

BIOMEDICAL RESEARCH FUNDING

INTRODUCTION

A half century of investment by the United States Federal Government in biomedical research has dramatically advanced the health and improved the lives of the American people. Funding for the National Institutes of Health (NIH) specifically has had a significant impact on the United States' global preeminence and development of a biomedical research enterprise that is unrivaled throughout the world. Biomedical research entails understanding how the body works and investigating what happens in human disease. A vital field of study for maintaining human health is endocrinology, which involves the investigation of hormones and the role they play in the body's daily function. This includes research to help us understand how changes in hormones contribute to disease. Basic and clinical endocrine scientists funded by NIH conduct research that leads to the development of treatments for endocrine disorders and diseases including diabetes, some cancers, obesity, thyroid disorders, and infertility. These conditions affect millions of people in the US and create a significant health and economic burden on society. The development and discovery of treatments for diabetes, obesity, cancer, cardiovascular disease and others are available today thanks to NIH funding.

BACKGROUND

The NIH is comprised of 27 institutes and centers and annually invests more than \$35 billion in extramural research funded throughout the country.¹ More than 80% of the NIH's funding is awarded through over 55,000 competitive grants to more than 300,000 researchers at over 2,500 universities, medical schools, and other research institutions around the United States and throughout the world.² There is no single NIH institute focused on endocrine research. Instead, clinical and basic endocrine-related research is supported through at least 18 different NIH institutes and centers such as the National Institute of Diabetes and Digestive and Kidney Disease, National Institute of Child Health and Human Development, National Heart, Lung, and Blood Institute, National Cancer Institute, and National Institute of Environmental Health Sciences.

Federally funded biomedical research is supported primarily through appropriations to the NIH and provides opportunities to conduct foundational and translational research that is not performed in the private sector or other government agencies. The United States Congress has historically shown bipartisan support for biomedical research by increasing the NIH budget. From 1998 to 2003, the Congress committed to double the budget of the NIH from \$13.6 billion to \$27.3 billion. However, this was followed by a period of stagnant growth for the agency. Then, from Fiscal Year (FY) 2016-FY 2023, the NIH saw funding increases each year with bipartisan support, with the FY 2023 budget reaching \$47.5 billion.³ Despite this support, NIH funding is not keeping pace with inflation as FY 2024 appropriated funds for NIH have not achieved considerable growth in real terms relative to FY 2003 funding levels.¹ Without funding increases that account for inflation or investment in real growth in the biomedical research enterprise, the opportunities to discover lifechanging cures and treatments will drastically decrease.

CONSIDERATIONS

Since the doubling of its budget, the NIH has typically received annual funding increases at or below the rate of biomedical inflation; consequently, the purchasing power of NIH funding initially peaked in FY 2003 and steadily declined for more than a decade until more substantial funding increases began in FY 2016. However, the FY 2022 purchasing power was still only 0.6% greater than the FY 2003 level.³ As a result, the NIH budget cannot sufficiently fund many of the highly meritorious research grants received from investigators and scored highly during peer review. While the total number of awards funded by NIH has recovered due to recent increases in the NIH budget, success rates of being awarded a grant are close to the lowest they have ever been. At present, roughly one in five projects are supported.⁴

Not only does the low success rate 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. Policymakers need to understand the positive impact that research programs have on the health and economy of the country.

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¹ 2022 Update: NIH's Role in Sustaining the U.S. Economy. United for Medical Research. <https://unitedformedicalresearch.org/annual-economic-report/>. Updated in 2022. Accessed March 8, 2023.

² Overview of FY 2023 Executive Summary. Office of Budget, National Institutes of Health. <https://officeofbudget.od.nih.gov/pdfs/FY23/br/Overview%20of%20FY%202023%20Executive%20Summary.pdf>. Updated in 2022. Accessed March 8, 2023.

³ National Institutes of Health (NIH) Funding: FY 1996-FY 2023. *Congressional Research Service*. <https://sgp.fas.org/crs/misc/R43341.pdf>. Updated May 20, 2022. Accessed March 8, 2022.

⁴ Success Rates: R01-Equivalent and Research Project Grants. *NIH Data Book, NIH RePORT*. <https://report.nih.gov/nihdatabook/category/10>. Updated in 2022. Accessed March 8, 2022.



POSITION STATEMENT

Increased longevity and improved quality of life

Federally funded endocrine-related research has resulted in significant advances in the prevention and treatment of some of the nation's most prevalent diseases at a fraction of what it would cost to manage these conditions. For instance, NIH-funded studies have found that in postmenopausal women, one of the best predictors of fracture is bone mineral density of the hip. This finding resulted in a better method for identifying those at risk for osteoporosis, which in turn prevents expensive and debilitating fractures that cost \$17 billion annually in direct care.⁵ Another impact of NIH research is focused on the management of Type 1 diabetes (T1D), which affects 1.6 million adults in the US. People with T1D cannot make insulin and must rely on external sources of insulin to survive. Monitoring insulin levels and when and how much to dose can be complicated for users, particularly children. To address this, the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) within the NIH funded researchers developed a device known as a “bionic pancreas”, which uses next-generation technology to automatically deliver insulin to those with T1D.⁶ Not only is the bionic pancreas more effective at maintaining blood glucose levels, it is also easier to use and leads to improved quality of life. This was made possible not only through funding of this project, but also through sizeable investments in basic research in the decades prior to establish the mechanism of how T1D leads to dysregulation of blood glucose levels. Additionally, 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%.⁷ These interventions improve quality of life for those living with diabetes and reduce associated health care costs. Diabetes affects 11% of the entire US population, and \$1 out of every \$4 in US health care costs is spent on care for people with diabetes.⁸ However, if funding levels for biomedical research do not keep pace with inflation, breakthroughs in medical care to address this need will never be realized.

Impact on the national, regional, and local economy

Funding for biomedical research fuels the local, regional, and national economy. For every \$1 invested in NIH funding, there is a \$2.46 return on investment. This means that the \$37.81 billion awarded to NIH scientists in FY 23 lead to \$92.89 billion in economic activity.¹ NIH funding supports basic, translational, and clinical science, ensuring that the discoveries made in the laboratory translate to treatment options for patients suffering from debilitating and life-threatening diseases. Advances in treatment also reduce the health care costs of our nation. As the population of the United States ages, the incidence of costly, chronic conditions such as diabetes, obesity, cardiovascular disease and cancer, will significantly increase. To save the country billions in healthcare costs, additional investment in biomedical research will be needed. Studies on the effectiveness of investing in research has identified significant savings on health care: for instance, treatments that delay or prevent diabetic retinopathy save the country \$1.6 billion a year,⁹ and prevention programs that reduce the risk of developing type 2 diabetes can result in a net savings to Medicare of \$2 billion over 10 years.¹⁰

In addition to the impact that research has on spending on health care for the nation's citizens, research funding also has a positive impact on local economies by supporting the development of new, high-paying jobs. FY 2023 NIH funding created over 400,000 jobs in the US.¹ In Los Angeles, each dollar of taxpayer investment received by the University of California Los Angeles, generates \$21 in economic activity, resulting in a \$16.6 billion impact on the region.¹¹ The jobs created by federal dollars directly impact those conducting research, and also support staff who operate “core” research facilities that provide specialized resources for numerous labs, administer grant submission and compliance at universities, and many others that directly or indirectly support the research enterprise. 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 downstream revenue.

⁵ Tran O, Silverman S, Xu X, Bonafede M, Fox K, McDermott M, Gandra S. Long-term direct and indirect economic burden associated with osteoporotic fracture in US postmenopausal women. *Osteoporos Int.* 2021 Jun;32(6):1195-1205. doi: 10.1007/s00198-020-05769-3. Epub 2021 Jan 7. Erratum in: *Osteoporos Int.* 2022 Aug;33(8):1835. PMID: 33411007; PMCID: PMC8128807.

⁶ Bionic Pancreas Simplifies Management of Type 1 Diabetes. NIH Research Matters, National Institutes of Health. <https://www.nih.gov/news-events/nih-research-matters/bionic-pancreas-simplifies-management-type-1-diabetes>. Updated October 18, 2022. Accessed March 10, 2023.

⁷ About the National DPP: National Diabetes Prevention Program, Centers for Disease Control and Prevention. <https://www.cdc.gov/diabetes/prevention/about.htm>. Updated on December 27, 2022. Accessed March 8, 2023.

⁸ American Diabetes Association. Economic costs of diabetes in the US in 2017. *Diabetes Care.* 2018;41(5):917–928.

⁹ Medical Research: Saving Lives, Reducing the Cost of Health Care, Powering the Economy. Research!America. <http://www.researchamerica.org/sites/default/files/uploads/EconomicFactSheet.pdf>. Created November 9, 2012. Accessed May 11, 2017.

¹⁰ 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.

¹¹ Systemwide Economic, Fiscal, and Social Impact Analysis. The University of California. <https://universityofcalifornia.edu/sites/default/files/economic-impact-report-2021.pdf>. Updated January 2021. Accessed March 8, 2023.



POSITION STATEMENT

Global competitiveness and leadership in science and the economy

Bolstering research funding is imperative for the success of the US biomedical research enterprise and leadership in the global economy. US R&D expenditures relative to the global share of R&D has declined over nineteen years from 37.1% in 2000 to 27.3% in 2019.¹² As the amount of federal research funding remains flat or begins to decline, so do the opportunities for the US to maintain its leadership and competitiveness in R&D globally. A decline in funding can translate to a depletion of America's pool of scientific talent, thereby reducing the US's ability to drive discoveries and innovation in all sectors of the economy.

A survey conducted by Research!America revealed that public sentiment supports federal funding of research as 73% of Americans feel it is very important for the US to be a leader in medical and health research.¹³ 61% say current spending on research to prevent, cure, and treat disease is not enough.¹⁴ In fact, 63% of Americans say they are willing to pay more in taxes in support of health research.¹⁵ These survey data highlight the need for policymakers to prioritize investments in research to maintain the country's global leadership.

POSITIONS

The Endocrine Society is deeply concerned about the future of biomedical research in the United States without sustained support from the federal government.

The Endocrine Society strongly supports increased federal funding for biomedical research to provide the additional resources needed to enable scientists to address the burgeoning scientific opportunities, identify better treatments, find cures for diseases, and maintain the country's status as the preeminent research enterprise.

The Endocrine Society recommends the National Institutes of Health receive funding of at least \$51.303 billion in FY 2025.

The Endocrine Society recommends funding for the Advanced Research Projects Agency for Health (ARPA-H) be separate from NIH base funding.

The Endocrine Society endorses the funding recommendations from the Federation of American Societies for Experimental Biology (FASEB) for other agencies that support biomedical research.

¹² The State of U.S. Science and Engineering 2022. U.S. and Global Research and Development. Science & Engineering Indicators, NSF. <https://nces.nsf.gov/pubs/nsb20221/u-s-and-global-research-and-development>. Updated January 2022. Accessed March 28, 2024.

¹³ January National Survey. Research!America. <https://www.researchamerica.org/wp-content/uploads/2024/02/January-2024-National-Survey-Release.pdf>. Updated in February 2024. Accessed March 28, 2024.

¹⁴ America Speaks! Poll Data Summary, Research! America. https://www.researchamerica.org/wp-content/uploads/2022/09/PollDataSummary_vol20.pdf. Updated in 2020. Accessed March 8, 2023.

¹⁵ America Speaks! Poll Data Summary, Research! America. <https://www.researchamerica.org/wp-content/uploads/2023/05/America-Speaks-Poll-Data-Summary-Volume-23.pdf> Updated in 2023. Accessed March 28, 2024.