

What Is Biotechnology?



Vocab	What it means
Biotechnology	Using living things or DNA technology to make useful products

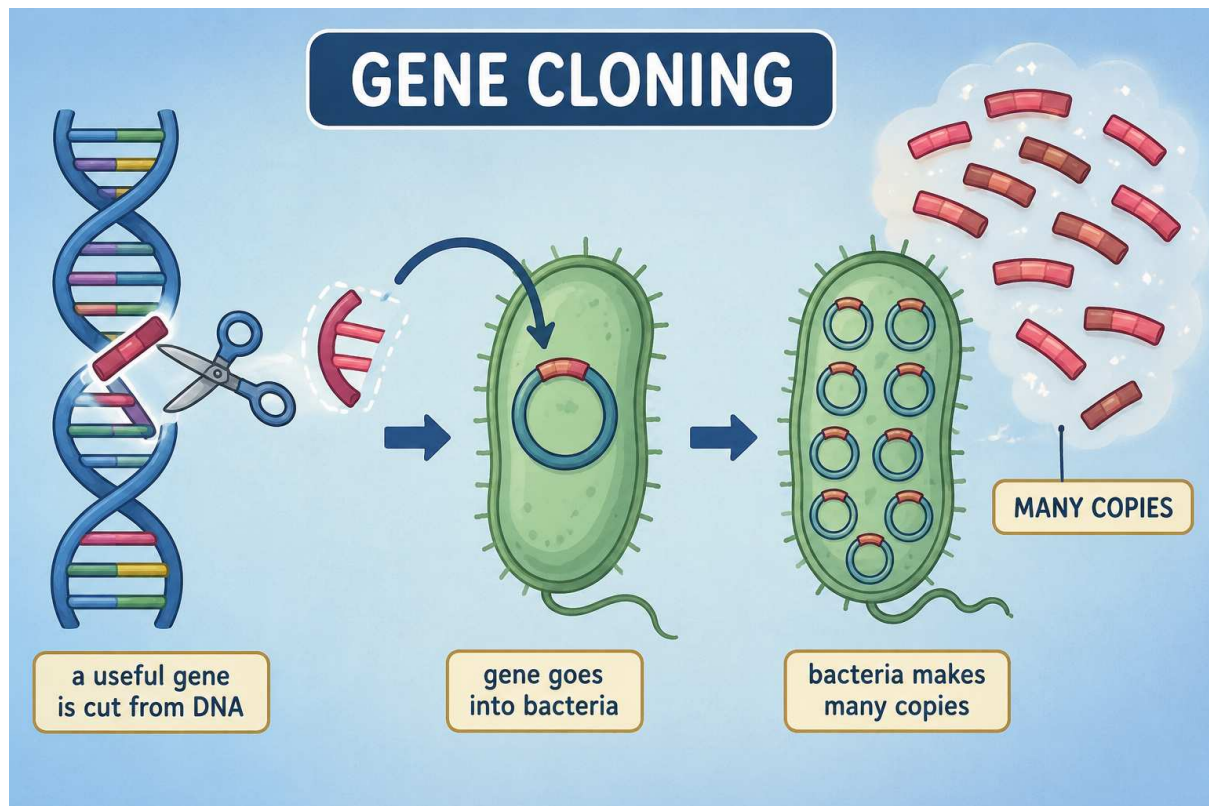
Easy explanation

Utilizing biotechnology, scientists can:

- copy DNA
- change DNA
- move DNA into another organism

This can help with food, medicine, farming, and disease testing.

Gene Cloning: Copying DNA



Vocab	What it means
Gene cloning	Copying a gene many times
Gene	A section of DNA

Explanation

Gene cloning means copying a gene many times.

A gene is a section of DNA.

Scientists can place a gene into bacteria.

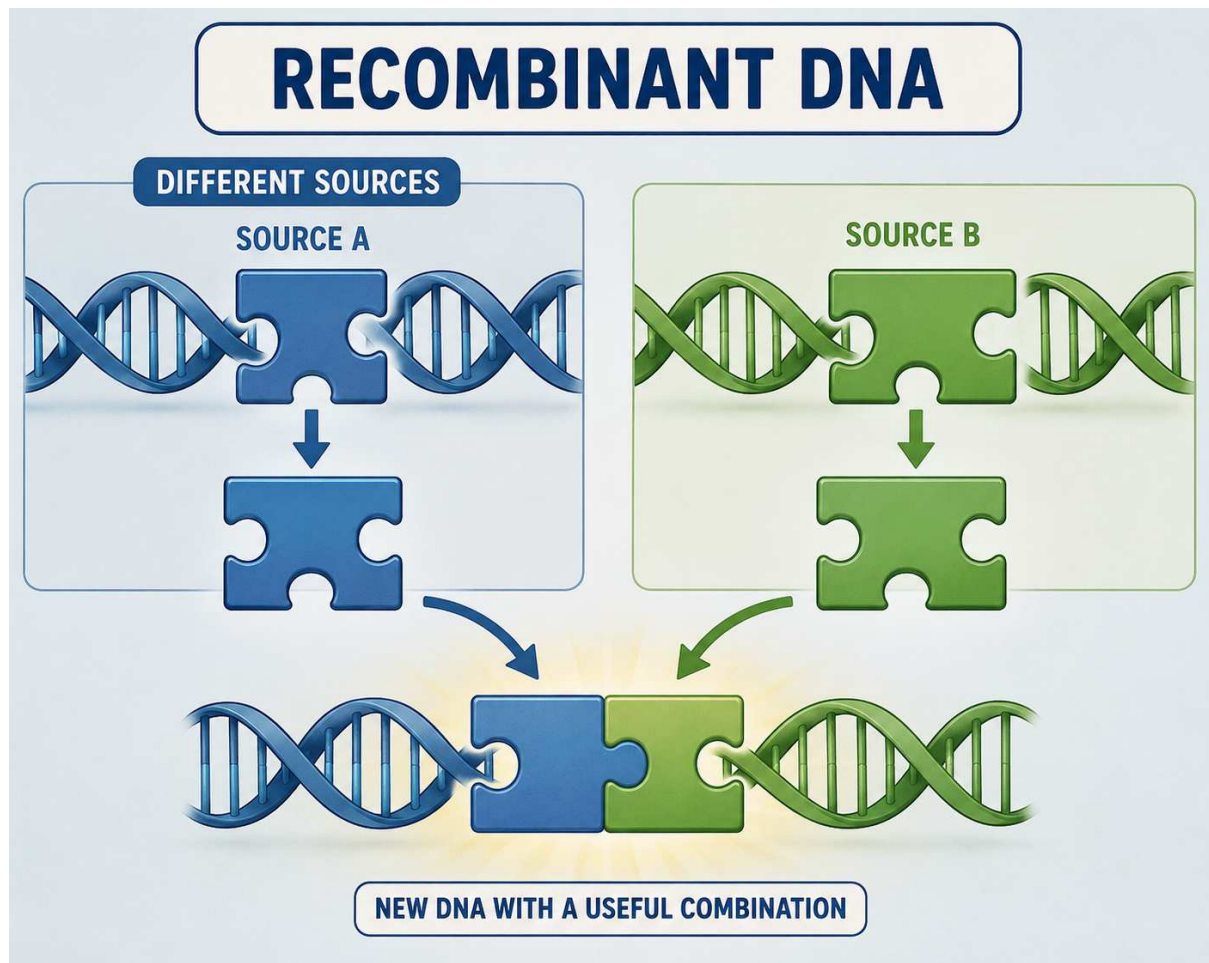
The bacteria can copy the gene.

Sometimes bacteria can also make a useful protein.

Example:

A copied insulin gene can help make insulin.

Recombinant DNA



Vocab	What it means
Recombinant DNA	DNA made from different sources

Easy explanation

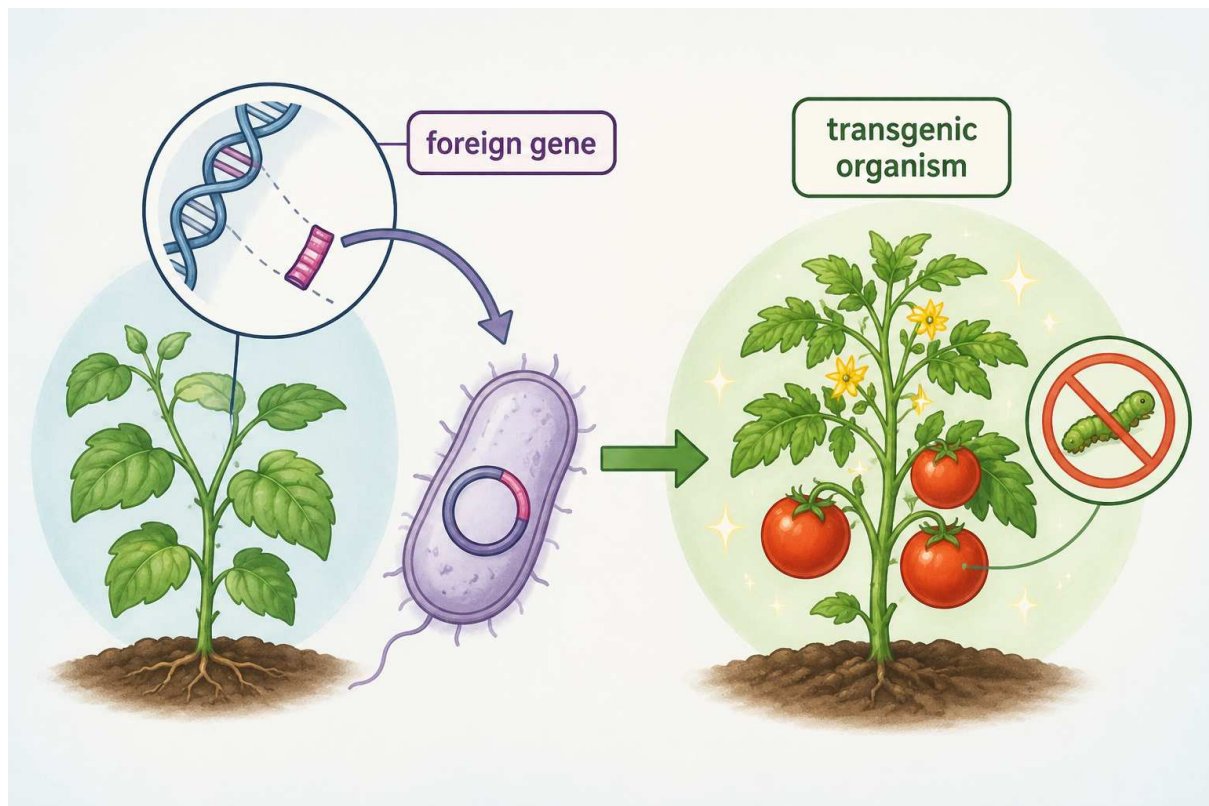
Recombinant DNA is DNA made from different sources.

Think of it like combining puzzle pieces.

One DNA piece can be joined with another DNA piece.

This can create DNA with a new instruction.

Transgenic Organisms



The visual above shows a transgenic organism resisting to harmful insects.

Vocab	What it means
Transgenic organism	DNA from another organism
Carcinogen	something that can cause cancer

Easy explanation

A **transgenic organism** has DNA from another organism.

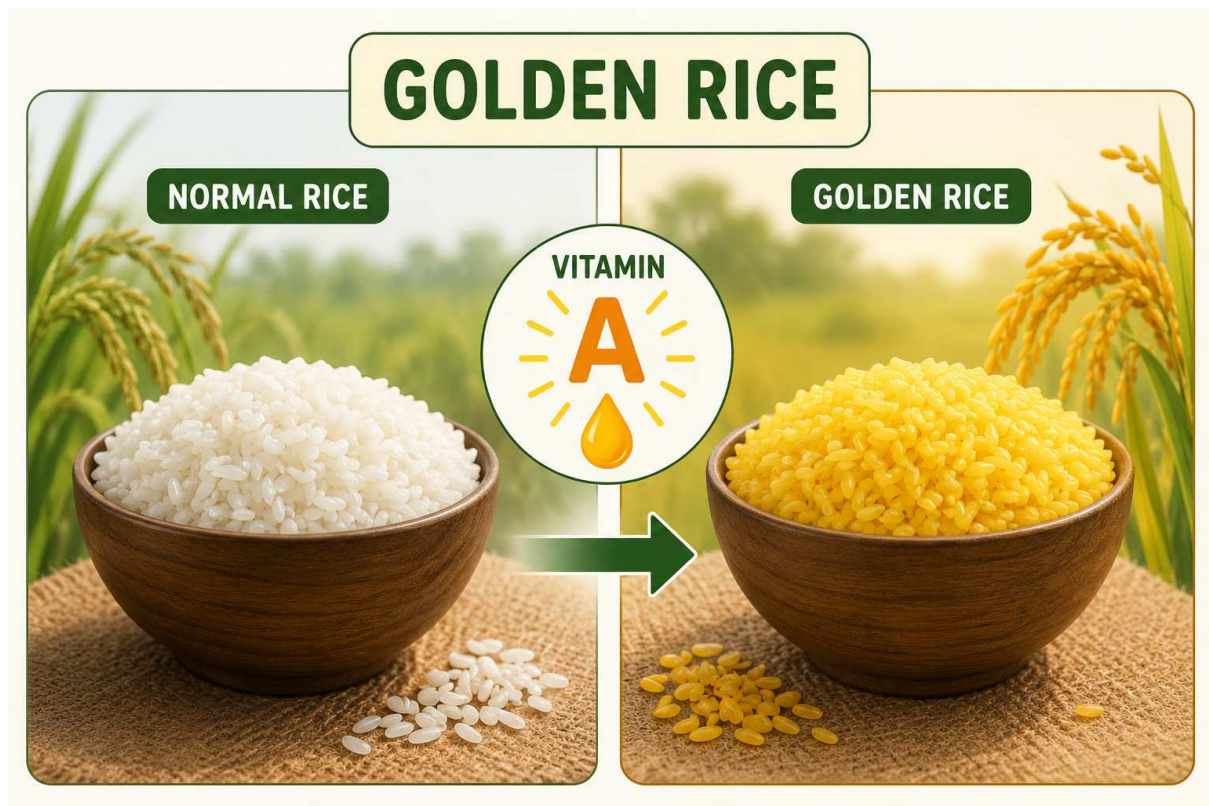
Scientists add a useful gene.

That gene can give the organism a new trait.

Example:

A plant may get a gene that helps it resist insects.

Transgenic Plants: Golden Rice



Vocab	What it means
Golden rice	Rice changed to add more nutrition (vitamin A) after genetic modification

Easy explanation

Some plants are genetically modified.

Golden rice is rice changed to add more nutrition.

It can help provide vitamin A.

This is an example of using DNA technology for food and health.

Transgenic Plants: Insect-Resistant Corn



Explanation

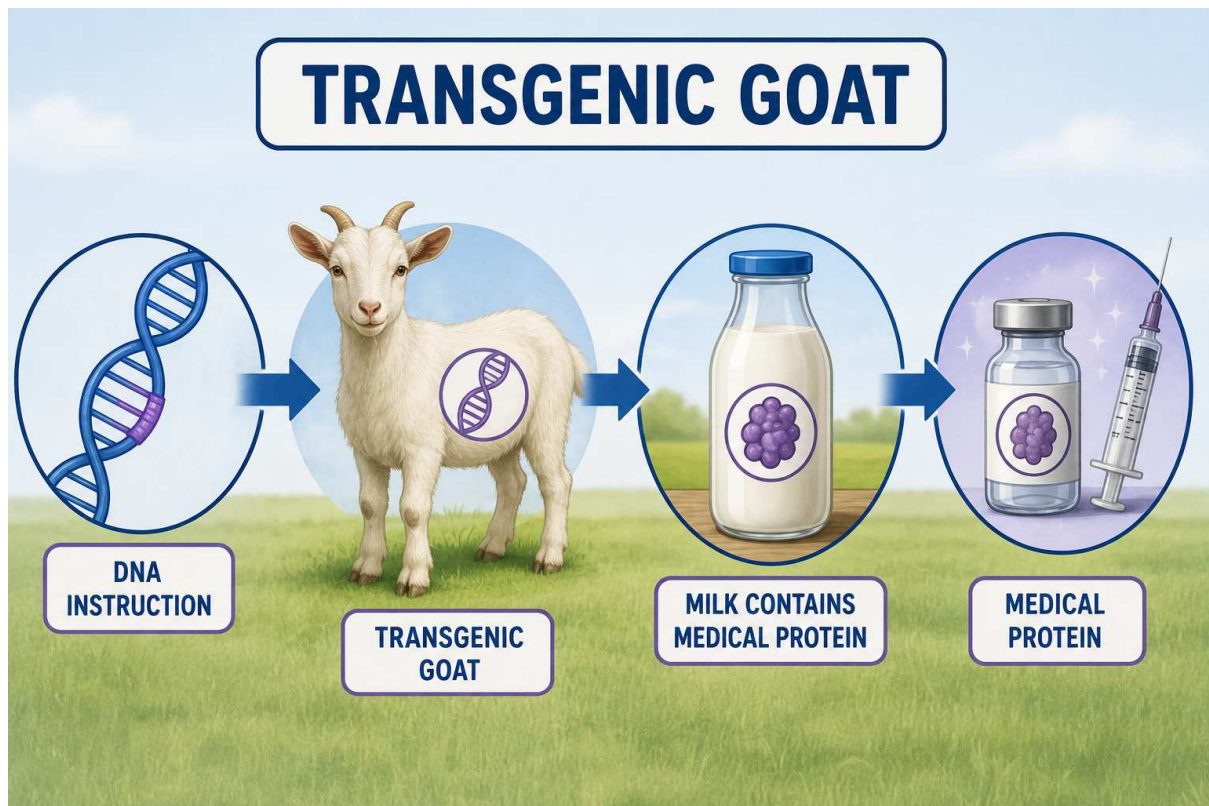
Some crops are changed to resist insects.

This can protect crops.

It can help farmers grow more food.

But scientists also need to study possible effects on ecosystems.

Transgenic Animals



Easy explanation

Some animals can be genetically modified.

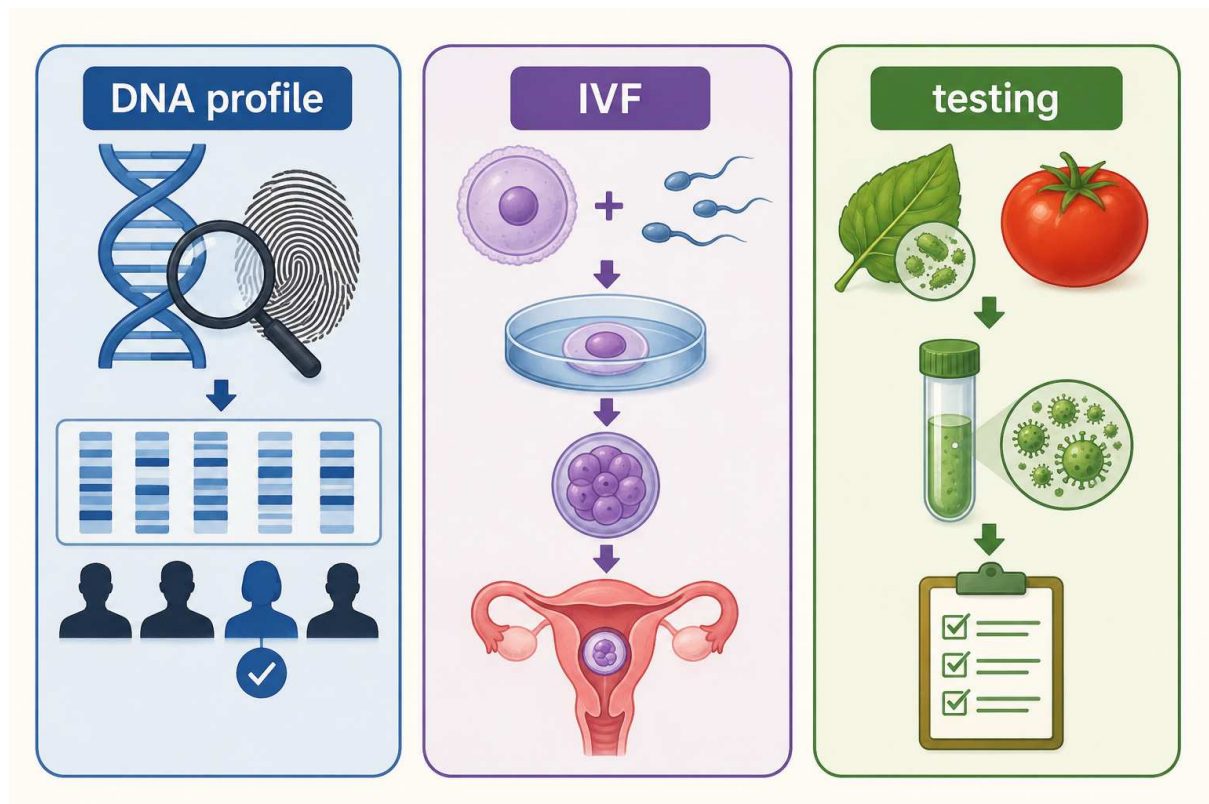
They may produce useful proteins.

Example:

A goat can produce a medical protein in its milk.

This protein may be used for medicine.

DNA Technology Uses



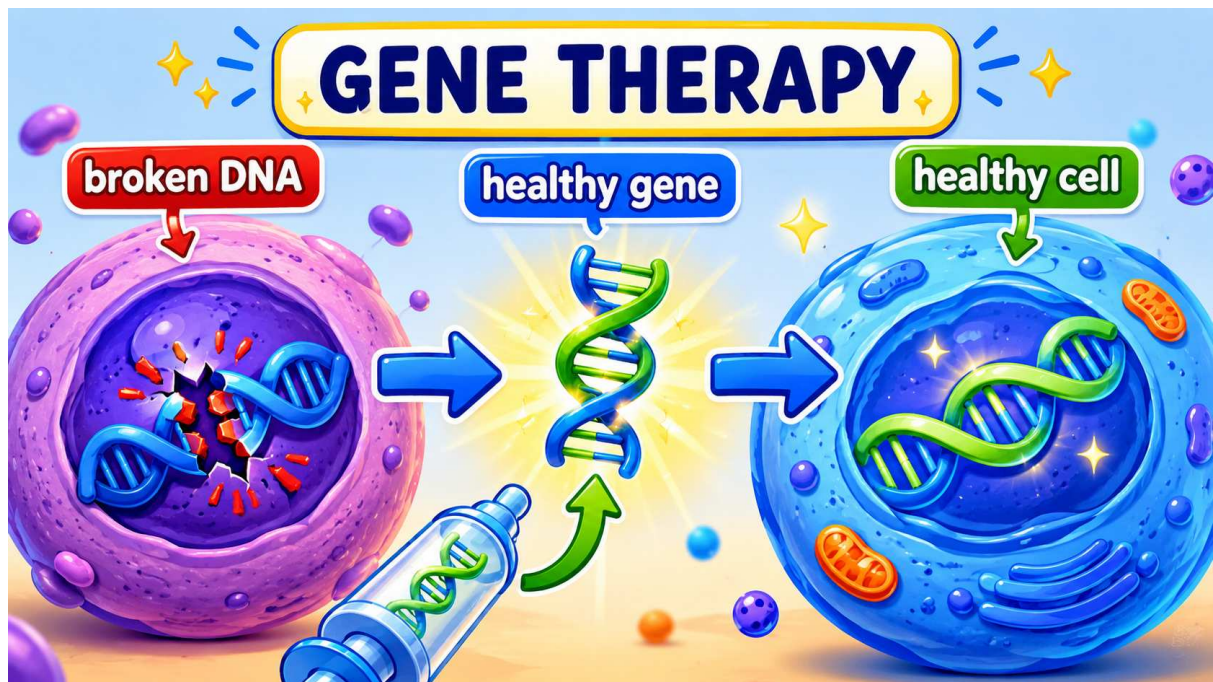
Explanation

DNA technology has many uses.

It can help:

- identify DNA samples
- study disease
- test food crops
- help some people have children
- detect invasive species

Gene Therapy



Vocab	What it means
Gene therapy	treatment of genetic disorders by adding a healthy gene and letting it help cells make a normal protein

Easy Explanation

Gene therapy tries to treat genetic disorders.

The goal is to add a healthy gene.

The healthy gene may help cells make a normal protein.

This technology is still carefully studied.

Biotechnology in British Columbia



Easy explanation

DNA technology can help British Columbia.

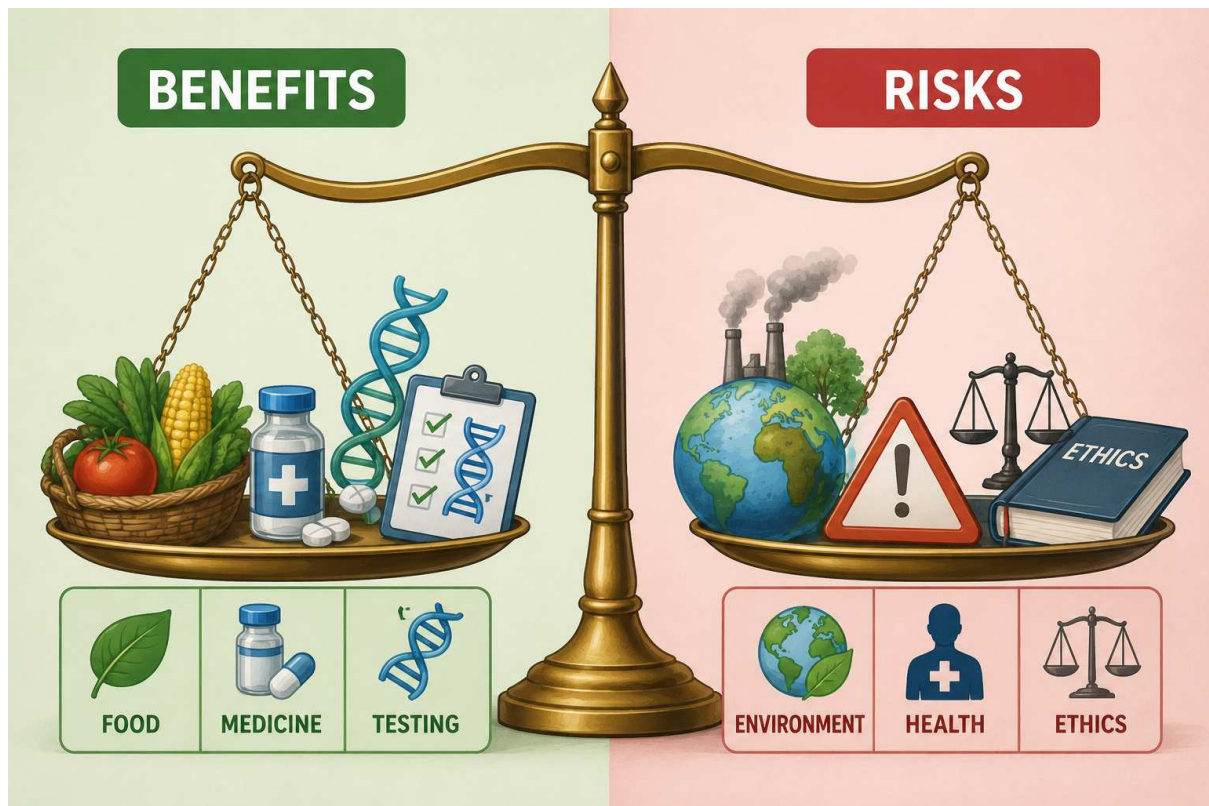
Scientists can test plants and forests.

They can look for:

- plant viruses
- invasive species
- forest pathogens

Early detection can reduce damage.

Risks and Ethical Issues



Explanation

Biotechnology can be useful.

But it can also raise questions.

People may ask:

Is it safe for the environment?

Is it safe for health?

Who controls the technology?

Is it fair?

Should animals be used this way?

There is not always one simple answer.

\

Final Summary

Final Explanation

Biotechnology uses DNA and living organisms.

Scientists can copy, change, or move genes.

This can create useful products.

It can help with farming, medicine, and testing.

But every use should be checked for safety, ethics, and environmental effects.