

How Risky Is It, Really?

Why our fears don't always match the facts
by David Ropeik

Uh Oh, FrankenSalmon! Why is genetically modified food so scary?

The psychology of risk perception is really powerful when it concerns food.
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Imagine sitting down to a lovely meal of grilled salmon, firm, moist, delicious...and genetically engineered. Does that sound different than firm, moist, delicious *wild* salmon? Or firm, moist, delicious *farm-raised* salmon? Probably. But why. Salmon is salmon is salmon right?

Well, no, you might say. With genetic engineering there might be a [gene](#) in there from a peanut or a potato or a pig. They can mix anything they want together these days. What if I told you that the only genes in the entire salmon, are salmon genes. The genetic engineering just took genes from one species that matures faster, the Chinook, and put them in the Atlantic salmon which people like to eat and which can be farm-raised and mass produced, so the salmon grows to its normal size faster. (They also put in a gene from a salmon relative, the ocean pout, to turn the Chinook growth gene on.)

But wait, you say. There was nothing on the label that said it was genetically engineered. That's because the Food and Drug Administration long ago ruled that food that is the same after genetic engineering as it was before is, well, the same, so it doesn't have to be labeled as different. It's like milk produced from cows injected with Bovine Growth Hormone, the natural hormone from cows that stimulates milk production. Put more BGH in the cow and you get more milk, but the milk is the same milk. Well, this is the same salmon.

But wait, you say. These genetically engineered salmon could interbreed with wild salmon, and then humans are messing with [nature](#). To avoid just that problem, the genetically engineered salmon will only be sold as eggs, to companies that breed their salmon in inland tanks. Oh, and the eggs will produce females that are sterile.

But wait, you say. The [government](#) won't release all the documents on how this genetically engineered fish is being produced. The FDA says that's because it regulates genetic modification of food the same way it regulates new pharmaceuticals. To protect companies that invest billions developing new [drugs](#), trade secrets are kept secret. (So are the formula for Coke and the recipe for Thomas's English Muffins, by the way, and we eat those industrially produced foods.)

That's a lot of "Yeah, buts..." before you finally dig into the salmon, albeit hesitantly. What's all the hesitation about? Do you know all you need to know about how genetic engineering is done to make a fully informed rational choice about this perceived risk? No? Do you have all the time to go learn up on it, or all the background knowledge and smarts you'll need to understand all that science? Nope. Then, if we're talking about a judgment that is not purely rational, *i.e.* purely fact-based, where do these fears come from?

The perception of genetically modified food is like the perception of any risk, a combination of the facts and how those facts feel, a mix of reason and gut reaction. GM food has several unique characteristics that psychologists have determined make some things feel scarier than others. It's human-made, and that alone makes it scarier than a risk that's natural. We're more afraid of what we can't detect ourselves, what we don't understand, and what we're exposed to involuntarily (remember your complaint about no labels?). We depend on the government to keep us safe, but we don't completely trust the government, and that lack of trust feeds greater worry (ergo the complaints about secrets).

None of this has anything to do with the fact that the genetically modified salmon is 100% salmon, just grown up faster. But the psychological lenses of risk perception, through which we filter what information we do have, mean that genetically modified food that is essentially identical to the natural kind, which offers the promise of more sustainable production of more protein at less cost, is going to bump up against resistance from people who, as we all do to some degree, just naturally worry about risks that are human-made, hard to understand, invisible and undetectable, imposed on us, and that a not-completely trusted bureaucracy is supposed to protect us from.

The opponents will argue all those facts that you just argued a few moments ago, but it will be their (our) underlying perception psychology doing the talking. It will be interesting, a few years from now, to listen in on the conversation they have with friends who invite them for dinner, and serve salmon.



David Ropeik is the author of *How Risky Is It, Really?*, an Instructor at Harvard University Extension School, and a risk-communication consultant. The psychology of risk perception referred to above is described in detail in David Ropeik's new book, [How Risk Is It, Really? Why Our Fears Don't Match the Facts](#).