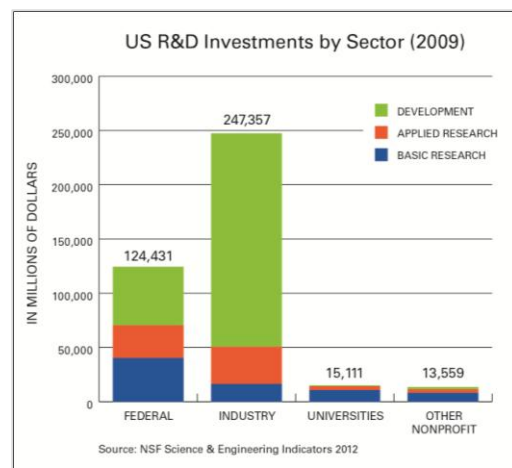
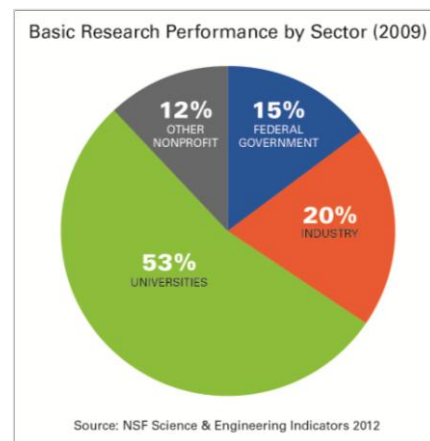


## The Federal Government and U.S. Research Universities: Driving Innovation that Fuels the Economy

Innovation fueled by basic scientific research has been a cornerstone of America's economy for the last half-century, leading to the creation of countless companies, jobs, technologies and products. At the root of this success is the partnership that was forged during World War II between the United States government and U.S. universities to conduct research on behalf of the American people.

Our system for research is eminently successful and the envy of the world. Below are important facts about this system:

- **Basic scientific research is essential to scientific discovery and understanding.** It is the first step in the innovation process.
- **Universities conduct the majority of basic scientific research in the United States— [53 percent in 2009](#).** Business and industry conduct approximately 20 percent of basic scientific research in the United States. They focus instead on the later-stage applied research and development that is required to commercialize a product or technology.
- **The federal government is the primary source of funding for basic scientific research** conducted in the United States, providing just under [60 percent of funding](#). However, as recently as 1980, the federal government funded more than 70 percent of basic research. The second largest source of basic research funding is the academic institutions themselves. Industry funds relatively little basic scientific research, yet relies heavily on that research to help fuel its innovation pipeline.
- **Federal support for basic research is based on scientific merit and competitive peer review.** In order to receive funding, researchers must submit proposals to one of several federal agencies responsible for scientific research in the U.S. These include the National Institutes of Health, the Department of Defense, the Department of Energy's Office of Science, the Department of Commerce, the National Science Foundation, and the National Aeronautics & Space Administration, among others.
- **Applications for federal research grants far exceed the availability of funds.** This is a highly competitive process where only the very best proposals – as judged by other scientists – receive funding. Less than [20](#) percent of the 49,592 new grant applications reviewed by the National institutes of Health in FY 2011 were funded. At the National Science Foundation, just over [20](#) percent of new grant applications were funded in FY 2011 – 11,200 of the 51,600 received.



- **Innovations that flow from basic scientific research are at the root of countless products, technologies, innovations and jobs that we take for granted today.** In fact, more than half of U.S. economic growth since World War II can be traced to science-driven technological innovation. The source of much of this innovation was scientific research supported by the federal government and led to such things as vaccines, the MRI, modern communications devices, and the Internet.
- **Countless companies also got their start through federally funded university based basic scientific research.** Google, Genentech, SAS, Cisco Systems, iRobot, A123 Systems, CREE, SunPower and FluGen are all examples. Companies spun out of research universities have a strong [success rate](#), creating good jobs and spurring economic activity.
- **The U.S. leads the world in global research and development** expenditures from [all sources](#). However, China and other nations are investing aggressively in R&D in order to enhance their innovation capabilities while U.S. spending as a percentage of GDP has been more or less flat. According to the *2012 Science and Engineering Indicators*, there has been rapid global growth in R&D spending over the last decade, particularly in countries like China, South Korea and Japan. In 1999, the U.S. accounted for 38 percent of global total R&D and Asia (including China and Japan) accounted for 24 percent. By 1999, the U.S. share had slipped to 31 percent and Asia's had grown to 32 percent.

