

# Introduction to Pharmaceutical Biotechnology



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# BIOTECHNOLOGY



- It is the area of biology that uses living processes, organisms or systems to manufacture products or technology intended to improve the quality of human life. Depending on the technology, tools and applications involved, biotechnology can overlap with molecular biology, bionics, bioengineering, genetic engineering and nanotechnology.

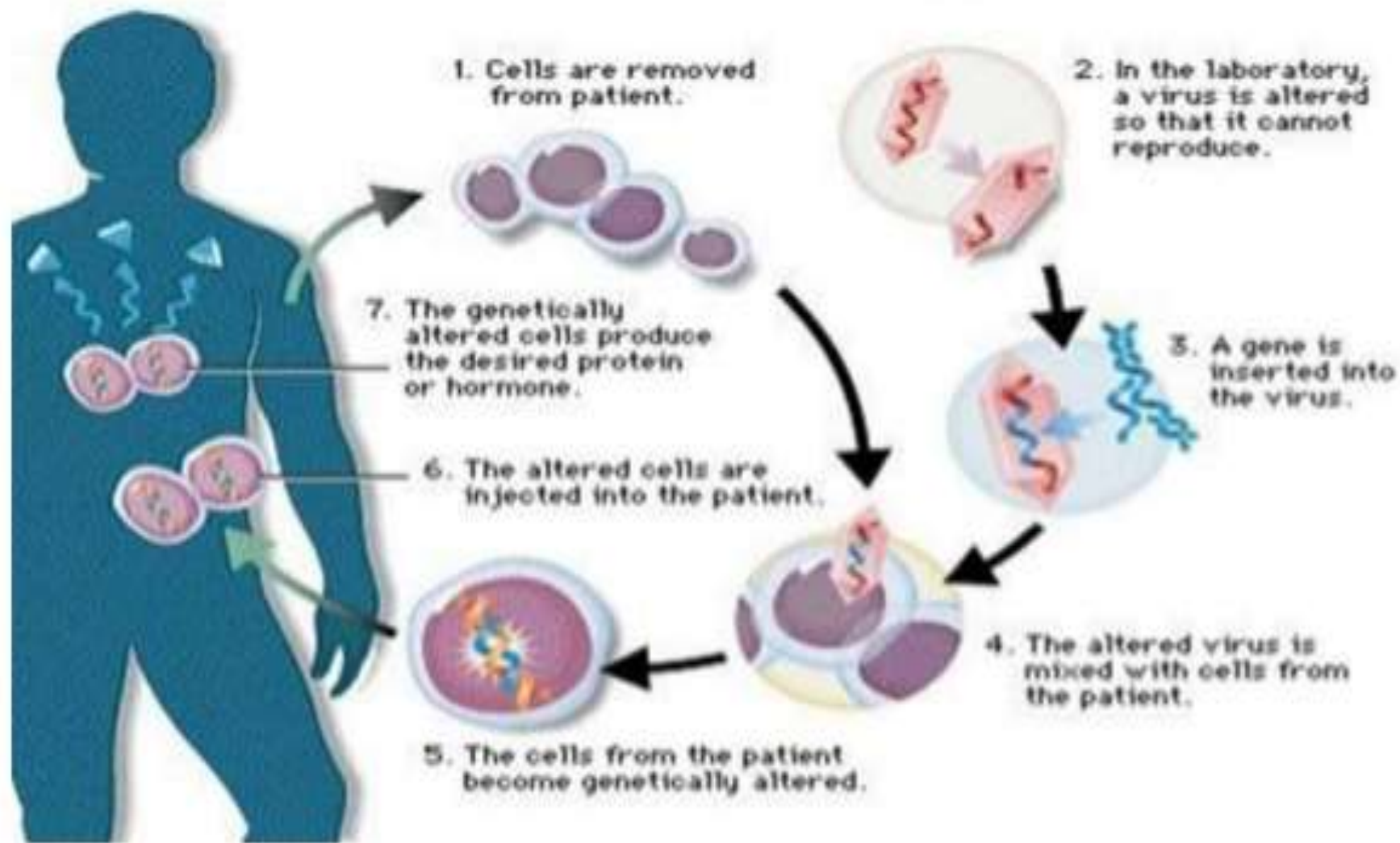
# HISTORY

- People have been harnessing biological processes to improve their quality of life for some 10,000 years, beginning with the first agricultural communities. Approximately 6,000 years ago, humans began to tap the biological processes of microorganisms in order to make bread, alcoholic beverages, and cheese and to preserve dairy products. But such processes are not what is meant today by biotechnology, a term first widely applied to the molecular and cellular technologies that began to emerge in the 1960s and '70s. A fledgling "biotech" industry began to coalesce in the mid- to late 1970s, led by Genentech, a pharmaceutical company established in 1976 by Robert A. Swanson and Herbert W. Boyer to commercialize the recombinant DNA technology pioneered by Boyer, Paul Berg, and Stanley N. Cohen. Early companies such as Genentech, Amgen, Biogen, Cetus, and Genex began by manufacturing genetically engineered substances primarily for medical and environmental uses.

# BIOTECHNOLOGY AND PHARMACEUTICAL INDUSTRY

- Pharmaceutical biotechnology is a relatively new and growing field in which the principles of biotechnology are applied to the development of drugs. A majority of therapeutic drugs in the current market are bio formulations , such as antibodies, nucleic acid products and vaccines.

# HOW IT WORKS?



## APPLICATIONS IN PHARMACY

- Biotechnological methods have become an important tool in pharmaceutical drug research and development. The most relevant indications are oncology, metabolic disorders and disorders of the musculoskeletal system

# APPLICATION IN PHARMACY

## EXAMPLES:

- INSULIN:

An hormone used diabetes mellitus

- GENE THERAPY:

The common function of gene therapy involves the use of functional DNA to replace muted DNA

- CLOTTING FACTORS:

Use in treatment of hemophilia where there is absence of clotting factors in patient's body

- HUMAN SERUM ALBUMIN:

One of the most blood protein use in the treatment of burns

- ENGINEERED ENZYME:

Used to treat variety of conditions that is due to enzyme deficiency