

What is Biotechnology?

At its simplest, biotechnology is technology based on biology – biotechnology harnesses cellular and biomolecular processes to develop technologies and products that help improve our lives and the health of our planet. We have used the biological processes of microorganisms for more than 6,000 years to make useful food products, such as bread and cheese, and to preserve dairy products.



Modern biotechnology provides breakthrough products and technologies to combat debilitating and rare diseases, reduce our environmental footprint, feed the hungry, use less and cleaner energy, and have safer, cleaner and more efficient industrial manufacturing processes.



HEAL THE WORLD

Biotech is helping to heal the world by harnessing nature's own toolbox and using our own genetic makeup to heal and guide lines of research by:

- Reducing rates of infectious disease;
- Saving millions of children's lives;
- Changing the odds of serious, life-threatening conditions affecting millions around the world;
- Tailoring treatments to individuals to minimize health risks and side effects;
- Creating more precise tools for disease detection; and
- Combating serious illnesses and everyday threats confronting the developing world.

[More on Human Health](#)

FUEL THE WORLD

Biotech uses biological processes such as fermentation and harnesses biocatalysts such as enzymes, yeast, and other microbes to become microscopic manufacturing plants. Biotech is helping to fuel the world by:

- Streamlining the steps in chemical manufacturing processes by 80% or more;
- Lowering the temperature for cleaning clothes and potentially saving \$4.1 billion annually;
- Improving manufacturing process efficiency to save 50% or more on operating costs;
- Reducing use of and reliance on petrochemicals;
- Using biofuels to cut greenhouse gas emissions by 52% or more;
- Decreasing water usage and waste generation; and
- Tapping into the full potential of traditional biomass waste products.

[More on Sustainable Fuels](#)



FEED THE WORLD

Biotech improves crop insect resistance, enhances crop herbicide tolerance and facilitates the use of more environmentally sustainable farming practices. Biotech is helping to feed the world by:

- Generating higher crop yields with fewer inputs;
- Lowering volumes of agricultural chemicals required by crops—limiting the run-off of these products into the environment;
- Using biotech crops that need fewer applications of pesticides and that allow farmers to reduce tilling farmland;
- Developing crops with enhanced nutrition profiles that solve vitamin and nutrient deficiencies;
- Producing foods free of allergens and toxins such as mycotoxin; and
- Improving food and crop oil content to help improve cardiovascular health.

[More on Food & Farm Innovation](#)

Currently, there are **more than 250 biotechnology health care products and vaccines** available to patients, many for previously untreatable diseases. **More than 13.3 million farmers around the world** use agricultural biotechnology to increase yields, prevent damage from insects and pests and reduce farming's impact on the environment. And **more than 50 biorefineries are being built** across North America to test and refine technologies to produce biofuels and chemicals from renewable biomass, which can help reduce greenhouse gas emissions.

Recent advances in biotechnology are helping us prepare for and meet society's most pressing challenges.

Did You Know?

BIO is the world's largest trade association representing biotechnology companies, academic institutions, state biotechnology centers and related organizations across the United States and in