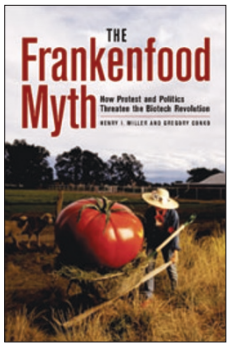
The irrationality precedent



The Frankenfood Myth: How Protest and Politics Threaten the Biotech Revolution

by Henry I. Miller & Gregory Conko

Praeger Publishers, 2004
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Reviewed by John Hodgson

Publishing, even electronic publishing, is much too slow a process for the life sciences and their applications in biotech. In a keystroke, tomorrow's experimental design is today's data and yesterday's barely cited paper. A unique business opportunity now is a mere competitive edge next week and, by the next partnering meeting, patented intellectual property will have been commoditized.

In such a world of Red Queens running, it is faintly reassuring to know that there is one aspect of the life sciences that remains more or less constant. The complaints that Henry Miller and Greg Conko make in *The Frankenfood Myth* about the regulators of genetically modified products are as germane today as they were a year ago when I was first asked to review this thought-provoking book, or a decade or more ago. Initial misplaced regulatory zeal and subsequent entrenchment have meant that wrong-headed views of biology in general and recombinant organisms in particular are now enshrined in laws across an increasing proportion of the globe. But the most unsatisfactory aspect of the genetically modified (GM) crops debacle is that an international precedent for regulatory irrationality has been set. What price logic in stem cell biotech or nanotech?

Miller and Conko document the history of genetic modification of plants and animals and the public and regulatory response to it. With its sharp reminders of the hundreds of instances where 'we'—the biotech community—went wrong, the book will be an agonizing read for anyone who has been directly involved or who objects to the erosion of the scientific process. The take-home messages distilled from the pages of *The Frankenfood Myth* would probably be these: regulators act in a self-serving way unless nagged into acting rationally; regulators respond to politics and social mood as much as to science; the public is open to believing anything that does not conflict with its own direct experience; the public attributes additional value to scientific information but it doesn't know how to recognize it.

The mobilization of public opinion is where a great deal of regulation has its genesis. In an era when gods still apparently instruct world leaders to wage wars and where Dan Brown is regarded as a great author of nonfiction, all things are clearly believable. We must be politically correct and respect beliefs, no matter how unsupported they are by evidence. Apparently, activists have a right to claim that milk from cows given recombinant BST will cause breast cancer in women who drink it. Or that antibiotic resistance genes in plants significantly increase the chance of antibiotic resistance emerging in gut flora. Or that the poisonous effects of a potato are due to the process of genetic engineering itself rather than to the poison that was added.

Activists are terrorists of the mind: they are extremists who depend on the sanctuary they find in the unquestioning attitude of sympathizers. That they can get away with claims like those above relies somewhat on the fact that their audience knows little about recombinant DNA, or BST, or cancer, or antibiotic resistance. But it has much more to do with the fact that their audiences are also pretty fuzzy about the constitution of milk, the origins of domestic cattle or almost anything to do with plants. In addition, in a world shrunken by communication in which everyone is your neighbor, people have an increasingly poor appreciation of risk and hazard.

However, as Miller and Conko point out, science does still retain sufficient kudos that even those who think unscientifically want to don its mantle. The public looks for scientific affirmation of its instincts, and the nonscience organizations wheel out their pseudoscientist to provide it. And then two sets of credentials can battle it out, while the public and regulators can choose whom to believe. Despite what we in science think, it isn't that easy to work out who are the good guys. Who but the cognoscenti can distinguish the National Academy of Science from the Union of Concerned Scientists; the Open University from UCD; the Foundation on Economic Trends from the Hoover Institution.

Like Mae West, the leading journals used to be Snow White, but on the issue of GM plants they have certainly drifted. Not often, but in key points in the debate, reputable publications have severely erred. Professional scientists may differentiate papers that are journalistic puffery, preliminary communications, opportunities to air the issues and peer-reviewed findings, but the public doesn't.

Industry is also hugely culpable in cementing many of the dafter rules surrounding genetically modified products. *The Frankenfood Myth* gives us a nice US example of industrial self-interest working against GM products. The North American Millers' Association argued that there should be zero-tolerance for the presence of industrial or pharmaceutical crops in agricultural products intended for food or feed. They called for all developers of plant-based drugs to have mandatory liability coverage or to indemnify all downstream processors and handlers of food products against the potential impacts of gene flow. Such a call might make sense from an industry that was whiter-than-white-flour and twice as wholesome. However, as Miller and Conko point out, milling itself is rather prone to adventitious agents—"highly toxic fungi, rodent droppings, and insect parts"—none of which are really intended for food use either.

In Europe in the late 1980s and early 1990s, individual large companies and their industry associations accepted that the whole area of GM crops needed regulating. Once the regulations were in force, the argument went, it would be easier for the barriers to the market to be

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dismantled. The greatest unscientific gaffe of this lamb-like stance was the acceptance that because GM crops can be distinguished, they should be. Of course, it was never the intention to treat GM products differently (just as it was never the intention for black people to get the raw end of the deal in the apartheid regimes of southern Africa). But once the special GM status was enshrined in legislation, regulators who were 'just following orders' introduced all sorts of unjustified measures. A grossly misshapen form of public opinion was used as a stick to beat a trail of submission through retailers, food processors and farmers—all the way back to the plant breeders and the research groups on whose results they drew. Europe's regulations on GM are only 'science-based' in that people in white coats conduct the uninstructive tests that the law now requires. Europe has a strong GM testing industry, but no homegrown GM products.

The Frankenfood Myth is a cautionary tale of what happens when beliefs and nonsense are given equal play with knowledge in setting policy (or as might be more appropriate, in not having a policy at all). It provides a historical record of the blindfolded, backwards walk that has been taken in regulating genetically modified organisms. The mere presence of controversy, say Miller and Conko at one point, "should not cause industry—or government regulators for that matter—to overreact." They have done so, and now is the time to admit it and try to rescue what remains of a potentially supremely important economic and humanitarian endeavor.

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