

This response was submitted to the Call for Evidence held by the Nuffield Council on Bioethics on *Genome editing* between 27 November 2015 and 1 February 2016. The views expressed are solely those of the respondent(s) and not those of the Council.

I am a philosopher of science, and an environmental philosopher. My current research is on how the Precautionary Principle can be defended against its critics, and on how precautionary reasoning transforms the way in which environmental threats are assessed. In particular, on how, once one takes up a properly precautionary stance, 'evidence-based' arguments can no longer be used to justify new GM techniques such as genome editing.

The work that I have been doing with Nassim Taleb and other colleagues on this focuses on how and why the Precautionary Principle should apply to GM (see <http://arxiv.org/abs/1410.5787>). Genome-editing, it's seeming 'precision' notwithstanding, falls within the purview of our argument. The point being this: that we do not know what hidden/silent 'tail-risks' lurk within such a technique. What we keep on finding as we develop our knowledge of genetics is that genes do more than we knew when we started to 'engineer' them. The unknown unknowns and known unknowns here are substantial. In relation to GM, including genome editing: that we don't have a great deal of evidence of harm is not a sound evidence-based reason for thinking that we have evidence of absence of harm. We do not. And precaution dictates that we should therefore be: cautious.

Please read our paper, <http://arxiv.org/abs/1410.5787>, and consider its relevance. I would be happy to talk with you further about this.

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