



Anti-GMO? This Modified Corn Could Save Lives!

Science & Tech by [Krista Johnson](#) - March 12, 2017 0



University of Arizona plant geneticist Monica Schmidt has **genetically modified** corn plants to turn off the ability of *Aspergillus* species of fungus to spread a toxin that leads to multiple life-altering and deadly conditions, which could be a game-changer for developing countries all over the world.

The procedure is called host-induced gene silencing (HIGS), and it involves inserting foreign genetic material into a host species so that the host can silence unwanted genes expressed by pathogens and pests. Schmidt and colleagues inserted RNA from the *aspergillus* fungus into the corn plant's genetic code. When the fungus tried to infect the corn plant, the two exchanged genetic code, which, since the corn contained *aspergillus* genes, shut down the ability of the fungus to produce aflatoxin.

The trials were 100 percent effective according to the peer-reviewed results published in [Science Advances](#) journal, and there were no other changes to the corn's genetic code. The success of this initial trial is important because *Aspergillus* species cause illness, death, and economic loss in places where the fungi are rampant.

What is *Aspergillus* and why is its toxin dangerous?

Aspergillus refers to a genus of fungi that includes a few hundred species. *Aspergillus flavus* and *Aspergillus parasiticus* are the **main species** that produce dangerous aflatoxins, a certain fungus that can contaminate crops at all stages, from development to processing. These fungi are found **on crops** such as coffee, cocoa, copra, corn, cottonseed, groundnuts, peanuts, tree nuts, and yam chips, especially in warm, humid regions.

Exposure to aflatoxins can lead to liver disease, liver failure, liver cancer, aflatoxin toxicity leading to death, Reye's syndrome, and impaired growth in children. According to the [Partnership for Aflatoxin Control in Africa](#), studies have also linked the toxins "to immune suppression, increased susceptibility to diseases such as HIV and malaria, and a possible reduction in the effectiveness of vaccines."

Who does this impact?

These problems are especially important in developing countries. For instance, the [Centers for Disease Control and Prevention](#) states that Kenya suffers from high rates of aflatoxin contamination and poisoning, with up to 40% of cases resulting in death. This is because testing is not readily available in these countries, resulting in undetected contamination. Aflatoxins have an impact on economics and nutrition in countries without widespread testing available because 1) contaminated crops must be destroyed, 2) the crops do not meet standards for trade, and 3) aflatoxins can cause illness and decreased yields in livestock.



What's next?

According to [the Arizona Daily Star](#), Schmidt is seeking funding for phase two trials but has hit roadblocks because of the public distrust of GMOs.

The Bill and Melinda Gates Foundation funded her initial research but refused to fund the second leg of the trial, stating that they were funding other ways to fight aflatoxins, reports the [Arizona Daily Star](#). They also turned down her next project involving fighting the fungus itself, but the US Department of Agriculture agreed to fund that research.

Right now phase two is still unfunded, which is unfortunate because if a group would overcome the GMO stigma and provide a grant to Schmidt and her colleagues, the eventual approval and release of such genetically modified corn could save lives in Africa.

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Krista's a freelance proofreader and writer with a focus on medical editing and teen story-based games. She also makes a few bucks with photography. When she's not working with words, she's spoiling her English bulldog and trying new things in the kitchen.

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