

Submitted By: Teresa K. Woodruff, PhD, President, The Endocrine Society

**FY 2015 SENATE APPROPRIATIONS COMMITTEE PUBLIC TESTIMONY
SUBMITTED BY THE ENDOCRINE SOCIETY
FOR THE SUBCOMMITTEE ON LABOR, HEALTH AND HUMAN SERVICES,
EDUCATION, AND RELATED AGENCIES
ADDRESSING THE NATIONAL INSTITUTES OF HEALTH
May 19, 2014**

The Endocrine Society is pleased to submit the following testimony regarding Fiscal Year (FY) 2015 federal appropriations for biomedical research, with an emphasis on appropriations for the National Institutes of Health (NIH). The Endocrine Society is the world's largest and most active professional organization of endocrinologists representing more than 17,000 members worldwide. Our organization is dedicated to promoting excellence in research, education, and clinical practice in the field of endocrinology. The Society's membership includes thousands of basic and clinical scientists who receive federal support from the NIH to fund endocrine-related research on topics such as diabetes, cancer, fertility, aging, obesity and bone disease. The Society's membership also includes clinicians who depend on new scientific advances to better treat and cure their patients' diseases. As a result of federal investment in endocrine research, individuals with diabetes have made dramatic improvements in managing their disease, and the obesity rate for children age 2 to 5 years old has dropped 43%¹². The Endocrine Society recommends that the NIH receive at least \$32 billion in FY 2015. This funding recommendation represents the minimum investment necessary to avoid further erosion of national research priorities and global preeminence, while allowing the NIH's budget to keep pace with biomedical inflation.

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 United States' NIH-supported scientists represent the vanguard of researchers making fundamental biological discoveries and developing applied therapies that advance our understanding of, and ability to treat human disease. In the past year NIH funded scientists have made fundamental insights into how mild traumatic brain injury causes brain damage; identified potential drug targets

¹ Casagrande et al., "The Prevalence of Meeting A1C, Blood Pressure, and LDL Goals Among People With Diabetes, 1988-2010." *Diabetes Care*, Aug 36;8 (2013) 2271-9.

² Sabrina Tavernise, "Obesity Rate for Young Children Plummets 43% in a Decade." *The New York Times*. Feb 25, 2014.



for Parkinson's disease; and identified a safe and protective candidate malaria vaccine.³ In the field of endocrinology, NIH-funded researchers have made remarkable contributions in areas of critical national interest, for example:

- Endocrinologists have made insightful discoveries describing newly understood contributors to body weight and obesity⁴. Obesity is a growing national concern, with related medical costs in the United States as high as \$190 billion in 2005 alone⁵.
- Endocrinologists have discovered that higher vitamin D levels are associated with increased mobility and physical function in older individuals. As the population of the United States increasingly lives longer, this research has the potential to dramatically improve the quality of life for Americans⁶.
- Endocrinologists are also at the leading edge of research on testosterone therapy and maintaining appropriate levels of sex hormones. For instance, endocrinologists are investigating links between testosterone levels and heart disease in men⁷.

These discoveries represent but a fraction of the contributions made by endocrinologists and other NIH funded scientists in the past year. The foundation for these research products are the NIH research grants that support the basic and clinical research done by scientists. Since 2004, the number of NIH research grants to scientists in the United States has been declining. Consequently, the likelihood of a scientist with a highly-regarded grant application successfully being awarded a grant has dropped from 31.5% in 2000 to an historic low of 16.8% in 2013⁸. This means that experienced scientists are increasingly spending time writing grant applications instead of applying their expertise to productive research. Additionally, younger scientists struggle to find a job in the United States that makes use of the unique skills generated during graduate training.

The lack of sustained government support compounded by austerity measures such as sequestration has created an environment that is leading to a "brain drain" as brilliant scientists pursue other careers or leave the United States to develop impactful research products elsewhere. In 2013, the number of NIH supported scientists declined significantly, with nearly 1,000 NIH scientists dropping out of the workforce⁹. NIH scientists run labs that support high-quality jobs and education while generating breakthrough innovations. In 2011, the NIH directly or indirectly supported over

³ "2013 Research Highlights". December 23, 2013.

<http://www.nih.gov/researchmatters/january2014/researchmatters2013recap.htm> Accessed March 23, 2013.

⁴ Mathur et al., "Methane and hydrogen positivity on breath test is associated with greater body mass index and body fat." *J Clin Endocrinol Metab.* 98;4 (2013) 698-702.

⁵ Cawley and Meyerhoefer. "The medical care costs of obesity: an instrumental variables approach." *J Health Econ.* 31;(2012) 219-30.

⁶ Wohl et al., "Vitamin D status is associated with functional limitations and functional decline in older individuals." *J Clin Endocrinol Metab.* 98;9 (2013) 1483-90.

⁷ Ruige et al., "Beneficial and Adverse Effects of Testosterone on the Cardiovascular System in Men." *J Clin Endocrinol Metab.* 98;11 (2013) 4300-10.

⁸ Salley Rockey, "FY2013 By The Numbers: Research Applications, Funding, and Awards," *Rock Talk*, January 10, 2014. <http://nexus.od.nih.gov/all/2014/01/10/fy2013-by-the-numbers/> Accessed March 20, 2014.

⁹ Jeremy Berg "The impact of the sequester: 1,000 fewer funded investigators." *ASBMB Today.* March (2014). <https://www.asbmb.org/asbmbtoday/201403/PresidentsMessage/> Accessed March 20, 2014.



432,000 jobs across the country¹⁰. As a result of sequestration, states such as Georgia and Connecticut lost \$62 million and \$32 million respectively¹¹.

We may never be able to quantify the opportunities we have missed to improve the health and economic status of the United States due to persistent underinvestment in research. We do know however, that when “laboratories lose financing, they lose people, ideas, innovations and patient treatments¹².” Based on the personal stories of researchers who have been forced to curtail research programs, we know that research programs to understand how genetics can influence heart disease, develop therapeutic treatments for Parkinson’s disease, and evaluate the effect of metal contaminants on reproductive health; among many others, are delayed or terminated¹³.

As the world’s largest source of funding for medical research, the NIH is vitally important to the United States’ global preeminence in research. However, this global preeminence is being tested due to flat funding that has reduced the inflation-adjusted budget of the NIH to a level that is nearly 22% below the NIH budget in FY 2003¹⁴. As a consequence of this underinvestment, the United States’ global share of pharmaceutical industry output has declined, our global share of biopharmaceutical patents has declined, and our trade balance in pharmaceutical products is worsening¹⁵. While the Bipartisan Budget Act of 2013 and omnibus appropriations bill have provided some much needed additional resources, overall levels of funding remain well below the \$32 billion required for adequate, sustainable growth in biomedical research.

We live during an age of tremendous scientific opportunity that can only be realized through federal funding of biomedical research. Researchers are only beginning to harness the power of big data to solve complicated problems. Innovative new experiments and clinical research hold promise to solve some of the United States’ greatest medical challenges and discover new ways to improve our quality of life. Government support is critical to these opportunities, and we encourage the Appropriations Committee to actively support promising and innovative research.

As the Appropriations Committee considers funding for the NIH, the Endocrine Society also asks the Committee to encourage the NIH to look at ways to increase data reporting to address gaps in gender and sex differences in research. Sex differences need to be acknowledged as a critical biological variable¹⁶. In addition to including more women in clinical research, the Endocrine

¹⁰ Everett Ehrlich “Engine Stalled: Sequestration’s Impact on NIH and the Biomedical Research Enterprise.” *United for Medical Research*. (2012).

¹¹ “NIH State Information Factsheets.” <http://www.faseb.org/Policy-and-Government-Affairs/Advocacy-onCapitol-Hill/Advocacy-Resources-for-Scientists/NIH-State-Information-Factsheets.aspx>. *Federation of American Societies for Experimental Biology*. Accessed March 19, 2014.

¹² Teresa K. Woodruff “Budget Woes and Research.” *The New York Times*. September 10, 2013.

¹³ Sequester Profiles: How Vast Budget Cuts to NIH are Plaguing U.S. Research Labs. *United for Medical Research*. http://www.unitedformedicalresearch.com/advocacy_reports/sequestration-profiles/ Accessed March 20, 2014.

¹⁴ “Budget Cuts in 2013 Reduced Biomedical Research” *Federation of American Societies for Experimental Biology*.

<http://www.faseb.org/pdfviewer.aspx?loadthis=http%3A%2F%2Fwww.faseb.org%2FPortals%2F2%2FPDFs%2Fopa%2F2014%2F1.21.14%2520NIH%2520Funding%2520Cuts%25202-pager.pdf> Accessed March 19, 2014.

¹⁵ Atkinson et al., “Leadership in Decline, Assessing U.S. International Competitiveness in Biomedical Research.” *The Information Technology and Innovation Foundation and United for Medical Research*. May 2012.

¹⁶ Woodruff et al., “‘Leaning in’ to Support Sex Differences in Basic Science and Clinical Research.”



Society believes sex differences should be considered as part of the design of all basic biological studies and clinical research. If the NIH required researchers to consider sex differences in grant applications when appropriate, and incorporate data on sex as a biological variable in animal and human studies, more appropriate conclusions could be drawn from basic research, and clinical research would provide more representative data on safety and efficacy of drugs¹⁷.

The Endocrine Society remains deeply concerned about the future of biomedical research in the United States without sustained support from the federal government. Flat funding in recent years, combined with the impact of sequestration, threaten the nation's scientific enterprise and make adequate FY 2015 appropriations for the NIH increasingly important. The Society strongly supports increased federal funding for biomedical research in order to provide the additional resources needed to enable American scientists to address scientific opportunities and maintain the country's status as the preeminent research engine. The Endocrine Society therefore asks that the NIH receive at least \$32 billion in FY 2015.

Endocrinology. 155;4 (2014) 1181-3

¹⁷ Kim et al., "Sex Bias in Trials and Treatment Must End." *Nature*. 465;7299 (2010) 688-9.