

# An Overview of Genetically Modified Organisms

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## INTRODUCTION

A Genetically Modified Organism (GMO) is an animal, plant, or microorganism whose DNA has been using genetic engineering techniques. Modern advances in biotechnology have allowed scientists to directly modify the DNA of microorganisms, crops, and animals. Organisms that are genetically changed into microorganisms that are bacteria and yeast, plants, fish, and mammals. Source of genetically changed foods, and are widely utilized in research projects and to produce useful goods other than food.

### How genetically modified organisms are produced?

Genetic modification involves the insertion or deletion of genes. When genes are inserted, they usually come from a unique species, which may be a variety of horizontal gene transfer. In nature, this could occur once exogenous DNA penetrates the cell membrane for any reason. To do this artificially means might need attaching the genes to a plague or simply physically inserting the additional DNA into the nucleus of the supposed host with a really tiny syringe, or with terribly tiny particles laid-off from a gene gun. Agrobacterium ability to transfer genetic material to plants or the flexibility of lentiviruses to transfer genes to animal cells is natural samples of gene transfer. The fundamental principle for producing a GMO was to feature new genetic material into an organism's ordination. This is often referred to as genetic engineering, gene-splicing, recombinant DNA technology and was created attainable through the invention of DNA and also the creation of the first recombinant DNA molecules.

## TRANSGENIC PLANTS

Transgenic plants are built for research works, to produce different part of plants like flowers, seedless fruits and also helps in improved crop yield. Plants are built to assist discover the functions of certain genes. One way to do this is to eliminate the gene of interest and see what phenotype develops. Another strategy is to connect the gene to a robust promoter and see what happens when it is overexpressed.

## GM crops

In agriculture, genetically built crops are created to possess many fascinating traits, like resistance to pests, herbicides, or harsh environmental conditions, improved product time period, enhanced biological process worth, or production of valuable merchandise like medicine (pharming). Plants, together with alga, Jatropha, maize, and alternative plants are genetically changed to be used in manufacturing fuel, referred to as biofuel.

## Microbes

Bacteria were the first organisms to be modified within the laboratory, due to their simple genetics. These organisms are currently used for many functions, and are notably vital in producing large amounts of pure human proteins to be used in medication. Genetically changed bacterium is used to produce the protein insulin to treat diabetes. Similar bacterium are wont to turn out natural process genes to treat bleeder's disease, and human growth hormone to treat varied sorts of inherited disease.

## Mammals

Some scientists developed the techniques responsible for transgenic mice, rats, rabbits, sheep, and pigs within the early Nineteen Eighties. They established several of the primary transgenic models of human illness, together with primary cancer caused by a transgene. The method of genetically engineering animals may be a slow, tedious, and expensive method. However, new technologies are creating genetic modifications easier and additional precise.

## ADVANTAGES OF GMO

### Production of Human hormone

Patients affected by the polygenic disorder aren't capable of producing enough hormones. So, there arises a requirement for such individuals to get hormones from external sources. With the assistance of biotechnology, human genes will be transferred into alternative mammals for the assembly of

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**Received:** December 02, 2021; **Accepted:** December 16, 2021; **Published:** December 23, 2021

**Citation:** Narayan P (2021) An Overview of Genetically Modified Organisms. Gene Technol. 10:178.

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hormones. The mammals like sheep and goat are used as a medium with human genes taking part in the role of 'software' or the 'brain' containing necessary genetic information to produce insulin.

### **GMO use in Gene Therapy**

The GMOs like some viruses are utilized in gene therapy. Gene therapy will be utilized in the treatment of assorted genetic disorders and diseases like sickle cell anemia, muscular dystrophy and cystic fibrosis.