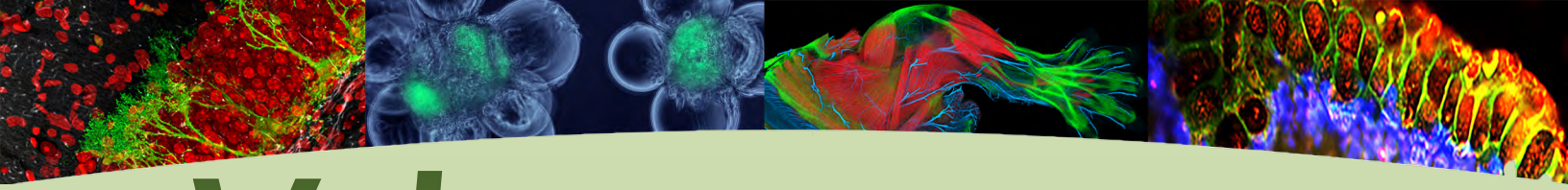


The Value of Federally Funded Biomedical & Biological Research

Improving health:

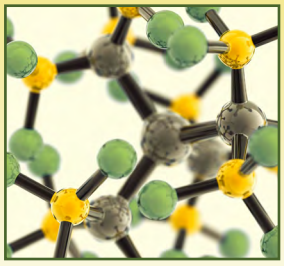
- Research funded by the National Institutes of Health (NIH) has improved treatment and prevention of heart attacks, strokes, and Type 2 diabetes. From 1982-2004, chronic disability among US seniors declined by nearly 30 percent.
- Since the 1970s, the five-year survival rate for patients with breast cancer has increased (from 75 to 90 percent) and for colon cancer (from 50 to 70 percent).

Developing new technologies, products, and industries:

- From 1990-2007, new drugs discovered by public-sector research institutions were more than twice as likely to receive a high priority review by the FDA.
- New industries have been created by initiatives like the Human Genome Project.
- NIH and the National Science Foundation (NSF) support the commercialization of research discoveries through grants to small businesses (SBIR/STTR programs).

Training the next generation of scientists:

- NIH and NSF support training and education in all 50 states.
- Training programs provide state-of-the-art education in emerging scientific fields and supports interdisciplinary training.
- Research grants provide opportunities for graduate and post-doctoral students to gain hands-on laboratory experience.



Increasing knowledge:

- From 1997-2012, 47 NIH- and NSF-funded investigators received a Nobel Prize in either Physiology/Medicine or Chemistry.
- Federally-funded research has the extraordinary opportunity to pursue high-risk lines of inquiry that could transform medicine, agriculture, and all areas of society.
- NSF, NIH, and other federal agencies supported basic research essential to the development of the artifical retina.

Strengthening the economy:

- A broad-based program of basic research supports the growth of a healthy and robust economy – from creating new industries to improving quality of life.
- NIH's IDeA and NSF's EPSCoR programs build critical research infrastructure that promotes innovation, expands the skilled workforce, and strengthens STEM education.

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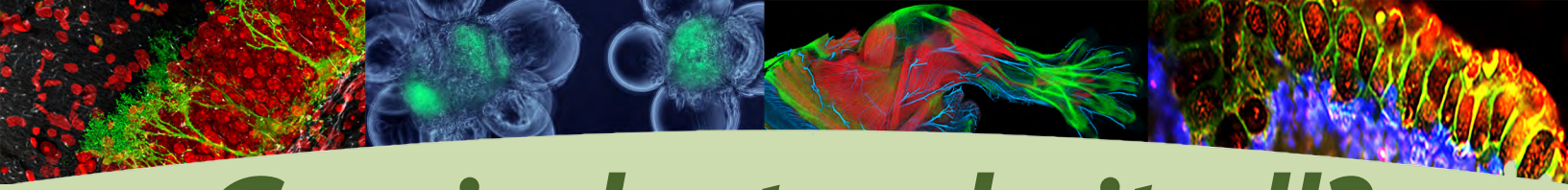

Can industry do it all?

While there are some highly profitable lines of research, many are ***not*** well-suited for corporate investment. **Why?**

Basic research is a critical foundation for future innovation, but is a very risky private investment

- We do not know when or in which field the next breakthrough will occur, so we need sustained support for a very broad range of scientific inquiry. Furthermore, this research stimulates future industrial investment and growth by providing a wide variety of new ideas to develop.
- Basic research creates the knowledge necessary for applied research, saving firms the costs of independently creating the same information and resources.
- The uncertain (and often decades-long) timeframe between initiating basic research and the application of any resulting discoveries is an investment disincentive for firms with short-term budget constraints.

Some clinical research lacks a commercial application, but still greatly benefits society

- Studies comparing medical care best practices and existing therapuetics can improve health outcomes, but there is a lack of commercial incentive for the private sector to carry out these studies.
- Treatments for very rare diseases are generally not profitable for a company to pursue, although insights gained from studying these diseases could lead to breakthroughs for more common illnesses as well.

Federal funding educates the vast majority of the next generation of scientists

- The federal investment in our workforce provides training in emerging fields and across broad areas of science, but it is often impractical for industry to make this long-term investment.

"A continued investment in basic science is also key to our economic competitiveness. America remains the world's leader in biotechnology and pharmaceutical discovery thanks to the strength of our research universities and other biomedical research institutions, which not only spawn countless biotechnology companies but also have attracted the R&D operations of most major pharmaceutical companies, which are keen to tap into our innovation."

From a jointly authored Forbes article by Marc Tessier-Lavigne, President of the Rockefeller University and former Chief Scientific Officer of Genentech, P. Roy Vagelos, Chairman of Regeneron Pharmaceuticals and former Chairman and CEO of Merck, and Elias Zerhouni, President of Global R&D at Sanofi and former Director of NIH

Publically and privately funded-research is complementary, but not interchangeable – both play an important role in our economy.

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