

**SPEECH TO THE GREATER BOSTON CHAMBER OF COMMERCE
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Introduction

Thank you. Thank you all for being here. And a special thanks to Paul Guzzi for the Greater Boston Chamber of Commerce for putting this together.

I went to Washington last January to fight for policies that can help level the playing field for middle class families and help build a better future for our kids. In the time since, I have done my best to represent the people of Massachusetts in the U.S. Senate. I'll be honest with you that in recent weeks, I've been shaking my head in frustration. We just reopened the government after an unnecessary and avoidable 16-day government shutdown that cost our country tens of billions of dollars and brought our economy to the brink of a self-made disaster. This sort of reckless partisan gamesmanship is shameful.

But I am not ready to give up. I believe there is more pressure than ever on Congress to lay out some sensible plans for revenues and spending and to get going. And while it's very faint, I also see an opportunity – an opportunity to do something that isn't partisan and isn't ideological. I believe we should seize this opportunity and use it to significantly expand and improve on our investments in basic scientific research.

Massachusetts is one of the best places in the country to live. Why is that? Obviously, it's the Red Sox. But it's also because we have one of the most successful, most prosperous economies in the country, and we have that because we have terrific schools and world-class colleges. Because we have livable cities. And because we invest in our future – in clean energy, in improving health care, in rebuilding roads and bridges.

But perhaps more than anything, what drives the Massachusetts economy – and the American economy – is innovation. Innovation makes us soar. And government-supported research is a critical first step in generating that innovation.

Economists of every political persuasion acknowledge this. Private industry is tremendously gifted at generating economic value from new inventions with obvious uses. But the economic value of basic scientific research isn't always something you can predict. And in many cases, it is only government that can absorb the risks of research whose ultimate application is not always obvious. Government provides patient capital, the kind that can wait for long-term results. That's why government support for basic research is essential—and ultimately benefits everyone.

This isn't just an abstract theory. Many of the major scientific and technological achievements of the last fifty years – sequencing the human genome, GPS location technology, and even the Internet itself – began with federally funded or federally-directed scientific research.

As a country, we have recognized the importance of basic research, and built many institutions to provide federal support for scientific discovery. The one I'd like to focus on today is the National Institutes of Health.

Case for the NIH

The NIH annually supports the work of more than 300,000 researchers – including 138¹ Nobel Prize winners – at more than 2,500² universities, medical schools, and other institutions. People live richer, fuller lives today because of the work of the NIH.

NIH also drives economic growth in the United States. Studies have shown that increasing public investment in basic biomedical research directly increases the number of new drugs on the market. Breakthroughs in research create jobs and profits, which in turn generate more tax revenues for the government, helping to cover the cost of our initial investment. The dots are all connected.

Up-front support for biomedical research can also *directly reduce* government spending by lowering health care costs. Consider how much less expensive it is to administer a vaccine than to treat an illness; consider how much cheaper it is to receive a vaccine than to miss time from work because of illness or to take care of a sick child. Vaccines for flu, meningitis, and cervical cancer trace their origins to NIH research.

And there are more breakthroughs to come, if we choose to pursue them. We are an aging population, and, to take just one example, a treatment breakthrough in Alzheimer's by 2015 – not even a cure, but a drug that just delays the onset of that horrible disease for five years -- would mean giving millions of people more meaningful years to spend with their families. And by the year 2050, the Alzheimer's Association projects that a drug like this could save our economy a half a trillion dollars per year in health care costs. Think what that would mean for Medicare, Medicaid, and private insurance companies.³ When it comes to the economy and the budget, refusing to invest in the NIH is the budgetary equivalent of cutting off your feet to save money on shoes.

Uncertain and Inadequate Funding

Given the importance of the NIH to our economy and our well-being, it is no surprise that politicians of both parties have supported the agency. Senator Kennedy was a legendary champion of the NIH. Senator Barbara Mikulski has picked up that mantle and has been a leading advocate for the agency. Republican Senator Jerry Moran, the top Republican with

¹ National Institutes of Health, "Nobel Laureates," <http://www.nih.gov/about/almanac/nobel/>.

² National Institutes of Health, "NIH Budget," <http://www.nih.gov/about/budget.htm>.

³ Alzheimer's Association, *Changing the Trajectory of Alzheimer's Disease: A National Imperative*, 2010, http://www.alz.org/documents_custom/trajectory.pdf

oversight over NIH spending, is currently a vocal supporter of their work. Even Majority Leader Eric Cantor, the second-ranking Republican in the House of Representatives, has frequently voiced his support for these investments. And there are others.

But instead of matching rhetoric with reality, Congress has actually been strangling the National Institutes of Health. In fact, the Director of the NIH, Dr. Francis Collins, has called the year 2013 the “darkest ever” for the agency.

Congress is crippling the NIH in two ways. First, we are not giving NIH enough money to do its work. Second, our funding commitments are so uncertain that it’s impossible to get the maximum benefit from the money that we do invest.

Inadequate Investments

The first issue is money. Federal investments in medical research are not keeping pace with the innovative capacity of our researchers -- or even the rate of inflation.

It wasn’t always this way. Congress historically worked in a bipartisan way to promote biomedical innovation. Starting in the late 1990s, Senator Arlen Specter, a Republican, and Senator Tom Harkin, a Democrat, worked together with President Clinton and President George W. Bush to support a gradual doubling of NIH funding⁴. That 5 year effort was a success, but since that time Congress has walked away from its commitment, providing the agency with only minuscule increases that do not even keep up with inflation—much less with the pace of potential discovery.⁵

Meanwhile, the opportunities for groundbreaking research continue to grow, and already outstrip our willingness to support it. According to the Federation of American Scientists for Experimental Biology, the number of research projects funded by the NIH has been declining over the last ten years.⁶ And the overall success rate for getting a project funded at NIH has dropped from 30% in 2003 to 18% last year — not because our scientists have fewer extraordinary ideas, but because we refuse to water those great ideas and make them grow⁷. There are serious consequences to abdicating our commitment to the NIH. While the United States walks away from its legacy as the world’s undisputed leader in scientific innovation, other nations are stepping in to take our place. More than 80,000 western-trained life sciences PhDs have returned to China to work.⁸ Over the next five years, China has pledged to spend nearly four times more of their GDP on discovering and commercializing medical miracles than the

⁴ National Institutes of Health, “Doubling the NIH Budget in the 107th Congress,” <http://olpa.od.nih.gov/legislation/107/pendinglegislation/doubledec.asp>.

⁵ National Institutes of Health, “Appropriations,” <http://www.nih.gov/about/almanac/appropriations/part2.htm>.

⁶ Federation of American Scientists for Experimental Biology (FASEB), “Predictable and Sustainable Funding for NIH will Drive Innovation and Progress,” 2012, <http://www.faseb.org/LinkClick.aspx?fileticket=aDQINW4adp0%3D&tabid=431>.

⁷ National Institutes of Health, “Success Rates,” updated February 1, 2013, http://report.nih.gov/success_rates/.

⁸ George Baeder and Michael Zielenziger, Monitor Group, *China, The Life Sciences Leader of 2020*, 2010, http://www.inovacao.unicamp.br/report/inte-Monitor_ChinaTheLifeSciencesLeader2020-101129.pdf

United States – and South Korea, Singapore, and Taiwan are following suit.⁹ We are the world leader in this work only so long as we make the investments that a world leader must make.

And of course, there is more at stake than just economics and global competitiveness. Limiting our support for medical research delays breakthroughs and treatments for deadly diseases. And that means more suffering, more sickness, more families in pain when their loved ones are ill.

The second issue crippling the NIH is uncertainty. As business leaders in Massachusetts, you know how difficult it is for any institution to budget for the future in the face of massive uncertainty. It's no different for NIH scientists. But instead of providing budgets that allow scientists to plan for the long-term and to conduct research with payoffs far into the future, Congress has left NIH funding at the mercy of an annual Congressional appropriations process that is increasingly dysfunctional.

NIH has taken serious blows from the meat-axe of automatic, across-the-board sequester cuts – cuts that were never supposed to happen. Sequestration required NIH to cut 5 percent from its budget this year, resulting in approximately 700 fewer competitive research project grants, 750 fewer new patients enrolled in research at the NIH Clinical Center, and no increase in stipends for promising young scientists.¹⁰ The nationwide result has been \$3 billion in lost economic activity and 20,500 lost jobs. In Massachusetts alone, \$128 million in medical and scientific funding disappeared.¹¹ And if the sequester wasn't bad enough, just weeks ago, the NIH was shut down entirely – along with the rest of the government - freezing grants, delaying projects, and sending thousands of researchers home. How does that make any sense at all?

The American Heart Association has pleaded for an end to the sequester and for more rational budgeting, observing that the “lack of consistency and predictability in the level of medical research funding” is introducing “tremendous uncertainty” into medical research and compelling scientists to leave the United States.¹² Months of conversations with doctors and scientists in Massachusetts and officials in Washington have convinced me that we must act decisively to fix this problem.

Solution

We are running out of time. If we continue on our current path, we will soon lose a whole generation of young scientists—lose them to other countries, or lose them to science altogether.

I feel the urgency of this moment. We need solutions and we need them now.

⁹ Information Technology and Innovation Foundation, *Leadership in Decline: Assessing U.S. International Competitiveness in Biomedical Research*, May 2012, <http://www2.itif.org/2012-leadership-in-decline.pdf>.

¹⁰ National Institutes of Health, “Fact sheet: Impact of Sequestration on the National Institutes of Health,” June 3, 2013, <http://www.nih.gov/news/health/jun2013/nih-03.htm>.

¹¹ John E. McDonough, “The Sequestration Cuts that are Harming Health Care,” *The Health Care Blog*, October 24, 2013, <http://thehealthcareblog.com/blog/2013/10/24/the-sequestration-cuts-that-are-harming-health-care/>

I am reaching out to my colleagues on both sides of the aisle to build support for a renewed commitment to innovation. We need two things: to double our investment in scientific and biomedical research — and to create more year-to-year certainty for that funding.

I know some will say that we cannot afford to double our investments in medical research. They are wrong. Research creates economic growth. It reduces health care costs. It creates a better life for our people. And yet, the success rate for NIH grants has dropped by nearly 50% over the last 10 years. That makes no sense. There is good work to be done—work to save lives and work to boost our economy. We cannot afford NOT to increase our investments in medical research.

We need to reduce our deficits, and that means making smart choices on spending. Right now, our country spends billions in the wrong places. Every year, we give away billions of federal dollars to giant oil and gas companies. Every year, we give away billions of dollars in subsidies to giant agribusinesses. Every year, we give away billions of dollars in tax shelters for wealthy individuals. We need to align our spending with high value investments, and we need to align our spending with our values. That means investing in innovation.

We need to make better funding choices, but we also need to make structural improvements to protect investments in NIH from broader budget battles while still preserving the important role of Congressional appropriators. That means ending mindless budgeting tactics like sequestration that make no logical sense and create massive uncertainty for our scientists about what future funding will look like. Congress should make NIH funding more certain by committing, in advance, to maintain or increase the NIH's funding levels every year. We want scientists to plan for the future so that we can get the most bang for our research buck.

I don't kid myself. I know that people are skeptical about the ability of government get things done. But there's no reason that levelheaded people from both parties can't come together and give biomedical research the support it needs to thrive in the 21st century. We've done it before — we can do it again.

For more than two hundred years Americans have defined ourselves in part by our inventiveness — by our search for knowledge, our willingness to experiment, and our commitment to discovery. Government investments in research and innovation have made us stronger, smarter, and more successful. We cannot abandon our legacy, abandon a generation of young scientists, and abandon the advancements that they can achieve. Our commitment to scientific research and discovery is part of who we are as a people, and even if the battle is uphill, I intend to fight for big investments in research and innovation. I hope you will be part of this fight.