries to continue their research, depleting the pool of talent that government agencies and pharmaceutical companies have to draw from. Without these scientists in our workforce, many medical breakthroughs will either never happen or will happen as a result of overseas research.

A recent *Research!America* poll found that 64% of Americans feel that it is very important to maintain our position as a global leader in scientific research, and 76% believe that it is very important to create more career opportunities in science and research.<sup>7</sup> The "America Creating Opportunities to Meaningfully Promote Excellence in Technology, Education, and Science Act" (COMPETES) provides an example of a federal funding program that supports the career development of those interested in research. This law keeps research programs at NSF and DOE on a near-term doubling path, expands programs at NSF to enhance the undergraduate education of the future science and engineering workforce, and expands early career grant programs for outstanding young researchers at NSF and DOE. However, this may have only a limited impact on the current supply of researchers; policymakers must continue to ensure that funding is available to create opportunities for new and existing researchers.

### POSITIONS

The Endocrine Society remains deeply concerned about the future of biomedical research in the United States without sustained support from the federal government. The Society strongly supports increased federal funding for biomedical research in order to provide the additional resources needed to enable American scientists to address the burgeoning scientific opportunities and maintain the country's status of the preeminent research enterprise. As such:

For FY 2017, The Endocrine Society recommends that the agencies that support biomedical research receive the following appropriations in order to recoup the losses caused by biomedical inflation, fund necessary new research programs, and build on the discoveries made during the doubling period:

- National Institutes of Health – at least \$35 billion
- National Science Foundation – \$7.96 billion
- Department of Energy's Office of Science – \$5.67 billion
- Department of Veterans Affairs – \$664.7 million for VA Medical and Prosthetics Research Program

<sup>3</sup> National Institutes of Health "Doubling Accomplishments" fact sheet.

<sup>4</sup> *Research!America* presentation.

<sup>5</sup> Thorpe, K. and Z. Yang. Enrolling People with Prediabetes Ages 60-64 in a Proven Weight Loss Program Could Save Medicare \$7 billion or More. *Health Affairs*. September 2011.

<sup>6</sup> Federation of American Societies for Experimental Biology. NIH Advocacy Slides: California, Texas.

<sup>7</sup> *Research!America* polls 2006; 2012.