

Can biotechnology be open-source?

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On January 16, the agricultural biotechnology giant Monsanto filed an [appellate brief](#) urging the U.S. Supreme Court to uphold its patent rights on its genetically modified soybean seeds. The case, *Bowman v. Monsanto*, will be heard in February and will decide whether Indiana farmer Vernon Hugh Bowman violated Monsanto's patents by planting its seeds without paying royalties to the company.

Typically farmers who buy the herbicide-resistant seeds sign an agreement not to plant the second-generation seeds harvested from the first generation plants. Instead, they may sell those seeds to a granary to be fed to livestock, writes Reuters' Alison Frankel. Vernon Bowman planted that commodity grain and grew Monsanto's patented Roundup Ready plants, reasoning that the company only has the right to control first-generation seeds. Monsanto, on the other hand, argues that if it couldn't restrict the second-generation plants it would never earn back the money invested to create the GM seeds.

Meanwhile, organic farmers demanding labeling for GM foods as well as protection from patent-infringement suits should GM seeds find their way into their fields, carried by winds or by other means—what anti-biotech activists call “contamination”—are rallying on the National Mall on Martin Luther King Day.

Intellectual property rights have always been an issue when it comes to biotechnology. The fight recently resurfaced in part due to the Prop 37 initiative that was defeated in November in California. “The fight over labeling GM food is not foremost about food safety or environmental harm,” food journalist Michael Pollan wrote in the *New York Times*. “The fight is about [the power of Big Food](#).”

Frederick Kaufman, another food journalist, recently [echoed those sentiments](#) in a *Slate* article. “The rules that govern patents for electronics and entertainment,” he writes, “should not be the same rules that govern the most vital element of human life”— meaning food. In the article, Kaufman alludes to several problems with food patents, including:

- Monsanto has filed 144 patent-infringement cases over the past 13 years, sometimes prosecuting farmers who allegedly are unaware of growing GM crops that had been carried in on the wind.
- Food patent laws may stand in the way of scientific research. According to [BiOS](#), an open-source science initiative, “The existing innovation system in biological sciences encourages the private appropriation of critical enabling technologies through intellectual property rights, typically patents. Increasingly, biological technologies are not self-contained, but instead are interdependent technologies requiring multiple key components to function to the point of delivery. Denial of access

to any component prevents the use of the technology.”

- Large biotech firms are looking for innovations with the greatest profit-generating potential, so they tend not to invest in solving small-scale, local problems
- According to one paper, intellectual property rights have [blocked farmers](#) in the developing world from accessing and adopting agricultural biotechnologies.

In that paper, researchers suggest that open-source biotechnology can provide a solution to many of these problems. By sharing genetic engineering tools, techniques and information, scientists from around the world could solve problems that the big companies are ignoring, while making the solutions available to everyone.

Lawyer Drew Kershen and Henry Miller, a GMO-proponent and policy expert at the Hoover Institution, sharply disagree in an article in a Hoover Institution journal. They say that intellectual property rights are not the cause of restricted access to biotechnology in developing countries. Instead they point to what they contend is “the strangulation of agricultural biotechnology by unscientific, unneeded, and discriminatory regulations.”

Fear and stigmatization can slow the regulatory process and add unnecessary hoops for GM food producers to jump through. Beta carotene-fortified “Golden Rice,” created in the 1990s to prevent vitamin A deficiencies in developing countries, has been delayed from reaching markets thanks to the strident opposition and questionable claims of groups like Greenpeace and Friends of the Earth.

In the U.S., it took 17-years and millions of dollars before the Food and Drug Administration issued its scientific safety and environmental assessments for [AquaBounty’s genetically engineered salmon](#). The company was [nearly bankrupted](#) in the process. Even still, biotech opponents called the FDA’s 17-year-long evaluation process a “mad dash to put GE salmon in our grocery stores”.

In part because of the legal and public relations hurdles created by activists, the costs to approve GM foods runs into the tens of millions of dollars for each transgenic event, write Miller and Kershen. With costs that high, what scientist or small business could afford to test and distribute safe, open-source food technology? Only the biggest of businesses can survive in this anti-science climate.

“The world’s poor are suffering and dying unnecessarily, not because of the failure of intellectual property,” write Miller and Kershen. “A far more critical factor is the gratuitous regulation demanded by activists and created and maintained by bureaucrats.... Unless these debilitating regulatory burdens are removed, or at least lightened, the intellectual property framework applied to agbiotech discoveries will be irrelevant, open source or not.”

In other words, open-source biotechnology may lead diverse and innovative solutions to important food security problems, but while the minds of the populace are closed to science, those innovations can’t get

very far.

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