

What is genetically engineered food? All living things contain genes. Genes contain information that helps shape how each living thing works. In genetic engineering, new genes are added that come from a different kind of living thing (for example, a gene may be added to a plant from an animal, a bacterium or virus, or from a different kind of plant). These new genes are intended to confer certain desired characteristics, such as resistance to frost or to pesticides, or a change in nutritive value. The goal is to give these new characteristics to a living thing that didn't have them before.

How is this different from normal plant breeding? With genetic engineering, genes from completely unrelated organisms can be introduced into our food supply. For example, moth or bacteria or fish genes can be engineered into plants. The most widely grown type of genetically engineered soybean, Monsanto's herbicide-resistant "Round Up Ready" soybean, contains genes from bacteria (*Agrobacterium* sp.), cauliflower virus and petunia.

Foreign genes are not welcomed by plants or animals. Therefore powerful techniques, which alter the protein structure and immune system of the plant or animal, have to be used to force the organism to take up the foreign genes. Sadly, these techniques aren't even particularly precise. Although genetic engineers know what gene they are putting in, they currently have no control over where it lands in the recipient organism's genome -- which can make a lot of difference. It can land in the middle of another gene and disrupt that gene's function. Or, the "promoter" can increase the activity of other genes that normally would be silent. Genetic engineers

have no control over these effects.

Is genetic engineering safe? Not necessarily. Genetic engineering offers potential health and environmental risks, including:

- **Allergy, toxicity and altered nutritional value:** Genetic engineering introduces new proteins into the food supply. It also alters the ways in which plants process proteins and can change plant metabolism, all of which can contribute to allergic reactions, toxicity and changes in the nutritional value of the genetically altered plants. Proteins may be produced in increased quantities. Proteins that in small quantities were safe may now exceed toxic levels. New proteins may be produced that were not produced before.

Another problem is that no one knows how individuals with allergies will react to genes from allergens that have been incorporated into other organisms. For example, will a person who is allergic to shellfish react to a shellfish gene that has been incorporated into, say, a tomato?

In addition, antibiotic resistance genes may transfer into intestinal bacteria or other organisms and contribute to our growing public health problem of antibiotic-resistant organisms. Diseases that once could be treated by existing antibiotics may now become resistant to treatment.

- **Possible Environmental Hazards:** Genetic engineering could harm the environment in a variety of ways, including: a) Increasing pesticide use as insects develop resistance, b) Spread of genetically modified herbicide resistance to weeds, resulting in "superweeds," c) Death of non-target insects, including beneficial insects, d) Interbreeding with wild relatives, spreading novel genes into wild populations, e) "Bio-invasion,"

i.e., genetically engineered species outcompeting wild species in an ecosystem not able to control them, and f) genetically engineered plants may alter soil bacteria in ways that are harmful to soil health.

But aren't these things tested for safety? No. Genetically engineered foods were declared in 1992 to be "substantially equivalent" to traditional foods and therefore there is no requirement for testing. Further, regulatory standards for testing were

designed before genetic engineering existed and have not been revised. In 1999, a major lawsuit against the FDA uncovered documents showing that the FDA's own scientists had concluded that GE foods pose unique safety hazards and had recommended that each one should be subjected to rigorous, case-by-case safety testing. These safety warnings by the FDA's best scientists have been ignored.

But isn't genetic engineering necessary to help solve the world hunger problem? No. In fact, as things currently stand, it could make it a lot worse. Because large corporations will virtually control the world's food supply, genetic engineering has the potential to drive more small farmers off their land and into poverty, making hunger problems worse.

So why are corporations genetically engineering our food? The biotechnology industry has invested billions of dollars in genetic engineering. They also hope to control all the levels of food production, from seeds and fertilizers to food processing and supermarkets, and even water supplies. Since 1980, it has been possible for companies to patent genes and living organisms, preventing others from breeding or growing those organisms if they don't buy them from that company. To enforce this, biotech companies have developed "terminator technologies," so that the seeds farmers save won't grow.

So, what can I do to stop this? As a consumer and a voter, you have more power than you may realize. Here are just a few of the things you can do to protect yourself and the planet from the dangers posed by genetically engineered foods:

◆ **Vote with your pocketbook.** Whenever possible, buy only foodstuffs labeled “Non-GMO” or “GMO-Free.” If at all possible, buy organic. Let your favorite supermarkets, natural foods stores and restaurants know that you prefer such products and ask them to stock them.

◆ **Vote with your pen (or computer, or phone).** Contact your favorite food manufacturers and ask them about the presence of genetically engineered ingredients in their products. Let them know that you prefer to buy GMO-Free foods. Write or call your local and national representatives and tell them that you’d like to see stricter regulations on the development, testing and labeling of genetically modified foodstuffs.

◆ **Vote at the polls.** Actively support candidates and measures that promote the regulation, testing and labeling of genetically engineered food and sustainable approaches to world hunger issues.

◆ **Vote with your fork.** World hunger is a real problem...and it’s everybody’s problem. Help eradicate it, so biotech companies can’t use it as a front for their money-making schemes. By eating a low-impact, plant-centered diet, you help make more food available for those who need it...and take the wind from the biotech companies’ sails.

◆ **Educate yourself.** Buy a copy of John Robbins’ groundbreaking new book *The Food Revolution* to learn more about genetically modified foods, as well as other ways in which your food choices can make a difference. *The Food Revolution* is available from EarthSave (1-800-362-3648), or from your favorite bookseller.

Join EarthSave to Stay Informed and to Educate Others

EarthSave’s greatly needed programs are actively helping people reclaim their health and restore our planet. By joining EarthSave, you learn how your food choices protect and improve your quality of life, and you become an active player in healing the environment. For membership or information, call 1-800-362-3648.

EarthSave promotes food choices that are healthy for people and for the planet. We educate, inspire and empower people to shift toward a plant-based diet, and to take compassionate action for all life on Earth.

Local EarthSave chapters throughout the world help further these goals by teaching people in their communities about healthy, compassionate and sustainable food choices. For information on the chapter nearest you, or for information on starting a chapter, call us at 1-800-362-3648 or email us at information@earthsave.org.



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What’s wrong with... Genetically Engineered Food?

**Educate yourself, for your sake
and for the planet’s.**

**Genetically modified foods are
not benign entities – regardless
of what their manufacturers say.**



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