

Biotechnology is the application of biological systems, organisms, or derivatives to develop products and technologies that improve human life. It combines principles from biology, chemistry, genetics, and engineering.

Modern biotechnology includes genetic engineering, where DNA is modified to produce desired traits. Applications include the production of insulin, vaccines, and genetically modified crops.

Biotechnology also plays a major role in medical diagnostics and gene therapy.

In agriculture, biotechnology improves crop yield, pest resistance, and nutritional value. In environmental science, biotechnological methods are used for waste treatment and pollution control.

Ethical and regulatory considerations are central to biotechnology development. Concerns include biosafety, environmental impact, and equitable access to biotechnological advancements.