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FY 2016 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

March 31, 2015

The Endocrine Society thanks the Subcommittee for the opportunity to submit the following testimony regarding Fiscal Year (FY) 2016 federal appropriations for biomedical research.

The Endocrine Society is the world's largest and most active professional organization of endocrinologists representing more than 18,000 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 including 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.

Funding for Endocrine-Related Research: An Investment in the Nation's Health

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. Their research has led to new medical treatments, saved innumerable lives, reduced human suffering, and spawned entire new industries.

Endocrinologists are a vital component of our nation's biomedical research enterprise and integral to the healthcare infrastructure in the United States. Endocrine researchers study how hormones contribute to the overall function of the body, and how the glands and organs of the endocrine system work together to keep us healthy[1]. Consequently, endocrinologists have a unique approach and understanding of how the various systems of the human body communicate and interact to create a comprehensive picture of health. The areas governed by the endocrine system are broad and essential to overall wellbeing; endocrine functions include reproduction, the body's response to stress and injury, sexual development, energy balance and metabolism, bone and muscle strength, and others. Endocrinologists study glands such as the adrenal glands, pancreas, thyroid, and specific glands of the brain including the hypothalamus.

[1] http://www.hormone.org/hormones-and-health/the-endocrine-system Accessed March 19, 2015.

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Endocrinologists also study interrelated systems, for example how the skin, liver, and kidneys work together to produce and metabolize Vitamin D.

Endocrinologists study and treat some of the most complex disease areas, such as diabetes, obesity, bone disease, thyroid disorders, and reproductive health. Many of these conditions represent growing areas of disease burden for the United States population. NIH-funded endocrine scientists continue to make remarkable contributions in areas of critical national interest, for example:

- Endocrine scientists found a direct correlation between low vitamin D levels and impaired glucose metabolism. This study helps clarify the connection between vitamin D, obesity, and diabetes and suggests that outdoor activity may also affect the risk of developing diabetes[2].
- Endocrine scientists discovered how the microbes living in our intestines change as people develop diabetes. This finding suggests that one's gut bacteria can help predict the risk of developing diabetes and can inform healthy eating habits[3].
- Endocrine scientists study of obesity helped develop prevention and treatments resulting in a 43% decrease in the obesity rate for children age 2 to 5 years[4][5].

The Future of Endocrine Research

We are rapidly entering a new era of precision medicine. Insights into genetic and biologic markers can be used to understand what causes a disease, the risk factors that predispose to disease, and how patients will respond to a particular treatment. Translating these new discoveries and technologies into personalized patient care offers the possibility of more effective treatments, less toxicity, increased disease prevention, improved quality of life, and lower health care costs. Several endocrine-specific conditions are on the cusp of a breakthrough in diagnostic testing. The ability to test for specific genetic mutations that cause the syndrome of resistance to thyroid hormone can dramatically alter potential treatment options. Additionally, rare adrenal tumors called pheochromocytomas and paragangliomas are notoriously challenging to diagnose. Genetic tests can reduce delays in diagnosis, help determine whether a tumor is likely to be malignant, and provide doctors with critical data to help monitor family members who might also carry a problematic mutation[6]. More NIH-funded basic and clinical research to help us understand how genetics can predispose us to, or protect us from disease is critical to develop and refine genetic testing strategies so that they are more reliable and more widely available.

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[2] Clemente-Postigo et al., "Serum 25-Hydroxyvitamin D and Adipose Tissue Vitamin D Receptor Gene Expression: Relationship With Obesity and Type 2 Diabetes." *J Clin Endocrinol Metab.* 2015 Feb 23. Electronic publication ahead of print.

[3] https://www.endocrine.org/news-room/current-press-releases/gut-microbial-mix-relates-to-stages-of-blood-sugarcontrol Accessed March 19, 2015.

[4] 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.

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

[6] Eric Seaborg, "Family History." *Endocrine News*, Feb. 2015. 15-17.

Sequestration Threatens Scientific Momentum

The Endocrine Society is particularly concerned about the impact of cuts on biomedical research supported by the NIH. At a time when we should be investing more in research to save more lives, research funding is in serious jeopardy. 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 new research grant has dropped from 31.5% in 2000 to 18.1% in 2014[7]. 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 jobs that make use of the unique skills developed 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 workforce[8]. NIH scientists run labs that support high-quality jobs and education while generating breakthrough innovations. In 2011, the NIH directly or indirectly supported over 432,000 jobs across the country[9]. For example, as a result of sequestration, Missouri and Washington lost an estimated $24 million and $46 million respectively in FY 2012[10].

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 treatments[11]." 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 terminated[12].

FY 2016 NIH Funding Request

The Endocrine Society recommends that the Subcommittee provide at least $32 billion in funding for NIH in the FY 2016 Labor-HHS-Education Appropriations bill. This funding recommendation represents the minimum investment necessary to avoid further loss of promising research and at the same time allows the NIH's budget to keep pace with biomedical inflation.

It is critical that we continue to invest in biomedical research to improve the Nation's future financial situation. Rising healthcare costs threaten to consume an increasing percentage of the United States'

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[7] http://report.nih.gov/success_rates/Success_ByIC.cfm Accessed March 19, 2015.

[8] 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.

[9] Everett Ehrlich "Engine Stalled: Sequestration's Impact on NIH and the Biomedical Research Enterprise." *United for Medical Research*. (2012).

[10] "NIH Sequestration Factsheet." http://www.faseb.org/portals/2/PDFs/opa/Sequestration%20factsheet.pdf *Federation of American Societies for Experimental Biology*. Accessed March 19, 2015.

[11] Teresa K. Woodruff "Budget Woes and Research." *The New York Times*. September 10, 2013.

[12] 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.

GDP and also the individual budgets of workers and businesses[13]. The cost of diabetes, in particular, represents a staggering $245 billion in 2012 alone[14].

Federal investment in the NIH and in programs such as the National Diabetes Prevention Program (NDPP) provides opportunities for substantial returns to the nation. The NDPP is based on the NIHfunded Diabetes Prevention Program clinical research study which found that even modest weight loss (510%) could prevent or delay the onset of type 2 diabetes by 58%. As a result of these findings, the Centers for Disease Control and Prevention (CDC) implemented the NDPP, which has now been expanded to over 794 sites in 39 states; it has been estimated that the program could save the country as much as $191 billion if fully implemented. Moreover, 75% of these savings would benefit federal healthcare programs that provide services for seniors and the poor—individuals who share a disproportionate risk of being diagnosed with diabetes.

We live during an age of tremendous scientific opportunity that can only be realized through federal funding of biomedical research. Researchers are just 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. We fully understand that the Appropriations Committee faces challenging decisions in FY 2016, however we assert that additional cuts to the NIH and other non-defense discretionary programs is not the way to solve the budgetary issues facing the United States.

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 2016 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 2016.

[13] Dan Mangan "Job health insurance costs rising faster than wages." CNBC. 9 Dec. 2014. http://www.cnbc.com/id/102249938#. Accessed March 19, 2015.

[14] http://www.diabetes.org/advocacy/news-events/cost-of-diabetes.html Accessed March 19, 2015.