

7. GENETICS OF THE FUTURE

1. What is genetic engineering ?

Video class link of this chapter : <https://youtu.be/M6DZjKdkcg4>

Genetic engineering is a technology that controls traits of organisms by bringing about desirable changes in their genetic constitution.

2. Mention how gene technology becomes beneficial ?

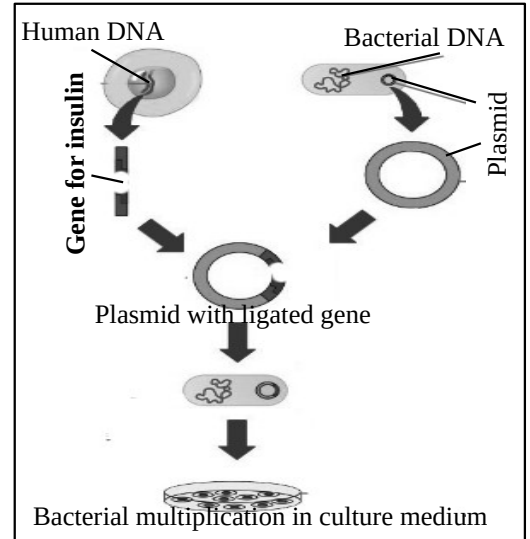
- Genetically modified organisms producing medicines, food items and other products.
- High productive and disease resistant varieties
- Remedy of genetic diseases through Gene therapy
- DNA finger printing/profiling (DNA test) to identify real person.

For **SSLC 2021**

3. How is it possible to bring about desirable changes in an organism ?

Genetic modification in organism is done by cutting or joining specific genes, using certain enzymes. This process is known as genetic engineering.

4. Describe the stages in the production of human insulin bacteria through the process of genetic engineering.



- From human DNA, cut the gene responsible for the production of insulin.
- Plasmid (circular DNA) is isolated from a bacterium.
- Human insulin gene is ligated with the isolated plasmid
- Insert this ligated plasmid in to another bacterial cell.
- This bacterium is allowed to multiply in a culture medium to produce inactive insulin.
- Active insulin is produced from this.

5. Define '**vectors**' in genetic engineering.

Vectors are other DNA (usually bacterial DNA / plasmid), by which genes can be transferred from one cell to another.

6. What do you mean by genetic scissors and genetic glue that are used in the process of genetic engineering ?

The enzymes like Restriction endonuclease, used to cut DNA at specific sites, are generally called as '**genetic scissors**'. The enzymes like Ligase, used for joining DNA at specific sites, are generally called as '**genetic glue**'.

7. Genetic scissor : Restriction endonuclease,

Genetic glue : ----- ? Ans: Ligase

8. What is DNA profiling ?

The technology of testing the arrangement of nucleotides in the DNA of persons is called **DNA profiling** or **DNA finger printing** (DNA testing).

9. The developer of DNA finger printing ?

Alec Jeffreys



Alec Jeffreys

10. What is the basic principle behind this technology ?

The arrangement of nucleotides in the DNA of each person differs. In DNA profiling, we test the arrangement of nucleotides in the particular person with that of others.

11. Mention the scope of DNA testing.

- To find out hereditary characteristics,
- To identify real parents in the case of parental dispute
- To identify persons found after a long periods of missing due to war or natural calamities.
- To prove murder, robbery etc.

12. DNA profiling : For identifying person or other organisms,

----- : For the treatment of genetic diseases (gene therapy)

Gene mapping.

