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WRITTEN TESTIMONY TO THE SENATE APPROPRIATIONS COMMITTEE IN CONNECTION WITH THE APRIL 29, 2014, HEARING ENTITLED *DRIVING INNOVATION THROUGH FEDERAL INVESTMENTS*

EXECUTIVE SUMMARY

For the past 11 years, the flat budgets at the National Institutes of Health (NIH) and National Eye Institute (NEI) have cut the amount of breakthrough research being performed, shrunk the size of the U.S. scientific workforce, and slowed the development of new therapies for patients.

The NIH is doing less science now than it was in the past. Since Fiscal Year (FY) 2003, NIH has lost 22 percent of its purchasing power, in terms of constant dollars. The number of R01s, or investigator-initiated grants, has fallen by 24 percent between FY2003 and FY2013.

As an economic driver, in FY2011NIH-funded research supported 432,000 jobs across the United States and generated more than $62 billion in new economic activity. Every $1 of NIH funding generates $2.21 in local economic growth.

NIH-funded basic and clinical research has helped to understand the basis of disease, thereby resulting in innovations in healthcare to save and improve lives. Its research serves an irreplaceable role the private sector could not duplicate.

FLAT NIH/NEI BUDGETS HAVE HURT THE U.S. SCIENTIFIC WORKFORCE

The vitality of the U.S. research community is at stake after the flat NIH/NEI funding of the past 11 years. Not only has funding for new investigators been squeezed, but also that of seasoned investigators. This scenario threatens the continuity of research and the retention of trained staff.

If an institution needs to let staff go, that means a highly-trained person is lost to another area of research, another institution in a different state, or even another country, if not lost entirely by changing careers or retiring early.

With the vicious funding situation only exasperated by the 2013 sequester, ARVO members have been sharing how the funding environment has affected them. Andrew Pucker, graduate student at Ohio State University (OSU), says:

> "The OSU College of Optometry currently has limited NIH funding, which has led to most of our Ph.D. students being required to spend over 50% of their time

> teaching instead of completing their coursework and research. **We had to lay off our study coordinators, one of our statisticians, and several of our research staff members**. Also, the harsh funding rates have made it difficult for new faculty members to achieve tenure."

Mary Ann Stepp, Ph.D., Professor of Anatomy and Regenerative Biology at George Washington University, worries about the effects of budget cuts on young female scientists:

> "Tenure protects fewer and fewer faculty these days. Women have made great strides over the past 20-30 years, but **will young women faculty be able to weather these hard times**? More likely than men to have taken time off to have kids or take care of aging parents, [women] are also more likely to be non-tenured and vulnerable. I am just not sure what the future of research is going to look like in 10 or 20 years. **I am glad I am not starting out now myself**."

Finally, University of California, Los Angeles (UCLA) Professor of Ophthalmology Michael Gorin, Ph.D., describes just how hard it has become to perform government-supported science:

> "**We have reached a point at which most [scientists] have a better chance of winning a hand of solitaire than they do of getting a [NIH] grant**. The degree of uncertainty is having an enormous impact on American science. Our most experienced researchers are looking to exit this competitive environment since it is so exhausting, stressful and detracts them from doing the actual research. The brilliant talent that we used to recruit from around the world are less likely to come here to train (and there are less labs to train them), and those whom we have trained are increasingly returning to their home countries where they are competing directly with the American research enterprise. We are no longer attracting young Americans to go into biomedical research and we are destroying our future group of investigators. Finally, we are losing incredible opportunities to fill in the vast gaps in our knowledge to both understand the diseases that confront the American people and find more effective therapies."

SUPPORT THE NEI AND ITS "AUDACIOUS GOAL" OF RESTORING VISION

NEI has lost 25 percent of its purchasing power since FY2003. The FY2013 sequester cut resulted in NEI awarding 30 fewer grants, and the President's FY2015 proposal would result in 23 fewer awards. Any one of those missed funding opportunities could have held the promise to save sight and restore vision−goals that would have seemed unattainable just a few short years ago.

The NEI has long been a leader in biomedical research. As NIH Director Francis Collins, M.D., Ph.D. stated in February 2013:

> "It's often, it seems to me, that vision research is a couple of steps in front of things that are happening in biomedical research. It's clear that vision research has played a disproportionately large share in scientific breakthroughs."

Dr. Collins made his comments at NEI's *Audacious Goals Development* meeting, where more than 200 attendees reflecting every sector of the vision community discussed topics built around the ten winning submissions from a pool of nearly 500 entries selected through NEI's *Audacious Goals in Vision Research and Blindness Rehabilitation Challenge*.

This initiative, conducted by NEI through *The America Competes Act,* led NEI to identify its primary Audacious Goal for vision research: **To Regenerate Neurons and Neuronal Connections in the Eye and Visual System."**

For patients with common eye diseases such as age-related macular degeneration (AMD) and glaucoma, it may **mean the development of light-sensitive cells that could be transplanted into their eyes, potentially restoring sight**.

As NEI Director Paul Sieving, M.D., Ph.D. stated in February 2014:

> "The goals are bold but achievable. They are beyond what medicine currently can do. We are planning for a 10-12-15 year effort to reach these endpoints. Success would transform life for millions of people with eye and vision diseases. It would have major implications for medicine of the future, for vision diseases, and even beyond this, for neurological diseases."

This is an ambitious goal that requires increased−not decreased−funding. Our nation's investment in vision health is an investment in its overall health. NEI's breakthrough research is a cost-effective investment, since it is leading to innovative treatments and therapies that can ultimately delay, save, and prevent health expenditures, especially those associated with the Medicare and Medicaid programs. It can also increase productivity, help individuals to maintain their independence, and generally improve the quality of life, especially since vision loss is associated with increased depression and accelerated mortality.

ARVO URGES CONGRESS TO INCREASE FUNDING FOR THE NIH AND NEI IN ORDER TO DRIVE RESEARCH PROGRESS, TRAIN THE NEXT GENERATION OF SCIENTISTS, CREATE NEW JOBS, PROMOTE ECONOMIC GROWTH, AND MAINTAIN LEADERSHIP IN THE GLOBAL ECONOMY.

ABOUT ARVO

ARVO is a community of 12,000 vision researchers from 80 countries; we are the largest, most respected vision research organization in the world. Our aim to advance research worldwide into understanding the visual system and into preventing, treating and curing its disorders.