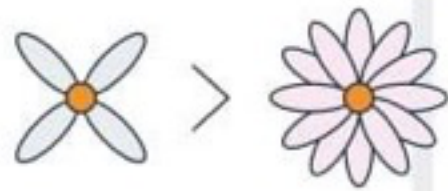


A TIMELINE OF GENETIC MODIFICATION IN MODERN AGRICULTURE

For thousands of years, people have worked to improve crops, livestock, and the foods we eat. In the 20th century, scientists found a way to modify food faster and more precisely by changing an organism's DNA. This process, called genetic engineering, produces genetically modified organisms (GMOs). This timeline highlights key dates in the development of GMO foods.



1940

Plant breeders learn to use radiation or chemicals to randomly change an organism's DNA.

1953

Building on the discoveries of chemist Rosalind Franklin, scientists James Watson and Francis Crick identify the structure of DNA.



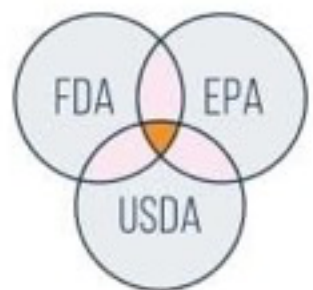
1973

Biochemists Herbert Boyer and Stanley Cohen develop genetic engineering by inserting DNA from one bacteria into another.



1982

FDA approves the first consumer GMO product developed through genetic engineering: human insulin to treat diabetes.



1986

The federal government establishes the Coordinated Framework for the Regulation of Biotechnology. This policy describes how FDA, USDA, and EPA work together to regulate the safety of GMOs.

1992

FDA policy states that foods from GMO plants must meet the same requirements, including the same safety standards, as foods derived from traditionally bred plants.



1994

The first GMO produce created through genetic engineering—a GMO tomato—becomes available for sale after studies evaluated by federal agencies proved it to be as safe as traditionally bred tomatoes.



1990s

The first wave of GMO produce created through genetic engineering becomes available to consumers: summer squash, soybeans, cotton, corn, papayas, tomatoes, potatoes, and canola. Not all are still available for sale.



2003

The World Health Organization (WHO) and the Food and Agriculture Organization (FAO) of the United Nations develop international guidelines and standards to determine the safety of GMO foods.



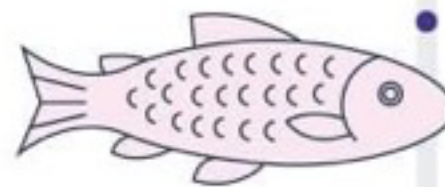
2005

GMO alfalfa and sugar beets are available for sale in the U.S.



2015

FDA approves an application for the first genetic modification in an animal for use as food, a genetically engineered salmon.



2016

Congress passes a law requiring labeling for some foods produced through genetic engineering and uses the term "bioengineered," which will start to appear on some foods.



2017

GMO apples are available for sale in the U.S.



2019

FDA completes consultation on first food from a genome edited plant.

