

Email Submission: Paul Wilson

Discussion Paper for Regulation of New Technologies

I favour Option 2

GENE EDITING is a major concern. Promoting the idea that anyone off the street is encouraged to manipulate living organisms in any way they like is deeply troubling. . When many people find out what gene editing means, genetic engineering likely to be a source of even greater distrust. A problem is the topic's not widely publicized, and certain media are run by those linked to industry.

1) The **business case / business model must be discussed as with any proposal, and we haven't seen this.** In this matter there is a total lack of openness and transparency.

Surely it's deceptive and misleading to claim anyone can have a go at gene editing.

2) **Who owns the finished product?** The gene tech industry's relationship with its players needs to be fully transparent.. Are they employees, or contractors, or self-employed or self-employed contractors??

3) Is gene editing involving the public aimed only at playing games of 'inventing' new kinds of foods? What about viruses? Bacteria? Is it a 'fun thing' to make money from the public (inappropriately trivializing / devaluing /grossly distorting the importance of food, a basic need of all)? How could one stop such games of genetic manipulation going further in the hands of skilled players, eg manipulation of animals ? What about in the hands of trouble-makers, hackers?

4) If gene editing is supposed to be available for all, much like computer games, how would the GM companies behind this make their money? How do they intend to commercialise it? This is where the business model comes in. Undoubtedly behind all this are the subsidy-seeking, powerful elite few. The PURPOSE on a case-by-case basis is vital to know surely for protection of community health, environmental health and national security, reasons, and OGTR needs to consider this. But without regulation there would be no transparency about 'purpose' at all. Potentially dangerous.

5) Would the companies class themselves as a software company? (This is how Uber is operating).

<http://www.economywatch.com/features/Is-Uber-Just-a-Software-Company.06-22-15.html>

Are those who play at creating new foods classed as employees, contractors or self-employed contractors? Or just players / participants? If employees, a litany of rights and requirements go along with it. Who will be accountable for what? The GM industry we hope would be liable when things go wrong. And the GM industry presumably would not be able to discriminate among users based on race, color, religion, sex, national origin, **age**, or **disability**. Who would screen participants? However, if participants are seen as self-employed, the gene tech industry presumably would owe them nothing, except what it explicitly promises in the contracts it drafts, if contracts are involved.

6) What would happen about patenting?

7) How would gene tech companies seek to maintain their enormous power and profits? Can participants do gene editing in their own homes or only by paying a fee to use the company's lab? Who is responsible for overseeing what happens in the labs? What about the negative results? What would constitute a negative result?

8) What about accountability and liability?

9) Long term safety (let alone short term) is a key issue (unresolved) and must be addressed. I can't see how this can be avoided. Without regulation of gene-editing there would be no scientific methodology applied, no peer reviews etc of what people off-the-street produce, which makes the whole idea unscientific - it makes a mockery of OGTR and industry claims that GM foods and products are scientifically and rigorously tested and sound.

I like what Drs Murray & Pizzorno say below. "Finally, we also respect the strong sentiment that genetic engineering is morally wrong as it implicates an attempt to modify nature beyond natural laws".

Sincerely,
Paul Wilson

Scientific American June 2015

Extract from Advances, page16, Martin Rees, founder of the Center for the Study of Existential Risk

<http://www.scientificamerican.com/article/meet-the-co-founder-of-an-apocalypse-think-tank/>

Question to Martin Rees: What are the major risks to humanity as you see them and how serious are they?

Answer: 'I'm personally pessimistic about the community's capacity to handle advances in biotech. In the 1970s the pioneers of molecular biology famously formulated guidelines for recombinant DNA at the Asilomar conference. Such issues arise more starkly today. There is current debate and anxiety about the ethics and prudence of new techniques: "gain of function" experiments on viruses and the use of so-called CRISPR gene-editing technology. As compared with the 1970s, the community is now more global, more competitive and more subject to commercial pressures. I'd fear that whatever can be done will be done somewhere by someone. Even if there are formally agreed protocols and regulations, they'll be as hard to enforce as drug laws.

Bioerror and bioterror rank highest on my personal risk register for the medium term (10-20 years)'.

SCientific American, July 2009.

Unfortunately, it is impossible to verify that genetically modified crops perform as advertised. That is because agritech companies have given themselves veto power over the work of independent researchers. Research on genetically modified seeds is still published, of course. But only studies that the seed companies have approved ever see the light of a peer reviewed journal. In a number of cases, experiments that had the implicit go-ahead from the seed company were later blocked from publication because the results were not flattering. It would be chilling enough if any other type of company were able to prevent independent researchers testing its wares and reporting what they find. But when scientists are prevented from examining the raw ingredients in our nation's food supply or from testing the plant material that covers a large portion of the country's agricultural land, the restrictions on free inquiry become dangerous.

Professor Brian Cox 'In search of science - "Clear Blue Skies" 2015

In any commercial environment, specific targeting brings with it the possibility that during the process of discovery, the kind of result that doesn't positively enhance the chance of success may be ignored. This is extremely worrying indeed.

In historical scientific journals, negative results were recorded as well as the positive ones, and that's important as all knowledge is valuable.

In a commercial setting, the temptation is to ignore the negative results. This is almost anti-knowledge. It goes against the ethos of science.

Extract from the 'The Encyclopaedia of Healing Foods', page 41

[By the authors of 'The Encyclopaedia of Natural Medicine'].

Dr Michael Murray and Dr Joseph Pizzorno with Lara Pzzorno, MA, LMT
Atria books 2006

Part 1, page 41.

'SAFE EATING

Our View of GM Foods,

We are concerned about the development of GM foods for several reasons.

First of all, there is little scientific data on the long term safety of GM foods. It may turn out that GM foods cause unexpected health consequences that will not be apparent for years.

Second, genes from genetically modified plants have already been shown to be capable of escaping into the environment and contaminating natural crops.

And third, manipulating genetic material changes the expression of proteins and antigens in foods, a situation that could lead to allergic reactions.

Since GM has already been shown to contaminate the natural variety of a crop, it is conceivable that they could also cross-fertilize with other plants, resulting in all varieties of a plant being the GM version.

GM could also lead to nonproducing crops or even "superweeds" that could wreak havoc and overtake planted crops.

Another concern is that some GM foods, such as GM corn, are being manipulated to resist synthetic pesticides. As a result, more of the pesticide is being used and humans' exposure to toxic pesticides is actually increasing while insects develop resistance to the pesticides' toxic effects.

Finally, we also respect the strong sentiment that genetic engineering is morally wrong as it implicates an attempt to modify nature beyond natural laws.

There does not seem to be a strong reason for GM foods, and the GM foods that have currently been introduced have not fulfilled their promise to reduce pesticide use or maintain the integrity of the environment. We therefore recommend choosing non-GM foods'.