



The Health Nugget

GMOs—Behind Husked Doors

Crossbreeding has typically been defined as the mating of different breeds. The mule is a good example of crossbreeding. Take a daddy donkey and a mommy mare and, voilà, you have a baby mule. If you tried to breed a mule with a mule, you'd end up with nothing. We are familiar with crossbreeding within species. Plant hybridization is common. In the human realm, we mix nationalities and have beautiful children. But crossbreeding outside of the species?

At some point, some scientists became infatuated with the idea of crossbreeding species in the laboratory. Spider genes have been combined with goat genes to obtain a protein from the goat milk with which to make bullet-proof vests. Cow and pig genes have been merged to develop cowhide on pigs. Human genes have been placed into the genetic material of corn to make spermicide. This has been called genetic modification—"mating" species that never would mate, combining the DNA of one species with another that would never combine in the natural world.

Tragically, this experimentation has slithered its way into farms, grocery stores, and ultimately our mouths. Much of genetic engineering has been focused on producing herbicide tolerant crops and pesticide producing crops—a gift from the same company who produces Roundup, the #1 herbicide used by farmers. Think about it. A crop that bugs won't destroy and is intolerant to Roundup? Needless to say, it hasn't been a hard sell.

Plucked from the garden and steamed, nothing could have been thought of as more natural and American than corn on the cob. In comparison, most other processed, concentrated, cheesified, puffed, and denatured corn is acknowledged as junk food. We are at least honest about that. Behind closed laboratory doors however, something as pristine and

unaffected as corn, as it grows on the cob, has been mutated into something unnatural. Yet, our senses have no way of deciphering the original from the genetically modified.

The American public may think that genetic engineering is a precise science, but apparently it isn't. Our genetics are wrapped up in a slinky toy shaped string of DNA pearls. Human DNA is the blueprint for who and what we are. Corn DNA is the blueprint of what corn should be. The unique sequence of genes in DNA is what makes creation unique. Genetic engineers can take genes from virtually any organism on the planet and introduce them into any other living thing on earth. Rather than a genetic surgery in which one gene is implanted into the double helix, a James Bond looking weapon shoots gene-coated pellets into plant cells. No less assaulting is the method of inserting genetic material into the plants own DNA by using the infective process of a disease-causing bacteria. The natural barriers placed between species are violated and the resulting genetic sequence exists nowhere else in nature.

Inserting genetic material from a different species into a plant results in a cascade of unintended and unknown consequences. Scientists have not been able to introduce a gene into an organism and only get one anticipated result. The very process damages the host cell's own DNA. Genes can lose their function. A protein can be produced which was never present in the plant before, and is completely new to the animal or human diet. "There is well-documented evidence... that genetic engineering causes extensive 'genome-wide' mutations and changes in the activity of very many of the plant's own genes as a result of genetic engineering. These widespread genetic effects are not predictable or

controllable.”¹

Austrian scientists conducted a multi-generational study in which mice were fed genetically modified (GM) corn. They reported that 1,016 genes had been differentially expressed in the mice fed GM corn with most being up-regulated. One might say they turned the volume up on certain characteristics. Essentially, the GM-fed mice had hundreds of their proteins, which are encoded by genes, expressed in an increased or decreased quantity, and as a result altered certain biological processes in their bodies. “For example, sensory perception, ion transport and the ability to breakdown proteins (proteolysis) were down-regulated or under-expressed, while the ability of the mice to regulate T-cells (a primary immunological response especially in fighting cancer), circadian rhythm regulation and the FAS signaling pathway (which is a major pathway for cell apoptosis and is important in the elimination of cancers) were over-expressed.”²

Highlighted from their research was the fact that some of the manifestations of biologic damage from ingesting GM food was not seen until a generation or two later. In other words, the pups or grandpups of these mice were the ones affected by what grandpa had eaten.

The subject is worthy of agitation. While Europeans were resisting the introduction of genetically modified foods into their food supply years ago, Americans didn't think twice while filling their grocery carts.

In 1996, genetically modified corn and soy were introduced to the diet of animals and man. Today, 88 percent of U.S. corn is genetically modified. This is put in the market without any notification on the label to the consumer. Many of us do not want one more thing to be concerned about in relation to our food supply or how or what we should eat. Whether we like it or not, this subject will impact us one way

or another. For nearly 20 years we have been eating foods that have not been proven to be safe for human consumption and we have been largely ignorant of this fact.

There is a bacteria in the soil that produces Bt toxin. When used as an insecticide and sprayed on plants, insects are killed as a result of the toxin breaking open their stomachs after it's been ingested. Scientists took the gene in charge of this toxin production and inserted it into corn and cotton. Elaine Ingham, Ph.D., Chief Scientist of Rodale Institute, explains how this merger results in a plant in which every single cell produces a toxic protein. The plant itself does the killing. Now we have pest-free corn and cotton, but how does this insecticide impact you and me?

The potential effect has been downplayed, saying that the toxin is only toxic to insects. However, researchers recently stated from their investigations, “we argue that modified Bt toxins are not inert on non-target human cells, and that they can present combined side-effects with other residues of pesticides specific to GM plants.”³ Gilles-Eric Séralini from the University of Caen, who supervised the experiments stated, “In conclusion, these experiments show that the risks of Bt toxins and of Roundup have been underestimated.”⁴

To be continued next month...

¹ Gundula Azeez, Colin Nunan, “GM crops – the health effects,” Soil Association, p. 4.

² Gregory Damato, Ph.D., “Latest GMO Research: Decreased Fertility, Immunological Alterations and Allergies,” Natural News, 12/4/2008, <http://www.naturalnews.com/025001.html>.

³ R. Mesnage, E. Clair, Gress S., Then C., Székács A., Séralini G, “Cytotoxicity on human cells of Cry1Ab and Cry1Ac Bt insecticidal toxins alone or with a glyphosate-based herbicide,” Journal of Applied Toxicology, 2/15/2012, http://www.gmfrecymru.org/pivotal_papers/crucial27.htm.

⁴ Ibid.

