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For more than a half century, the United States has operated what might be called a “Miracle Machine.” Powered by federal investment in science and technology, the machine regularly churns out breathtaking advances.

The Miracle Machine has transformed the way we live and work, strengthened national defense and revolutionized medicine. It has birthed entire industries—organized around computers, biotechnology, energy and communications—creating millions of jobs. It’s the reason the United States is the global hub for the technologies of the future: self-driving cars, genome editing, artificial inte

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drug development, and atomic clocks, which enable the Global Positioning System that guides travelers to their destinations.

And we've witnessed firsthand that creating and sharing mountains of scientific data can drive both exploration and commercialization. The \$4 billion NIH investment in the Human Genome Project, which one of us (Lander) co-led, dramatically accelerated the understanding of human disease—and unleashed roughly \$1 trillion in economic activity. That's like \$5 in a savings account growing to \$1,250.

Finally, tackling novel engineering challenges has laid the foundation for new industries. In the late 1960s,

federal grants to universities to explore message-passing among computers led directly to the Internet. A \$4.5 million National Science Foundation grant to Stanford University in 1994, to explore the idea of digital libraries, helped contribute five years later to the creation of Google. Today, the U.S. taxes paid each year by the company and by its more than 40,000 domestic employees total in the billions—a good portion of the NSF's annual \$7 billion budget.

Crucially, when scientific breakthroughs spawn new industries and jobs, those benefits occur right here in the United States—because companies want to remain close to the flow of new discoveries and experienced workers.

The Miracle Machine has been astoundingly successful. The problem is that too few people—in government or in the public—know how it works. As a result, we've been letting it fall into disrepair.

If we don't change course and invest in scientific research, we risk losing one of America's greatest advantages. To our lasting detriment, we may wake up to find the next generation of technologies, industries, medicines and armaments being pioneered elsewhere.