

Basic science: Saving lives, fueling the economy

Funding the future of scientific breakthroughs

Fundamental biological research, sometimes called “basic” research, helps us understand the principles, mechanisms and processes that underlie biological organisms and their systems, structures and functions. This knowledge forms the foundation for breakthroughs in how to predict, prevent, diagnose, and treat disease. For instance, understanding the mechanics of how proteins fold and misfold in brain cells has been essential to understanding the basis of conditions like Alzheimer’s and Parkinson’s diseases, and that knowledge is informing other researchers who work to identify possible targets for new drug development.

The nation’s largest funders of basic science research are the National Institutes of Health, the National Science Foundation, and the Department of Energy. Groundbreaking research from these agencies has led to the development of therapeutics and medical interventions to improve the health of the country.

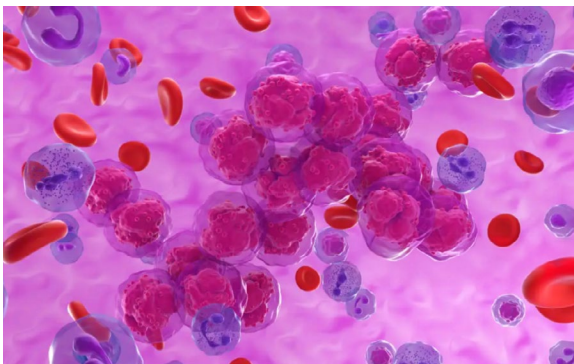
While there are many powerful examples of the impact of basic research, one highlight is the remarkable progress to understand and treat cancer. Decades of federally supported basic research have led to today’s increasingly effective treatments for various forms of cancer, where deaths have shown a consistent decline and better outcomes for American families.

Critical breakthroughs



Breast cancer

Basic science research on estrogen receptor alpha (ERα) has made today’s most effective treatments for estrogen receptor positive breast cancer possible, a disease that accounts for about 70% of cases of breast cancer. Foundational discoveries about how ERα drives tumor growth led to widely used aromatase inhibitors such as Anastrozole (Arimidex), Exemestane (Aromasin), and Letrozole (Femara).



Leukemia

Basic scientific research on cytotoxic T cells has laid out the groundwork for today’s most promising cancer immunotherapies by revealing how these immune cells recognize and destroy infected or cancerous cells. That foundational knowledge enabled breakthrough treatments such as CAR-T cell therapy, which is FDA approved for several blood cancers including leukemia, lymphoma, and multiple myeloma.

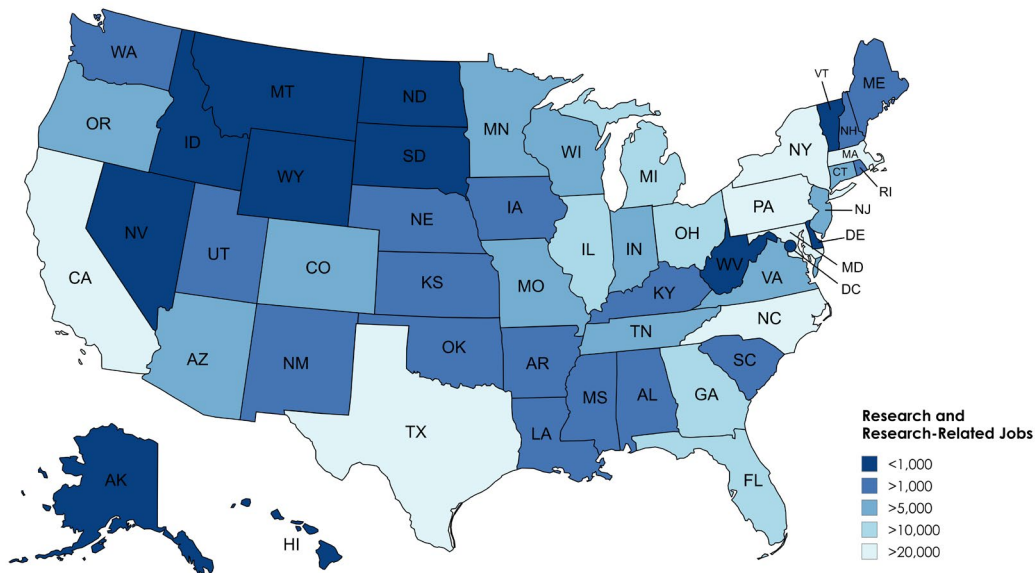
Growing the U.S. workforce and economy

Scientific funding has far-reaching implications for the economy of the U.S. For example, in fiscal year 2024, **NIH funding generated \$94.58 billion in economic activity.**¹

- NIH supports roughly 59% of all research personnel, including undergraduate, graduate and postdoctoral scholars, in academic R&D concentrated in biological and biomedical sciences.
- In 2021, 61% of science and engineering research positions and training opportunities were funded through research grants.
- Federal science agency funding supports jobs:
 - NIH: > 400,000 research and research-related jobs
 - NSF: > 45,000 research and research-related positions
 - DOE: > 4,000 labs²

Scientific research funding impacts every state

Investing in basic science research supports research training for all career stages, promotes job development, increases global competitiveness, and prepares our science workforce to tackle the pressing challenges of the twenty-first century. The agencies that prioritize foundational research, the NIH, NSF and DOE, fund research positions in all 50 states.



1. "NIH'S ROLE IN SUSTAINING THE U.S. ECONOMY." United for Medical Research, 11 Mar. 2025, www.unitedformedicalresearch.org/annual-economic-report/.

2. National Science Board, National Science Foundation. Academic Research and Development. Science and Engineering Indicators 2024, NSB-2023-26, October 5, 2023, nces.nsf.gov/pubs/nsb202326/executive-summary.