Viewpoint: Frankenstein's legacy is a 'distrust of science'—and GMOs

In 1992, when I was just two years old, a commentator (a professor of English, appropriately enough) writing to the *New York Times* distilled all the fear of genetic engineering rife at the time with the fear of "playing God" so popularized by Mary Shelley, into a single word: "Frankenfood". Twenty-five years later this neologism, with all the fear and loathing it conjures, is still around, and it's hindering the work my colleagues and I are trying to do by creating GMOs that can save lives and reform a failing food system.

Scientists like me work in publicly funded institutions all around the world genetically engineering crops like cassava, wheat, and rice, often for the poorest communities on the planet. The kind of GMO research we do has led to the development of rice varieties that can stop child-blindness *and* end the scourge of iron-deficiency anemia, cassava plants that can solve vitamin B6 deficiency; the creation of papaya, tomato, bean, and cassava plants that can resist viruses, and can thus lessen the use of insecticides by the farmers who can least afford them; even plants that need less water and fertilizer, and are thus prepped for the cataclysmic effects of climate change.

And yet, every day we also have to contend with a ferocious PR battle around GMOs where fear-inducing constructs like 'Frankenfood', demonization and personal attacks are the weapons of choice, and where the main casualty is sound science. As a result, most of us labor in the full knowledge that the fruits of our efforts (GMOs that can help alleviate starvation and suffering), may never make it to those farmers and consumers in developing countries who need them the most.

frank 6 29 18
Frankenstein, 1931. Image credit: Photofest

My grouse with Frankenstein is not that the name lends itself to such easy prefixing(*franken-science, –pigs, –apples, –fish* etc.). It's that the novel sparked off an almost unalloyed distrust of science that the world seems reluctant to let go of. To be fair, it's hard to imagine that a 19-year-old Mary Shelley had any idea that 200 years after her novel was published, scientists would be cloning genes from one species into another and even editing the genetic codes of human patients. It's also true that her message in its entirety is much more nuanced than the screed against technology that it's made out to be. (As others have pointed out, Frankenstein has more to say about parenting and the generational gap than it does about freewheeling science.) However, in the 21st century, her doctor and his monster-creation have been firmly adopted as propagandist metaphors for genetic engineering and its alleged evils, with GMOs being the primary target. I find myself (perhaps irrationally) wishing it was never published.

Beyond a general distrust of science 'creating' life, Frankenstein seems to inspire a particular suspicion of scientists themselves. Victor Frankenstein is after all the stereotypical mad scientist, creating his own demons, isolated from the society around him. It's not a stretch, then, for activist organizations to draw on this vision and whip up fears about modern scientists creating toxic food in the interest of Big-Ag. This image of rogue scientists easily bought by industry dollars is often plain wrong though.

In 2010, I spent a month interning at Monsanto's research center in Bangalore, India. Interacting with

fellow Indian scientists working for this company (the primary target of most anti-GMO activism globally), I found that they were just as passionate about improving the lives of local farmers as any publicly funded researcher. And they worked within the same parameters of teamwork, peer-review, and government oversight that characterize most modern science. That same passion for science that can make an impact is what animates colleagues at my current position as a PhD student in a publicly funded European lab that works on creating disease-resistant and nutritionally enhanced GMOs for Asian and African countries.

On the other hand, entire movements of European and American NGOs operating in Africa and Asia hold techno-phobia, roused by narratives like Frankenstein, as their fundamental animus. It is these actors who have played a large role in festering anti-GMO regulations and policies backed by shoddy science in Africa. In a particularly distressing case, in 2002 the Zimbabwean government turned away 10,000 tons of US corn (meant for food aid) because of fears of GMO 'contamination.' When the shipment was redirected to nearby Zambia, intense pressure from European NGOs led to its rejection. (Overall Zambia rejected more than 60,000 tons of corn). Since then country after country in Africa and Asia (including my own, India) have shut their doors to GM technology, including that developed by indigenous scientists and institutions.

Over the last year, several countries in sub-Saharan Africa have been suffering from an epidemic of fall armyworm, destroying fields and fields of corn, the primary staple. South Africa, however, survived the effects of the disease because it allows, and as I saw first-hand, even provides farmers with GM insect-resistant corn to grow. At the same time, in November Kenyan scientists announced that they had created their own GM corn resistant to the devastating insect and pleaded with the government to allow its cultivation. However, due to a law passed in 2012 on the basis of debunked science and fear-mongering by European activists, Kenyan farmers cannot grow insect resistant maize developed by their fellow citizens, nor import it from other countries like South Africa.

massive logo

Image not found or type unknown

It is heartbreaking that farmers and consumers in the former

colonies are yet again being denied technology, and more importantly *choice,* this time due to ideas and imagery partly driven by a work of fiction, that in my opinion, does little to speak to real fears in these societies and more to imagined ones in wealthier countries.This apart from the fact that Frankenstein, and like expressions of the ethical quandaries of 'playing God,' draw from a well of Christian morality that's alien to worldviews in other societies.

Frankenstein is obviously not the cause of all anti-science movements, but its pervasiveness in popular culture has certainly played a role in engendering an atmosphere of suspicion around any science that appears to "meddle with life." This influence wielded by art is something that has always been recognized by civil society, industry, and politicians, who have all recruited artists to their causes, for good and evil. More recently though, scientists have begun recognizing the importance of art in research and science communication too. Researchers across the globe are now meeting with artists regularly, welcoming them into our glass-walled, HEPA-filtered laboratories and introducing them to our newest *Franken-critters*.

Perhaps this is a good thing, but to me the message behind Frankenstein's recasting in the GMO debate is that art often toes perilously close to propaganda, and that line is one we all have to learn to distinguish. In the meantime though, almost a billion people in the developing world are starving, and they deserve the choice to adopt technologies that can help, free of the specter of a 200-year-old novel.

Devang Mehta has a PhD in plant biotechnology from ETH Zurich. Follow him on Twitter @_devangm

This article was originally published at Massive as "How 'Frankenstein' unfairly sways the GMO debate" and has been republished here with permission.