

GM Food Newsletter

March 2005
Published by Food and Public Health Branch



A Dialogue between an Insect-resistant GM Corn and a Scientist

GM corn : Hello, I am a genetically modified (GM) corn with an insect-resistant property. I was first developed in the United States in 1995. After so many years, I still don't fully understand how I was produced. Today, I have a chance to meet a professor in biotechnology and let me ask him how I was born. Professor, would you please tell me how a GM corn like me is produced?

Professor : No problem. I think we should begin with introducing genetic modification. Genetic modification is a technology which has been developed over the past 30 years for altering the characteristics of living organisms, such as plants and animals, in order to improve agricultural and food production.

The initial objective of applying genetic modification to agriculture was to improve crop protection through the introduction of resistance against plant diseases caused by insects or viruses, or through increased tolerance towards herbicides. Under current research, genetic modification can also be applied to increase the adaptation of plants in drought or cold environment.

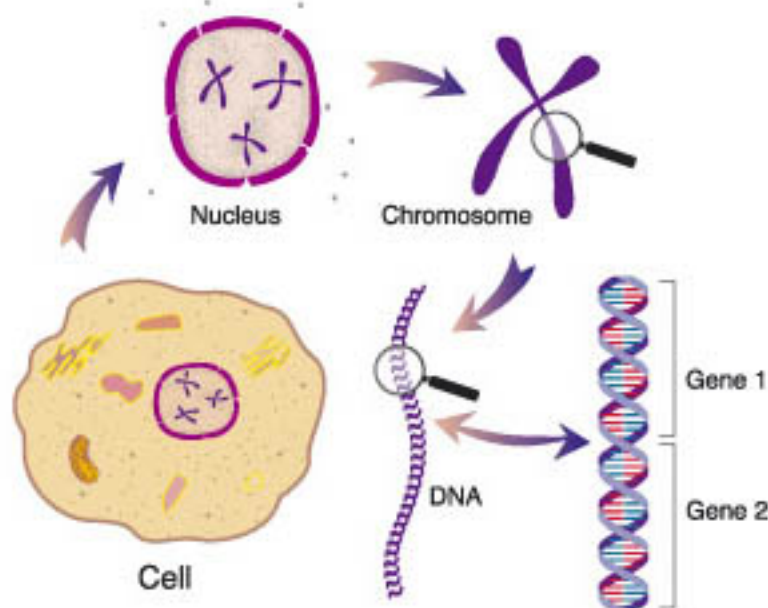
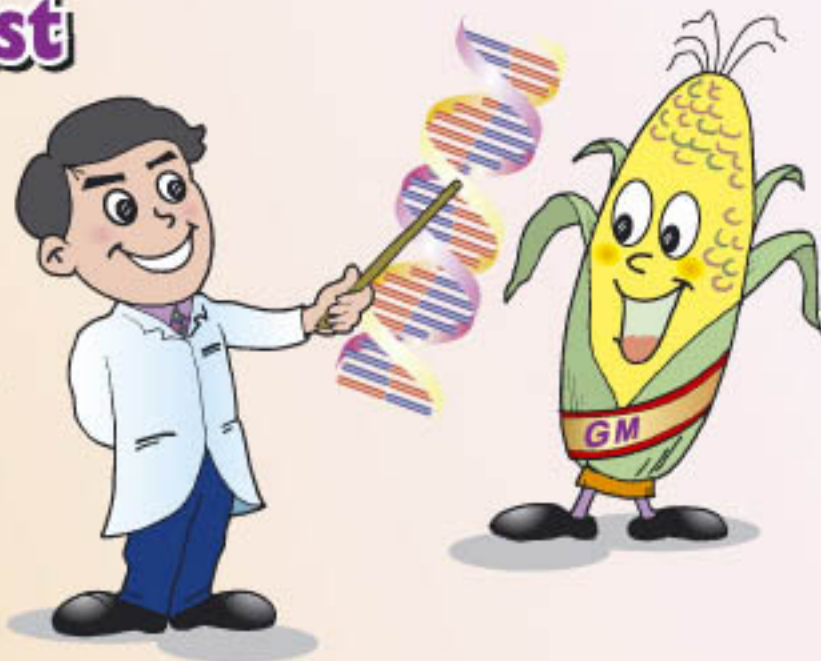
GM corn : Umm...It seems a bit complicated to me. I think we need to go back to the basic principle first.

Professor : Okay, let me introduce the basic genetic material - gene. All living organisms (plants, animals and microorganisms) are made of cells. Each cell contains inherited genes. Genes are segments of DNA

(Deoxyribose Nucleic Acid). They carry essential information that determines the characteristics of an organism. Genes are passed from one generation to the next. Plants and animals have thousands of genes in their cells.


GM corn : Thanks, Professor. Now, I know what genes are but how are they related to genetic modification?

Professor : Genetic modification is a technique of altering genes by changing them or inserting new ones. It allows genes to be transferred from one organism to another within the same species or more importantly, between different species so as to develop characteristics that would be very difficult or impossible to acquire through traditional breeding.



Footnote

Nucleus: An organelle which contains chromosomes
Chromosome: A DNA molecule complex with a threadlike structure
DNA: The primary carrier of genetic information



1986

- The US Environment Protection Agency approved the release of the first GM crop - the GM virus resistant tobacco plants.

1990

- The World Health Organization (WHO) and the Food and Agricultural Organization (FAO) started the discussion on the safety of GM food. They identified the limitation of application of traditional toxicological testing methods to the safety assessment of whole food and recommended a comparative principle whereby the GM food being assessed is compared with the conventional counterpart that has an accepted level of safety.

1993

- The Organisation for Economic Co-operation and Development (OECD) further elaborated the comparative principle developed by WHO and FAO.

1994

- FlavrSavr[®] tomato - the first GM food product, received approval from the US Food and Drug Administration for sale in the market.

1996

- WHO and FAO refined and endorsed the comparative principle elaborated by OECD. The comparative principle is the basic principle for the safety assessment of GM food.

2000

- Codex Alimentarius Commission established a task force to develop guidelines for risk analysis and safety assessment of GM food based on the internationally agreed comparative principle.

2003

- The principles and guidelines developed in the task force were adopted in Codex meeting as international standards for safety assessment of GM food.
- A legally binding international agreement named "Cartagena Protocol on Biosafety" which addresses the environmental issues associated with living modified organisms' (LMOs) became effective on 11 September 2003. The Protocol aims to ensure safe transfer, handling and use of LMOs that may have adverse effects on the conservation and sustainable use of biological diversity, taking also into account the indirect risks imposed on human health*.

21st Century (GM Food in the future)

- Future generations of GM crops/foods are expected to have the following properties:

- Increased nutritional content;
- Elimination of allergens in food;
- Lower fat and oil levels;
- Salt tolerance;
- Drought resistance; and
- Drugs and vaccines in plants and food.



* A Living Modified Organism (LMO) is defined as any living organism that possesses a novel combination of genetic material obtained through the use of modern biotechnology. Common LMOs include agricultural crops that have been genetically modified for greater productivity or for resistance to pests or diseases. Examples of modified crops include tomatoes, cassava, corn, cotton and soybeans. LMO, however, does not include processed food products.

* In Hong Kong, the environmental issues related to LMOs are under the jurisdiction of the Agriculture, Fisheries and Conservation Department which proposed to extend the application of the Cartagena Protocol on Biosafety to Hong Kong for better protection of biological diversity in December 2003.

For more information on GM food, please visit the FEHD website

www.fehd.gov.hk/safefood/gmf/index1.html