

13–4 Applications of Genetic Engineering

Transgenic Organisms

- An organism described as transgenic, contains genes from other species.

How are transgenic organisms useful to human beings?

Genetic engineering has spurred the growth of biotechnology.

Transgenic Microorganisms

Transgenic bacteria produce important substances useful for health and industry. Transgenic bacteria have been used to produce:

- insulin
- growth hormone
- clotting factor

Transgenic Animals

Transgenic animals have been used to study genes and to improve the food supply.

Mice have been produced with human genes that make their immune systems act similarly to those of humans. This allows scientists to study the effects of diseases on the human immune system.

Researchers are trying to produce transgenic chickens that will be resistant to the bacterial infections that can cause food poisoning.

Transgenic Plants

Transgenic plants are now an important part of our food supply.

Many of these plants contain a gene that produces a natural insecticide, so plants don't have to be sprayed with pesticides.

Cloning

A **clone** is a member of a population of genetically identical cells produced from a single cell.

In 1997, Ian Wilmut cloned a sheep called Dolly.

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Researchers hope cloning will enable them to make copies of transgenic animals and help save endangered species.

Studies suggest that cloned animals may suffer from a number of genetic defects and health problems.