



## GMO Spelled Backwards is “OMG!!!”



Dr. Kate Thomsen and Silky

It's time to do something about this. You can no longer say, "This is a theoretical problem", or "I'm not affected." In the US, we are all affected. You may not have voted for it or approve of it. You may not know you are eating it. You think you have a choice to decide to eat it or not – but you don't. You are unwillingly or unknowingly eating Frankenfoods. Yikes!!!

Genes are the "blueprints" for proteins. Specific proteins make a living creature what it is – a human, a dog, a shrimp... Genes are mixed when creatures mate or breed within their species – making diversified humans and dogs and shrimp. But the science of genetic engineering transfers genes from one species to another in an attempt to obtain a desired characteristic. For example, scientists can insert an arctic fish gene into tomato DNA in hopes of creating a tomato that can withstand frost. They have inserted spider genes into goats in order to "milk" spider web protein. They have inserted human genes into corn to produce spermicide. These are now genetically modified (GM) or genetically engineered (GE) organisms.

The agricultural arena is where GMOs have had the longest commercial use. Almost all of the GMO crops were designed to tolerate the direct application of herbicides or to produce an insecticide. When farmers use chemical herbicides to keep competing weeds out of a crop field they know the herbicide will also affect the crop plant to some degree, decreasing the yield. "Round-up Ready" soy however, is genetically engineered so that the soy plant is not killed when the Round Up herbicide is sprayed on the field. Theoretically this should result in

bigger crop yields and need for less herbicide application. Another genetically modified crop is called Bt Cotton. This particular cotton produces its own pesticides. Insects feeding on this cotton will die. This should create higher crop yields and less need for chemical insecticide application to the fields. Doesn't this sound beneficial?

Here are the problems:

1) Genetic engineering is not an exact process of inserting a gene in DNA like inserting a Lego into a chain of Legos. This is a messy process where millions of copies of the "trait" gene are shot with a gun, of sorts, into millions of cells. There are hundreds of DNA mutations created along the "host" DNA. Some of the mutations are in the DNA instruction regions causing the host DNA to lose some of its natural regulation in areas not expected to be altered.

2) "New-to-Nature" molecules are unidentifiable to our immune systems. Attacking these foreign Franken-proteins would cause inflammatory reactions. Since the introduction of genetically modified soy and corn into our food supply in 1996, the incidence of diseases of inflammation of the gastrointestinal tract has skyrocketed. Reflux, Crohn's disease, ulcerative colitis, gastrointestinal infections, food allergies are almost common conditions. Chronic systemic inflammatory diseases that originate in the GI tract like allergies, autoimmune conditions, headache, joint pain, rashes... are also rampant.

3) The overwhelming opinion of scientists from outside and inside the FDA advised the FDA not to approve GE foods as more long term research was needed. Animal research showed accelerated aging, cholesterol and blood sugar dysregulation, infertility, immune imbalances, among other conditions. The FDA, using studies supplied by the manufacturers of GE foods and led by the Food Safety Czar (a former VP of Monsanto) created it's current GMO policy in 1992. It defines GE foods as safe, with human effects no different than those of "natural"

foods, and requiring no special labeling for consumers.

4) Since GE foods have been in widespread use there have been more animal and human studies showing reproductive effects (increases in birth defects in children of farm workers), animal studies showing a consistent preference for non-GMO food, immune system effects in animals and farm workers, increased disease and death in cattle. Round up Ready crops have been found to be weaker with deficiencies in their content of copper, zinc and manganese. A 2012 study of rats fed GE corn showed increased incidence of aggressive breast tumors as well as liver and kidney damage. Our current crisis of antibiotic resistance may be partially due to human gut bacteria taking up antibiotic resistant marker genes that have been inserted into GE foods.

5) The environmental consequences of growing these GE crops include contamination of nearby waterways, herbicide resistance (and yes, the use of herbicide has actually increased, not decreased), and contamination of nearby crops (corn, canola, and cotton cross pollinate and are vulnerable)

6) Most people in the world don't want GM foods. The US lost 99% of its corn exports to Europe when it started growing GE corn. In many countries there are significant restrictions and a few have outright bans on the production and sale of GMOs or specific GMOs. Unfortunately, the rules of the World Trade Organization explicitly prohibit countries from completely banning GMOs. However 3 billion people in over 60 countries (Asia, Australia, Europe...) have the right to choose foods with or without GMO because they are labeled. In the US there is no legal requirement to label a product containing GMOs. This is where you can help. New Jersey has a "Right To Know – GMO" bill advancing through the Senate and Assembly Committees as you read this (NJ Labeling Bill S-1367). Connecticut just

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- \* In the US, GMOs are in as much as 80% of conventional processed food
- \* What percentage of which foods are GE in the US?
  - Soy (94%), cotton (90%), canola (90%), sugar beets (95%), corn (88% - not popcorn), Hawaiian papaya (more than 50%), zucchini and yellow squash (a lot)
- \* Other sources include:
  - Products made from the above foods: oils from all flour, soy protein, soy lecithin, corn starch, corn syrup, high fructose corn syrup
  - Contamination from unapproved trial varieties of GM crops: alfalfa, flax, rice
  - Meat, eggs and dairy from animals eating GM feed (corn and soy)
  - Dairy from cows injected with Growth Hormone
  - Food additives including aspartame (NutraSweet) and rennet (used in hard cheeses)
  - Honey and bee pollen from bees foraging in GM crops
- \* How to Choose Non GMO (because we don't have a labeling law in effect):
  - Look for the "NonGMO Project Verified" label – a non-profit organization performing third party ingredient testing. [www.nongmoproject.org](http://www.nongmoproject.org)
  - Buy organic. Organic standards do not allow use of GE seeds but testing is not required. Contamination by cross pollination occurs and does not disqualify the organic label. High standard producers will test their foods or use NonGMO Project Verified.
- \* Please go to the Institute for Responsible Technology ([responsibletechnology.org](http://responsibletechnology.org)) and see where all this information comes from. Thank the Executive Director Jeffrey Smith who has written "Seeds of Deception" and "Genetic Roulette" and has tirelessly worked to shed light on this underreported, misunderstood, and immensely important topic.

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passed such a bill and we can too. Contact your congressman and let them know you "want to know if it's GMO". Also contact your grocer and ask them to take a stand as well. Genetically engineered seafood (salmon currently) is on its way to your favorite food store and restaurant. If it is labeled, at least you can vote with your wallet. If we don't buy it, they won't supply it!!

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