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Genetically Modified Organisms

What are Genetically Modified Organisms?

Genetically modified organisms¹, or **GMOs**, are organisms, like plants or animals, whose **DNA**² has been changed. These changes give certain **traits**³, or characteristics, to plants and animals. Normally, when animals breed or plants cross, one trait comes with others. The trait you want may come with some traits you didn't want. Some of those unwanted traits may be dangerous. GMOs avoid this problem. There are many benefits to GMOs but there are also a lot of concerns too.

Did You Know?

About 88% of corn in the United States comes from genetically modified crops.



Modern dogs are the result of thousands of years of selective breeding.

History of Genetically Modified Organisms

The idea behind genetic modification has been around for a long time. Our ancestors did something called **selective breeding**⁴ by choosing specific animals to mate. This created offspring with traits people wanted. In this way, wolves gave rise to modern dogs. Plants were also selectively bred. This is how we got larger ears of corn and sweeter apples.

Modern genetic engineering, done in a lab, started in 1973. Herbert Boyer and Stanley Cohen put a gene from one bacterium into another. This gave the first bacterium's **antibiotic resistance**⁵ to the second. The first GMO animal, a mouse, was produced in 1974.



The first GMO was a bacterium given antibiotic resistance in 1973.

How Are Organisms Genetically Modified?

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¹ **Genetically modified organisms (GMOs):** organisms (like plants or animals) whose DNA has been changed

² **DNA:** a molecule that is the recipe for an organism

³ **Traits:** characteristics, like hair color or leaf size

⁴ **Selective breeding:** a process of choosing specific animals to mate or plants to cross to make a specific offspring

⁵ **Antibiotic resistance:** being immune to the effects of an antibiotic

The **gene gun**⁶ shoots tiny pieces of gold or tungsten covered hundreds of copies of a gene into a cell.

Microfibers⁷ are tiny, needle-like structures covered in hundreds of copies of a gene. When they're put together with cells and shaken, they stab the plant cells, injecting them with DNA.

Benefits of Genetically Modified Organisms

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GMOs are also used for medical research. Human genes are put into animals to study diseases and test cures. GM animals can even grow tissues and organs for human transplant. Researchers can also make things like insulin using GM bacteria.



Some people are afraid of GMOs, but science has shown them to be safe.

Concerns About Genetically Modified Organisms

There are also many concerns about GMOs and their impact on human health and the environment.

For example, people are afraid that the new genes will be toxic or cause allergic reactions in people. An allergic reaction from GMOs has never been reported. To be safe, though, researchers try not to use genes from common allergens in GMOs.

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GMOs are and should continue to be closely monitored and regulated. Scientists have found, however, that GMOs are as safe for humans to eat as normal crops.

⁶ **Gene gun:** a machine that shoots genes into a cell

⁷ **Microfibers:** tiny, needle-like structures that stab cells to inject genes

Reading Comprehension Questions

1. What is a genetically modified organism?
2. Who
3. What was the first genetically modified animal?
4. What
5. Name
6. Name two concerns about GMOs.

Extension Questions

7. What would you say to someone who didn't want to eat genetically modified foods?
8. Do you
9. What is a gene? Perform some research online then put the definition into your own words.
Your answer needs to be given as an explanation to a younger sibling.
10. How many

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