The Rt Hon Daniel Zeichner MP
Minister of State for Food Security and Rural Affairs
House of Commons
London SW1A 0AA

7 October 2024

Dear Minister Zeichner:

**Re: Secondary legislation for the Genetic Technology Act**

Following your recent announcement of the government's intention to proceed with secondary legislation to implement the Genetic Technology (Precision Breeding) Act, we are writing to inform you that several elements must be included in the secondary legislation in order that it is based on solid scientific grounds and contains robust protections for health and the environment.

As it stands, the Act does not contain measures that would ensure that genetically modified organisms (GMOs) designated as "precision bred" could have resulted from traditional processes and are as safe for human or animal consumption and the environment as traditionally bred organisms. In other words, the Act does not ensure that these GMOs are in fact "precision bred".

To remedy this omission and establish robust criteria for "precision bred" status, the following pre-market requirements that the applicant must fulfil should be an integral part of the secondary legislation:

1. Long-read whole genome sequencing of the "precision bred" GMO must be carried out, to check for both intended and unintended changes in the genome brought about by the genetic engineering and associated processes (such as plant tissue culture) used to develop the organism.
2. Full molecular characterisation of the "precision bred" GMO using molecular profiling techniques (transcriptomics, proteomics and metabolomics) must be carried out. This gives a comprehensive functional readout of the effects of the processes used to generate the claimed "precision bred" GMO, to provide an initial assessment of the presence of toxins, allergens, or other compositional changes that can unexpectedly be generated.
3. Samples of plant seeds or other material from the "precision bred" GMO should be provided to the regulator, along with a detection method, as has been required under the former UK and current EU legislation. This is necessary so that if unforeseen adverse effects occur from release or consumption of the GMO, it can be more readily identified and detected, and the relevant foods or crops recalled.

The above requirements recognise that it is essential to take into account the fact that the processes used to generate a "precision bred" GMO are radically different from traditional processes and have an inherently imprecise and unpredictable component in their outcomes. Thus even if, as claimed, certain intended outcomes from precision breeding could have been achieved through traditional processes, the spectrum of unintended genetic changes will be markedly different between the two, with different associated risk profiles.

As an analogy, electricity produced by fossil fuel power stations is the same as that from solar panels, but due to the fact that the processes used to generate this electricity are very different, they carry different risks and therefore different safety requirements.

There is now an extensive body of reviews and other articles by scientists independent of the agricultural GMO industry providing evidence that new genetic engineering techniques such as gene editing are neither precise nor predictable and that their products can pose risks to health

and the environment that are different from those posed by traditional processes.[1] Therefore even the apparently simplest of genetic modifications need to be assessed on a case-by-case basis in a full risk assessment in which the effects of all changes, both intended and unintended, are considered. This applies even when the developer states that their GMO is no different from an organism that could have been produced with traditional processes.

We would add that risk assessment for health and the environment, full traceability requirements, and clear consumer-facing labelling should be applied to all GMOs, including those designated as "precision bred". Among other considerations, traceability and labelling requirements protect the democratic right of producers and consumers to choose whether they use, buy, and eat "precision bred" GMOs.

We have repeatedly expressed our concerns to DEFRA and the Food Standards Agency, but they have failed to properly address them. In this respect we would draw your attention to research showing that these bodies are compromised in their independence by the dominant presence of people with conflicts of interest with the agricultural GMO industry.[2]

We look forward to your reply and are happy to help in any further consultation or discussion.

Yours sincerely

Michael Antoniou
Professor of Molecular Genetics and Toxicology
King's College London

Claire Robinson
Co-Director
GMWatch

[1] For example, see: Koller F and Cieslak M (2023). https://doi.org/10.3389/fbioe.2023.1276226 ; Chu P and Agapito-Tenfen SZ (2022). https://pubmed.ncbi.nlm.nih.gov/36365450/ ; Kawall K (2021). https://www.mdpi.com/2223-7747/10/11/2259/htm ; Eckerstorfer MF et al (2021). https://doi.org/10.3390/biotech10030010 ; Kawall K et al (2020). https://enveurope.springeropen.com/articles/10.1186/s12302-020-00361-2 ; Eckerstorfer MF et al (2019). https://doi.org/10.3389/fbioe.2019.00031 ; Kawall K (2019). https://www.frontiersin.org/articles/10.3389/fpls.2019.00525/full ; Kosicki M et al (2018). https://www.nature.com/articles/nbt.4192 ; Leibowitz ML et al (2021). https://pubmed.ncbi.nlm.nih.gov/33846636/ ; Samach A et al (2023). https://academic.oup.com/plcell/article/35/11/3957/7231994 ; Biswas S et al (2020). https://www.sciencedirect.com/science/article/pii/S1673852720300916 ; Norris AL et al (2020). https://www.nature.com/articles/s41587-019-0394-6

[2] See, for example, Millstone and Lang (2023). https://www.nature.com/articles/s43016-022-00666-w ; and GMWatch (2024). https://www.gmwatch.org/en/106-news/latest-news/20373 ; GMWatch (2022). https://www.gmwatch.org/en/106-news/latest-news/19999 ; GMWatch (2023). https://www.gmwatch.org/en/106-news/latest-news/20157