**Genetically Modified (GM) Foods.**

**What Is It?**

Genetically modified (GM) foods come from organisms whose genetic material (DNA) has been artificially modified.

* GMF = genetically modified food; it’s food whose DNA has been genetically and artificially modified in labs to produce new food.
* GMFs = genetically modified foods;
* GMOs = genetically modified organisms.
* Transgenic = food whose DNA has been modified artificially to produce new food.
* DNA = deoxyribonucleic acid.
* Organism = any biological living being composed of cells.
* Gene = the basic unit of heredity made up of cells.

**Traditional Modification:**

Humans have always modified plants for thousands of years:

1. If they found a particularly resistant crop, they would try to cultivate it more.
2. They selected others like it.
3. The process was slow and didn’t taste so good.
4. By experimenting with different varieties and selecting the best, they produced more plants or animals with the chosen characteristics.
5. This process is called **selective breeding**.

**Genetic Engineering:**

Selective breeding took another step when genes are now carried out in the laboratory:

1. Genes are extracted from one plant and added to another organism.
2. This produces more resistant crops.

**Why?**

* Most genetically modified crops have been developed to **improve production**.
* They are more resistant to:
  + **Insects**
  + **Viruses**
  + **Plant diseases**
  + And more tolerant of **herbicides** (insecticide/herbicide = a pesticide that is used to kill insects)
* **Virus resistance** is achieved by:
  1. Introducing a gene from the virus which causes disease in plants.
  2. The plant develops a **viral protein** which protects it before the virus can infect it.
  3. This results in **bigger, better-quality crops**.

**Why Not?**

* Modified species could **replace natural species**, leading to a **reduction in biodiversity**.
* The production of **insecticide** in modified plants causes insects to develop **resistance**. (This affects plants that haven’t been modified)
* The effects of GMOs on our body include:
  + **Allergies**
  + **Antibiotic resistance**
  + **Nutritional alterations**
  + In the long term, scientists say it can **lead to cancer**.

**America vs. Europe:**

* Some **European countries** have **banned GMO production**.
* The **United States** has **not banned** it:
  + Most **corn and soybeans** in the U.S. are genetically modified.
  + Many Americans are **unaware** they are consuming genetically modified food.
* **Consumer groups** are advocating for **labeling** GMO foods.
* Food packages often **claim GMOs are safe**, implying that labeling would be **unnecessary**.
* The company that produces GMOs is **Monsanto**. In 2018, it was acquired by a German pharmaceutical company known for producing aspirin: **Bayer**.

**A Way Forward:**

* In the future, the emphasis will probably be on the **nutrient content** of food rather than increasing production.
* For example:
  + Producing **fruit and vegetables containing more antioxidants**
  + This help prevent **cancer and other diseases**