

# Basic science saves lives and fuels the economy

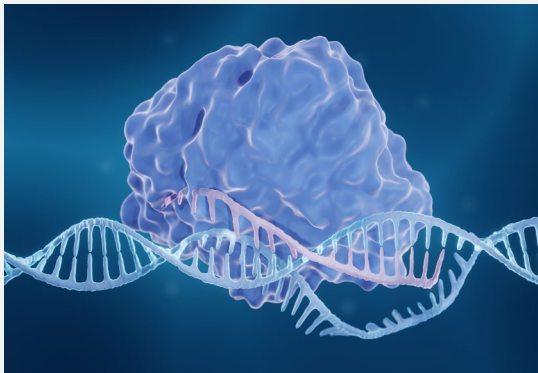
## Funding the future of scientific breakthroughs

The building block of all medical and scientific breakthroughs is basic science research. Basic science research helps us understand the principles, mechanisms and processes that underlie organisms and systems. The fundamental knowledge gained through basic science research often forms the foundation for breakthroughs in how to predict, prevent, diagnose, and treat disease.

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.

### Recent breakthroughs

- NIH funding contributed to the development of 354 out of 356 drugs approved by the US Food and Drug Administration from 2010 to 2019.
- NSF funding has led to the development of biotechnology techniques that has streamlined scientific innovation and advancements.
- DOE funding helped [crack the genetic code of sugarcane](#), a prime ingredient in biofuels, a finding that can help researchers fight brown rust disease and advance the bioeconomy



**NSF funding:** Jennifer Doudna and Emmanuelle Charpentier's discovery of CRISPR has led to the development of the first FDA approved treatment for sickle cell disease.

In addition to treating diseases CRISPR technology can be used to [develop stronger crops and improve livestock production](#).



**NIH funding:** Lynne Maquat's lab researches RNA decay pathways. These studies have led to the development of over 80 drugs for diseases such as Duchenne muscular dystrophy and Fragile X syndrome.

## 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 2023, **NIH funding generated \$94.58 billion in economic activity.**

- 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 labs

## 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.

