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TESTIMONY IN SUPPORT OF CT **HB 6519**, An Act Concerning the Labeling of Genetically Engineered Foods

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Good afternoon. I am Michael Donagher and I have a B.S Degree in environmental chemistry from University of Connecticut and next year finishing a master's degree in environmental engineering at University of Hartford. I have read a lot about genetically engineered (GE) crops (GMOs, genetically modified organisms). I am here to briefly discuss some studies published in professional research journals that suggest health concerns.

Firstly these crops are engineered in a lab to have a segment of genes imprecisely infected or shot into their DNA, the segment is an artificial combination of an antibiotic resistant gene, bacterial genes and a segment of DNA from the cauliflower mosaic virus. The segment fits into the plants DNA mutating it, tricking the plant cells into synthesizing foreign proteins.

The genetic engineering process is uncontrollable and the genetic engineering process itself regardless of what genes and subsequent proteins are added and created was never proven to be completely safe.

Two major discoveries involving DNA that are of important consideration for this technology have been made after this technology was adopted. There are still unknowns about DNA, RNA, proteins and the human immune and digestion system. With so much uncertainty and without knowing how people will use this infinite power all risks are not apparent.

In a study by Nancy Podevin and Patrick du Jardin (**Podevin and du Jardin 2012**) the viral DNA commonly used in GE crops was investigated because it has a partial segment which codes for a viral protein. However they do not know if there could be viral material produced in these plants, they looked at different possibilities with a computer program to analyze for toxicity and allergenicity.

Their results mostly showed no match. They did state if there is some viral material generated in transgenic plants, it might change the ability of the plant to protect itself and decrease the plants overall health including plant stunting, late flowering and reduced fertility. If some viral material is expressed there is debate if it would affect humans. Some people disregard this; others think more investigation should be done.

Finamore et al. in 2008 showed significant immune responses in both weaning and old mice that were fed a diet containing a commercially available GE corn that produces the Cry1Ab protein otherwise known as Bt toxin. This finding is important because a compromised immune system can lead to many health problems. In their publication they mentioned a team of researchers that found 43 proteins that were produced in abnormal quantities in the GE seed; they noted a disturbance likely from foreign gene insertion.

Duggan et al. were able to find a DNA fragment containing the entire Cry1Ab gene from modified grain in the stomachs of a sheep 5 hours after ingestion. They concluded that the DNA in the maize grain could provide a source of DNA that could transform bacteria present in the sheep's stomach.

Additionally Tudisco et al. detected fragments both of the viral DNA and the gene for herbicide resistance in blood and milk of tested goats. These fragments were also found in the goat's offspring, especially the viral DNA segment, in liver, kidney and blood, and herbicide resistant gene fragment in liver, kidney, heart and muscle. They found evidence of a significant increase in the enzyme lactic dehydrogenase.

Netherwood et al. tested 7 patients who had their lower intestines removed and replaced with a colostomy bag. He found fragments of the herbicide resistant gene were able to pass through the stomach and small bowel. More interestingly he had discovered some indication of low-frequency gene transfer from GM soy to the micro-flora of the small bowel; he noted this occurred before the experiment.

Kleter et al. suggest in their publication that regulatory agencies do not go far enough to investigate the transfer of the genes added to these plants to other organisms including bacteria in the soil and in the stomachs of animals and humans.

The lack of proven safety and insufficient regulation and a lot of unknowns make this is a large experiment with food. Monitoring without labels is impossible and there is a lack of independent testing and acknowledgment of adverse findings. Please vote to label GE food so that people can choose for themselves, thank you.

Sources (in the order they appear in the testimony):

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