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The Truth about Genetic Engineering

What are Genes?

Genes contain information that helps shape how living things work and determine an organism's growth, size, and other characteristics. Genes are strings of chemicals, called nucleic acids, found in DNA. The order of the nucleic acids in DNA underlies the order of amino acids in proteins. Amino acids are the building blocks of proteins, and proteins form the structure of living things.

What is Genetically Engineered (GE) Food?

When gene technology is used to alter the genetic make up of any food crop or food ingredient, it is considered to be genetically engineered. This is accomplished by transferring a gene into the target food. Genetically engineered plants have genes from other plants, and some even have genes from animals. Because genetic engineering is an inexact science, multiple copies of the same gene often end up getting transferred. In addition, antibiotic genes and promoter genes are often added to support the transfer and activate the gene in its new home. The antibiotic and promoter genes can each cause their own type of negative side-effect.

Is GE Food Safe for Human Consumption?

Not necessarily. Different ways of processing proteins can lead to changes in function or changes in potential for allergy. According to the National Institute of Health, four to eight percent of children and one to two percent of adults exhibit allergies to certain foods and the building blocks of foods, mainly proteins. Moreover, proteins that in small quantities were safe may now exceed toxic levels, or new proteins may be produced that were not produced before.

Can GE Foods Harm the Environment?

Yes, in several ways.

Despite early claims that the need for pesticides would decrease with the planting of GE seeds, time has proven this claim faulty. Pesticide use has continued to increase as pests develop resistance to the genetically altered crops. Pesticide use has also been linked to water and soil contamination.

Genetically modified organisms can spread their novel genes by bird, insect or wind into wild populations thus contaminating the natural gene pool; unlike other types of contamination, this cannot be reversed. Furthermore, genes from crops resistant to herbicides may spread to weeds, thus creating "superweeds" that the herbicide can no longer control.

GE plants can unintentionally harm other species. For example, Bt corn, a popular US corn variety genetically engineered to produce its own toxins against a pest known as the European corn borer, doesn't discriminate between "targeted" and "non-target" insects. Bt's toxic effects can ripple through the insect food chain. An insect that ingests Bt will either die immediately or be eaten by another insect susceptible to Bt and therefore spread the effect of Bt to that insect and so on down the food chain.

Aren't there safety standards or mandatory tests for GE foods?

In 1992, genetically engineered foods were declared to be "substantially equivalent" to traditional foods. At this time, the FDA declared that there would be no requirement for testing. Because of this, the FDA does not conduct its own tests of the safety of GE foods. Instead, the FDA relies on the summaries of studies and tests conducted by the company manufacturing the new food to make the safety determinations. In sum, the companies profiting from the manufacturing and sales of the GE products determine the safety of GE foods. Currently biotech companies do not even need to notify the FDA that they are bringing a new product to market.

How Will I Know Which Foods Contain GE ingredients?

According to the Pew Initiative on Food and Biotechnology, 25% of the world's land under cultivation has been planted with genetically engineered crops.[1] In 2003, the United States was the largest producer of GE crops with 105.7 million acres.[2] According to Consumer Reports 1999, nearly 2/3 of all the food products on the shelves of your local supermarket contain GE ingredient.[3] Aside from bringing your food to a genetic testing facility, the only way to tell if your food has been genetically altered is via labeling.

Unfortunately, the FDA has decided that GE foods do not have to be labeled, and most of the food industry has decided not to provide label information about the presence or absence of genetically engineered ingredients. What this all means is that—with a few exceptions—you cannot tell whether the food you purchase has been genetically engineered.