

## Arctic Apple's gene-silencing tech presents new regulation challenges

Biotechnology is heading into the Garden of Eden. A Canadian corporation, Okanagan Specialty Fruits, is offering a genetically engineered apple that doesn't brown after it's bruised or sliced. The U.S. Department of Agriculture appears to be on the brink of deregulating the so-called "Arctic" apple, allowing it to be planted and sold without any further oversight.

Whatever challenges it poses to the apple industry, the Arctic apple raises a much larger issue for the public: how to evaluate the risks of the next big wave of genetically engineered crops and foods.

Does the Arctic apple pose risks to health and the environment? As of right now, the government doesn't know. That's because the Arctic apple is the product of complex new genetic engineering techniques that the USDA is just learning how to evaluate.

[Genetic engineers can now use gene silencing to dial back the expression of genes.](#) The Arctic apple has been engineered to silence the polyphenol oxidase (PPO) enzymes responsible for browning in apple flesh after the fruit is cut.

Is there any reason to worry about turning genes off? Yes. RNA manipulations may end up turning down, or off, genes other than those that were targeted.

The FDA and the USDA need new protocols for evaluating these complex new technologies. Modern genomics research has provided scientists with powerful tools to identify nontarget genes that might be turned off by gene silencing.

Last January, a U.S. Environmental Protection Agency committee concluded that the EPA's tried-and-true methods for evaluating chemical pesticides would not work to assess the risks of gene silencing used in pesticides and that new approaches, including genomics, were needed.

**Read full, original article:** [Gene-Silencing and the 'Arctic' Apple \(Op-Ed\)](#)