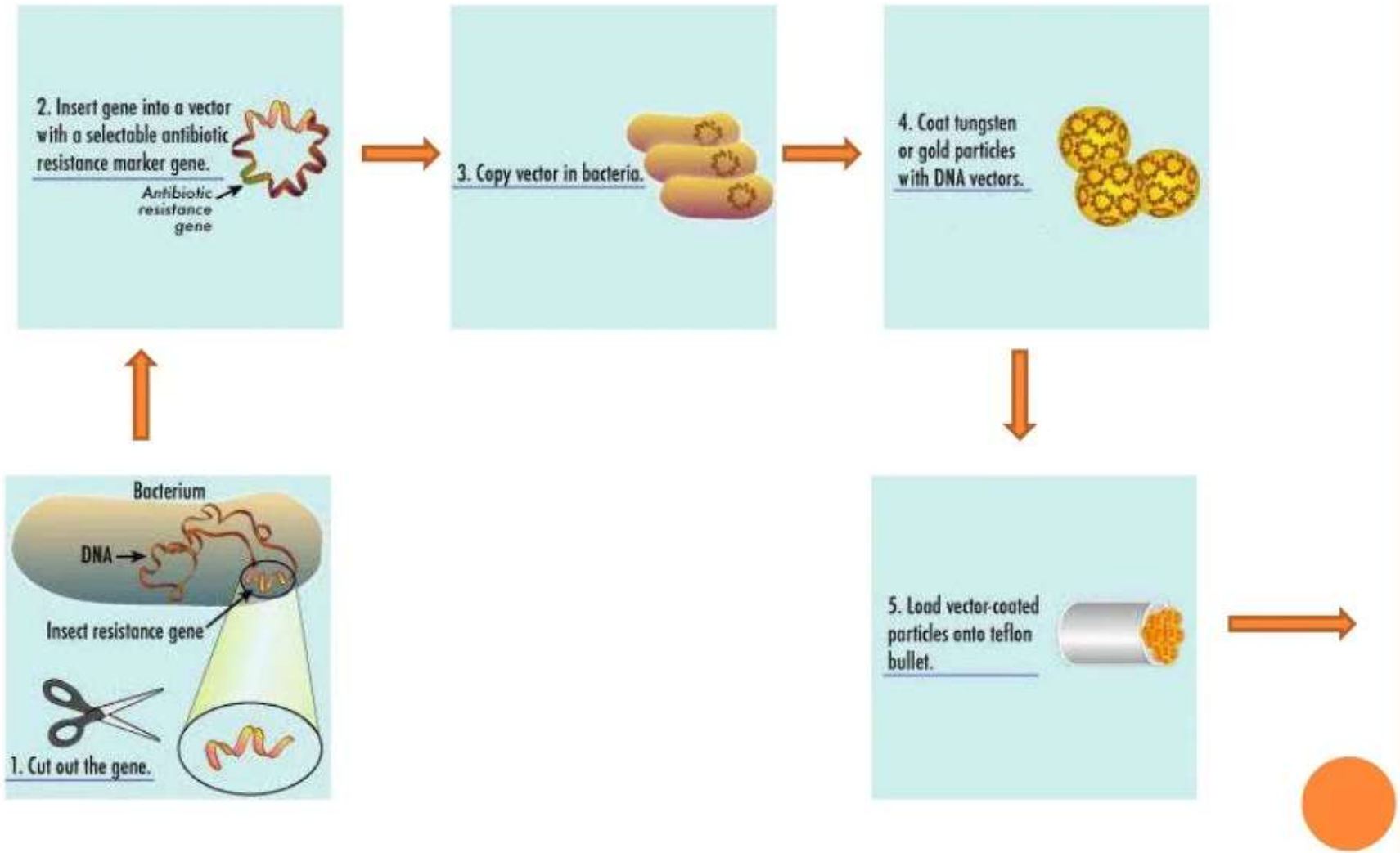
Genetically Modified Food

WHAT ARE GM FOODS ?

- **Genetically modified foods** are foods derived from Genetically modified organisms(GMOs). Genetically modified organisms can be defined as organisms in which the genetic material (DNA) has been altered in a way that does not occur naturally.
- "or"
- This can be done by altering an existing section of DNA, or by adding a new gene altogether.
- The technology is often called "modern biotechnology" or "gene technology", "recombinant DNA technology" or "genetic engineering".
- It allows selected individual genes to be transferred from one organism into another, also between non-related species.

HOW GENETIC MODIFICATION IS DONE ?



6. Load bullet into gene gun.

7. Shooting the gene gun releases the particles at a high velocity penetrating the plant cells.

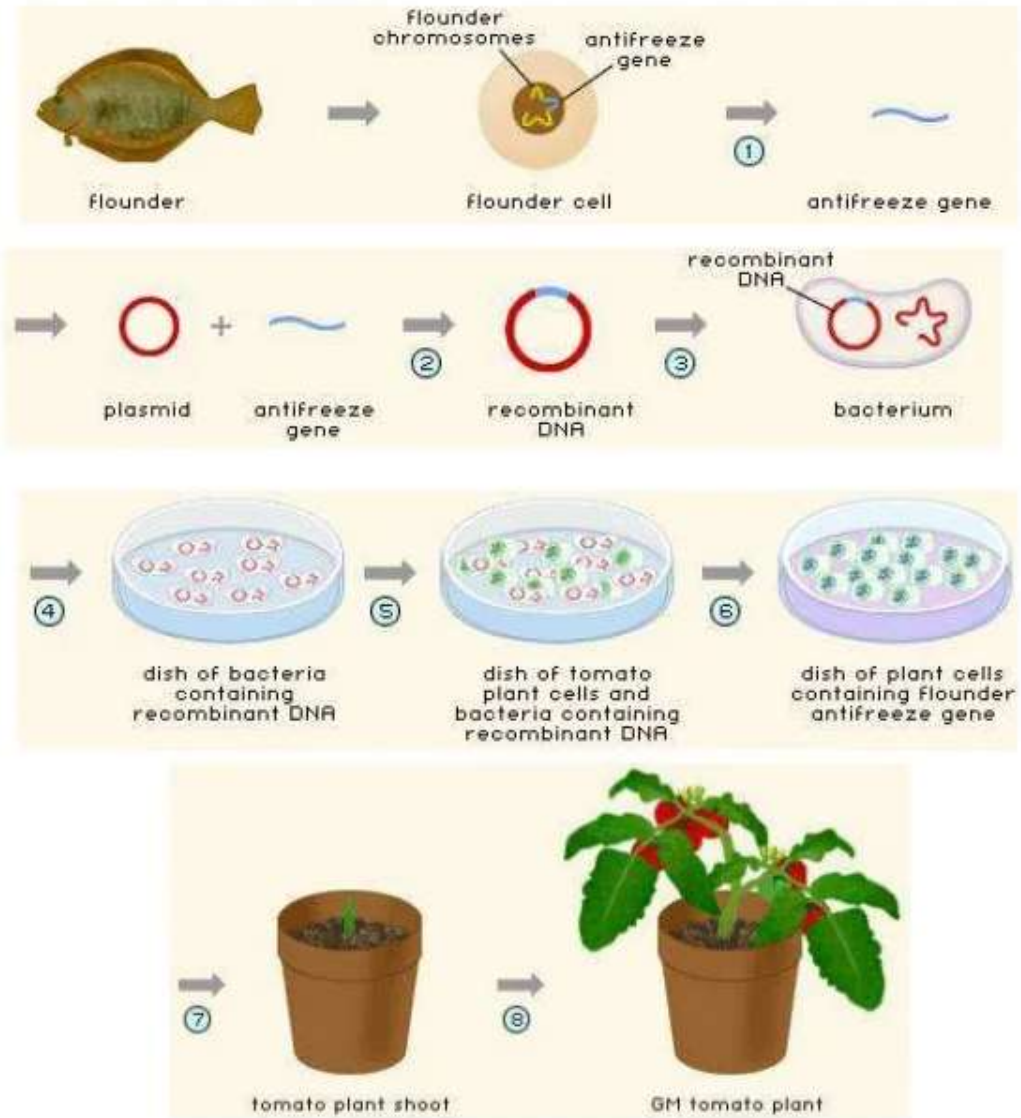
8. The vector enters the cell. The genes are incorporated into the plant genome.

9. The cells are plated on a selective antibiotic media. Only cells that have incorporated the vector will grow.

10. These cells are transferred to medium containing plant growth factors.

Insect resistant tomato plant

HOW TO ADD A FISH GENE TO A TOMATO ?



COMMON GM FOODS

MAIZE(CORN)

CANOLA

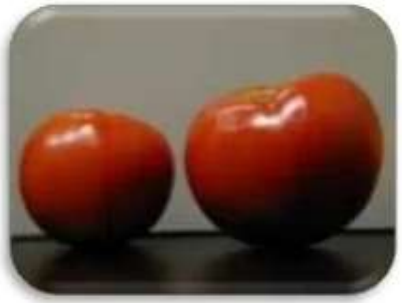
ALFALFA

GOLDEN RICE

BT cotton

SOYABEAN

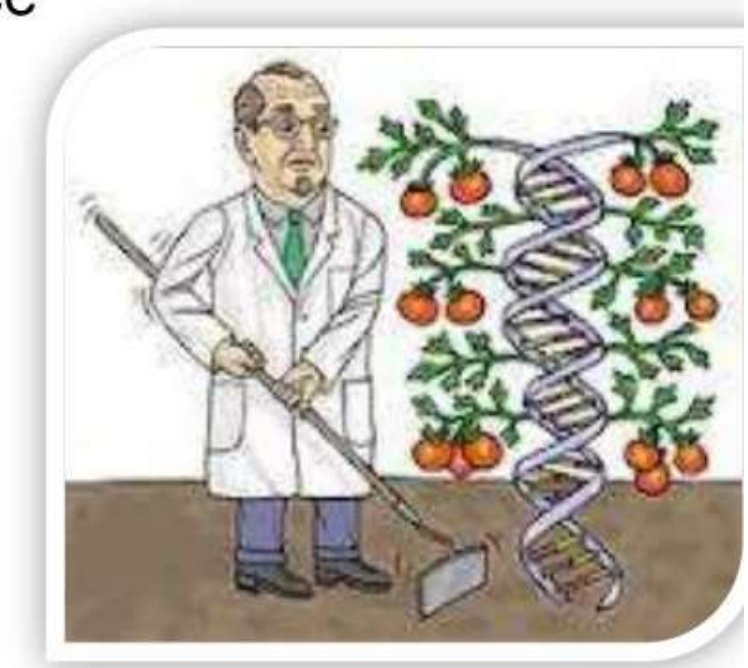
POTATOES



TOMATOES

POSITIVE IMPACT OF GM CROPS

- Improved agricultural performance with less labour input and less cost input.
- Foods with a greater shelf life, like tomatoes that taste better and last longer
- Disease and herbicide resistance
- Potentially drought resistance
- Improved nutritional content
- Improved sensory properties



NEGATIVE IMPACT OF GM CROPS

- **Environment:**
  - **Cross-breeding** the potential for cross-breeding between GM crops and surrounding vegetation, including weeds.

    This could result in weeds that are resistant to herbicides and would thus require a greater use of herbicides, which could lead to soil and water contamination.

  - **Herbicide tolerant (HR) crops** the increasing acreage of HR crops (such as soybean and canola) has resulted in an increase in the types of weeds that are now glyphosate resistant (GR).

Health:

- **Allergens**

  Genetic engineering could potential introduce or create allergens

  For example, inserting genes from a nut into another plant could be dangerous for people who are allergic to nuts

- **Antibiotic resistance**

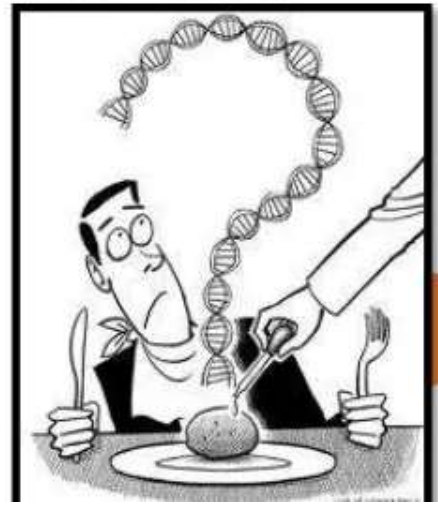
  Bioengineers insert a ‘marker’ gene.

  If genes enter the food chain and are taken up by human gut microflora, the effectiveness of antibiotics could be reduced and human infectious disease risk increased.

SOCIAL AND ETHICAL CONCERNS

Concerns about the social and ethical issues surrounding genetic modification include:

- The possible monopolisation of the world food market by large multinational companies that control the distribution of GM seeds.
- Using genes from animals in plant foods may pose ethical, philosophical or religious problems.
- Animal welfare could be adversely affected.
- New GM organisms could be patented so that 'life' itself could become commercial property through patenting.




Improved Nutrition
Resistance to disease
Reduced use of chemicals
Environmental risks
Health risks

CONCLUSION

- Genetically-modified foods have the potential to solve many of the world's hunger and malnutrition problems.
- To help protect and preserve the environment by increasing yield and reducing reliance upon chemical pesticides and herbicides.
- Yet there are many challenges ahead for governments, especially in the areas of safety testing, regulation, international policy.
- Many people feel that genetic engineering is the inevitable wave of the future and that we cannot afford to ignore a technology that has such enormous potential benefits.
- However, we must proceed with caution to avoid causing unintended harm to human health and the environment as a result of our enthusiasm for this powerful technology.