

Why people become skeptics of GMOs, vaccines and climate change

We live in an age when all manner of scientific knowledge—from the safety of fluoride and vaccines to the reality of climate change—faces organized and often furious opposition. Empowered by their own sources of information and their own interpretations of research, doubters have declared war on the consensus of experts. There are so many of these controversies these days, you'd think a diabolical agency had put something in the water to make people argumentative. And there's so much talk about the trend these days—in books, articles, and academic conferences—that science doubt itself has become a pop-culture meme.

We're asked to accept, for example, that it's safe to eat food containing genetically modified organisms (GMOs) because, the experts point out, there's no evidence that it isn't and no reason to believe that altering genes precisely in a lab is more dangerous than altering them wholesale through traditional breeding. But to some people the very idea of transferring genes between species conjures up mad scientists running amok—and so, two centuries after Mary Shelley wrote *Frankenstein*, they talk about Frankenfood.

Scientific thinking has to be taught, and sometimes it's not taught well, Marcia McNutt says. Students come away thinking of science as a collection of facts, not a method. Shtulman's research has shown that even many college students don't really understand what evidence is.

Of course we're right to ask questions about some of the things science and technology allow us to do. "Everybody should be questioning," says McNutt. "That's a hallmark of a scientist. But then they should use the scientific method, or trust people using the scientific method, to decide which way they fall on those questions." We need to get a lot better at finding answers, because it's certain the questions won't be getting any simpler.

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