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# Biology and Technology in the Real World

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## Introduction (Purpose)

- The purpose of the presentation is to help a student understand the meaning of genetically modified (GM) food
- The reason for genetically engineering crop plants
- To explain how GM foods are created
- Provide examples of some of the variety of foods that contain GM foods
- Focus on the wellbeing of GM food to human consumption and regulations available

## Introduction (Background)

- Produced from plants or animals that their hereditary material have been changed through genetic engineering
- Genetic engineering is important in changing the genetic phenotype by varying the genetic make-up
- The United States Food and Drug Administration accepted the first human medication produced by GM organism
- The US department of Agriculture approved marketable manufacture of the first GM plant Calgene's Flavr Savr tomato in 1987 (Krimsky, 2019)
- Since then more GM foods have been produced to make foods more aesthetically pleasing and easier for farmers

## Purpose Of Genetically Engineering Crop Plants

- Insect resistance (Zhang, 2016)
- Enhance nutritional value
- Drought disease resistance
- Improved yields
- Herbicide tolerance

## Creation Of Genetically Modified Foods

- The process starts by transmitting DNA in another crop cell (Krimsky, 2019)
- Deoxyribonucleic acid (DNA) is the molecule that contains the genetic code of organisms
- Different plants have different genetic make-up
- After transferring the DNA the cells are then developed in tissue culture to grow into mature crops
- The seeds created by the crops will receive a different DNA

## Creation of Genetically Modified Foods (Continuation)

- The characteristics of all organisms depend on the genetic make-up and its relation to the environment (Krimsky, 2019)
- The GM comprises accumulation of a precise section of DNA into another crop genome
- The genome comprises of genes
- DNA procedure can also appear without careful involvement of individuals

## Variety of Foods Containing GM Foods

- Margarine
- Veggie Burgers
- Granola bars
- Yoghurt (Pino et al., 2016)
- Papaya

## Safety Of GM Foods

- Gm foods accepted to be commercially available have been approved by safety evaluation
- The foods have not caused any adverse health effect to individuals in countries where is accepted
- GM foods are safe for consumption (Dadgarnejad et al., 2017)
- Specific systems have been set up for rigorous assessment in both human health and environment
- Safety assessment is based on direct health effects, allergic reactions and toxic properties (Huang, 2017)

## Safety Of GM Foods (Continuation)

- Outcrossing
- Allergenicity (Dadgarnejad et al., 2017)
- Gene transfer

## Regulations Existing For GM Foods

- The United States <sup>1</sup>Food and Drug Administration (FDA) (Zhang, 2016)
- The United States Environmental Protection Agency (EPA)
- The U. S Department of Agriculture (USDA) (Zhang, 2016)

## Conclusion

- No environmental impacts
- Reduced the use of pesticides (Zhang, 2016)
- Improve crop protection
- Increase yield
- More nutritional value

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