

BIOTECHNOLOGY (जैव प्रौद्योगिकी)

DEFINITION:- Deals with techniques of using live organisms or enzymes from organisms to produce products and processes useful to humans.

Biotechnology (Bt) Bios + technologic = systematic treatment

जैव प्रौद्योगिकी एक ऐसी प्रक्रिया है जिसमें आनुवंशिक प्रक्रमों, सजीवों अथवा उनके भाग पराचों का उपयोग किया जाता है। Biotechnology से प्राप्त फलस्वरूप उत्पाद निम्नलिखित हैं:-

- ① Growth hormones
- ② Interferon
- ③ Insulin
- ④ vaccine
- ⑤ Antibiotics
- ⑥ Organic acid
- ⑦ Tissue culture
- ⑧ Molecular biology

In this sense, making curd, bread, or wine, which are all microbe-mediated processes, could also be thought as a form of biotechnology. However, it is used in a restricted sense today, to refer to such of those processes which use genetically modified organisms to achieve the same on a larger scale. Further, many processes/techniques are also included under biotechnology. For example, in vitro fertilisation leading to a test-tube baby. Synthesising a gene and using it, developing a DNA vaccine or correcting a defective gene, are all part of biotechnology.

According to European Federation of Biotechnology (EFB) has given a definition of biotechnology that ^{en}compasses

both traditional view and modern molecular biotechnology.

The integration of natural science and organisms, cells, part thereof, and molecular analogues for products and services.

PRINCIPLES OF BIOTECHNOLOGY

① Genetic engineering: Techniques to alter the chemistry of genetic material (DNA and RNA), to introduce these into host organisms and thus change the phenotype of the host organism.

② Maintenance of sterile (microbial contamination-free) ambience in chemical engineering processes to enable growth of only the desired microbial/Eukaryotic cell in large quantities for the manufacture of biotechnological products like antibiotics, vaccines, enzymes etc.

The techniques of genetic engineering which include creation of recombinant DNA, use of gene cloning and gene transfer, overcome this limitation and allow us to isolate and introduce only one or set of desirable genes without introducing undesirable genes into the target organism.
