

ADVANCES IN SCIENCE AND TECHNOLOGY

Exercise :

Get involved

1. The word ‘ Biotechnology ‘ is combining two words : ‘ “+ “” Infer its meaning from this combination.

2- look at the pictures below and find out some applications of biotechnology.

read and discover

3- skim through the following text and write in your own words a definition of “ biotechnology”.

Ask the Expert

What is biotechnology?

Biotechnology (or bioengineering) refers to any change of an organism’s genes for practical purposes like disease control, better crops, cloning of plants and animals,...

Biotechnology is closely related to genetics which can be defined as the scientific study of genes, i.e. variations in the characteristics. Resemblances and differences—of organisms and how these characteristics are inherited from generation to generation. Modern genetics is as much concerned with the organism level of this process as it is with the cellular and molecular levels.

What are the current applications of biotechnology?

Plants

Thanks to biotechnology, farmers are able to get rid of unwanted characteristics of plants and keep the ones that they desire. One example of this is the “ flavr savr “ tomato; this genetically engineered tomato has a longer shelf life as the ripe* phase lasts significantly longer before the rotting** begins. The other famous example is the new type of potatoes that resist invasion by dangerous insects.

Other advances in genetic engineering have made it possible to decrease the need for fertilizers by breeding plants that produce their own form of efficient fertilizers. Farmers are looking for a greater crop product while having to plant fewer crops. These are only a few of the many advances and prospects that genetic engineering holds for agriculture.

However, there are some negative side effects that must be worked out. An example of this is a decline in the quality of taste, which would definitely outweigh the benefits of a long shelf life or resistance to insects!

Genetic engineering can improve the genes of animals by reducing the possibility of diseases. In cows, for example, higher products of meat or milk can be brought forth. Genetic

variations can also promote faster growth, which means less time and expense before the farmer can achieve market value for an animal's meat.

However, the use of genetic engineering in livestock has not come without its problems. There have been increased instances of mutation and overgrowth, which has caused scientists to re-evaluate the effectiveness of genetically engineered livestock.

Human disease control

Already bioengineering has grown into a huge industry that creates a wide variety of medical products made by genetically enhanced DNA. A small representative sample of products currently available would include such drugs as insulin for treating diabetes, growth hormones for heart attacks, interferon for cancer, safer vaccines for AIDS.

The use of genetic engineering in humans promises some extraordinary benefits, one of which is cure and prevention of many types of diseases that come from faulty genes. Medically, genetic engineering has the potential to improve the lives of humans who are suffering from genetic disorders. However some claim that eliminating bad genes in a population will only narrow the diversity of the wider human gene pool .

4- red the text and find out examples of benefits of biotechnology on human beings.

5- read the text again and find out examples of problems related to biotechnology .

6-Answer these questions.

- A. How can biotechnology help farmers ?
- B. What effect can biotechnology have on livestock ?
- C. How can biotechnology help medically ?