Statement on Importance of Funding Scientific Research

The Graduate Student Council (GSC) represents the 6,800 graduate students of the Massachusetts Institute of Technology (MIT) in all matters concerning their welfare, academic opportunities, and professional careers after graduation. We support all measures that strengthen federal funding for both basic and applied research and enable major scientific innovations. Moreover, we stress that these investments in research are essential to increase the competitiveness of our economy and the overall health and prosperity of human society.

Nobel prize winning economist Robert Solow found that over \textit{60\% of economic growth can be attributed to advancements in science and technology}.\footnote{1} As an example, MIT students and faculty have founded more than 30,000 currently active companies that employ roughly 4.6 million people and generate annual revenues of $1.9 trillion, which is equivalent to the world’s 10th largest economy.\footnote{2} This success can be attributed to the over \textit{65\% of research funding at MIT that comes from federal sources}.\footnote{3} MIT’s success is only one illustration of how federal research funding leads to economic prosperity. Previous federally funded research initiatives have led to technological revolutions that have improved quality of life and now are important drivers of our economy.\footnote{4}

- \textbf{National Science Foundation (NSF)} had an allocation of only 0.2\% the federal budget in 2016, yet NSF has contributed to the founding of Google, advancements in electronics, and advancements in clean energies.
- \textbf{Defense Advanced Research Projects Agency (DARPA)} had an allocation of only 0.06\% the federal budget in 2016, yet has contributed to the development of GPS, the Internet, and numerous battlefield technologies that have saved thousands of lives.
- \textbf{Human Genome Project} had a total lifetime cost of only $5.6 billion in 2010 dollars, and has contributed to the treatment and prevention of numerous diseases as well as creating $796 billion in economic impact from 1988 to 2010.\footnote{5}

When we consider national government R&D funding as a percentage of GDP, eight nations invested more in R&D than the United States in 2015, including Russia and South Korea.\footnote{6} Furthermore, economic competitors such as China have greatly increased their research investment in the past 20 years. \textbf{Prioritizing funding for research and innovation is necessary to keep the United States globally competitive.}

There are numerous research breakthroughs on the immediate horizon that will spur new waves of innovation and economic prosperity. For example, new battery technologies and fusion energy are poised to benefit our energy sector, while advances in Alzheimer's, infectious diseases, and synthetic biology will revolutionize healthcare. Government research funding in basic and translational research is essential for these innovations, and many more, to be realized.

\begin{itemize}
\item \begin{flushleft} 1. The Information Technology and Innovation Foundation report on Federally Supported Innovations p.4 \\
2. MIT Sloan 2015 report on “Entrepreneurship and Innovation at MIT” p.7 \\
4. Information Technology and Innovation Foundation 2014 report “Federally Supported Innovations” \\
5. Batelle 2011 report “Economic Impact of the Human Genome Project” p. 8 \\
6. OECD “Science, Technology and R&D Statistics” www.oecd-ilibrary.org/\end{flushleft}
\end{itemize}
The GSC also urges strong and sustained growth in federal funding programs to enable predictable long-term support for research projects. Current research grants average 3-4 years of support, even though many fields of science have projects with naturally longer lifetimes. Unfortunately, total federal research funding has dropped from 4.9% of the federal budget in 2004 to 3.5% of the federal budget in 2016. This is already having a detrimental impact on the United States’ technological output that will only worsen in the coming years, and we urge policymakers to prioritize research funding during the budgeting process.

The GSC urges its representatives to prioritize research funding during budget and policy decisions. Now is the time to invest in the promising technologies of the future with robust funding. Research has been, and will continue to be, the key to economic competitiveness and improved quality of life.

Prepared by the External Affairs Board on behalf of the MIT Graduate Student Council.

7. Science editorial “Benefits of steady growth”