Veille citoyenne d'information sur les OGM et les semences

The majority of micro-organisms modified by NGTs are detectable

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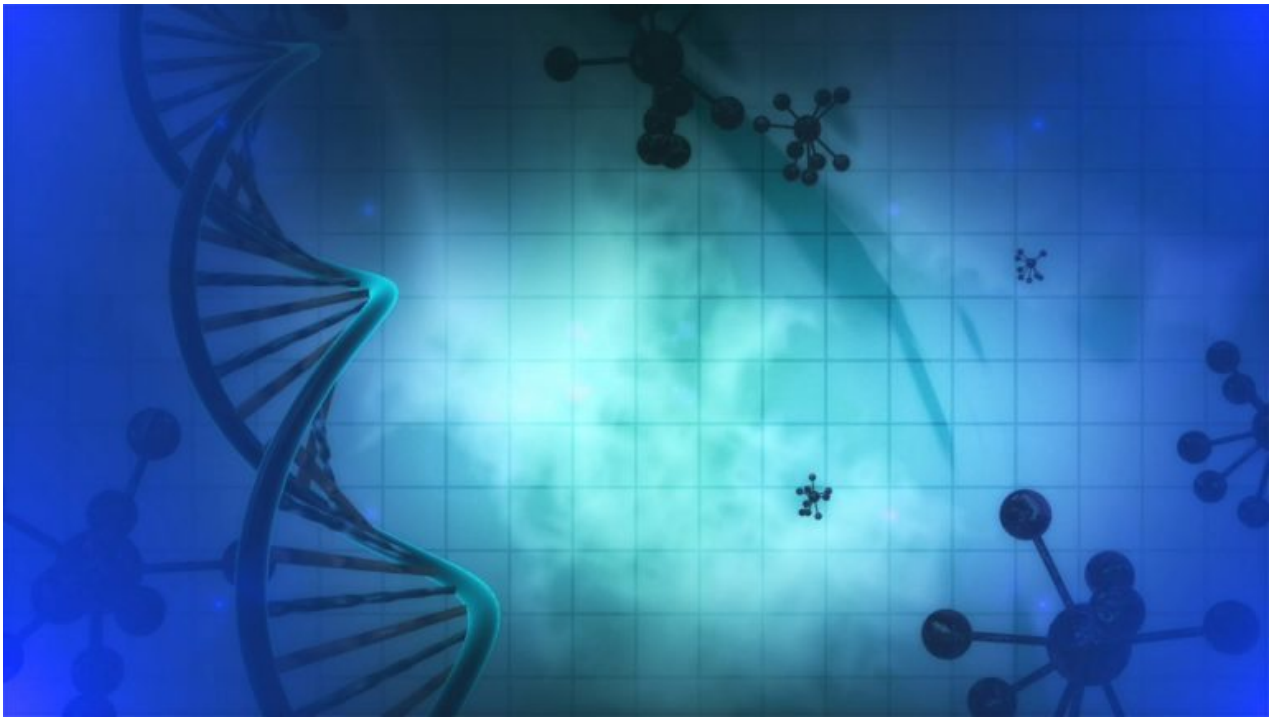
In 2025, the European network of GMO laboratories (ENGL) published a report written by several of its experts on the detection and identification of genetically modified microorganisms using new techniques in the food and feed industry. According to this report, the vast majority of these micro-organisms are detectable and identifiable. However, "*in somecases*", with the processes currently available, very small genetic modifications can be more complicated, or even impossible, to detect and differentiate from those that can occur without technical intervention on the genome.



23 december 2025 - Since the original publication of this article in French on 16 December 2025, the legal proposal has been released by the European Commission and Inf'OGM *will write an article about it by the beginning of next year*

Releasing genetically modified viruses, bacteria or yeasts into the environment or industrial sectors (including agri-food) without control and without knowing the risks they may pose? This seems to be the objective pursued by the European Commission, which appears to be preparing a legislative

initiative to deregulate these genetically modified micro-organisms (GMMs). At a time when multinationals are working to artificialise and gain property over living organisms, micro-organisms are clearly part of the picture. To this end, European experts are being mobilised to provide the European Commission with all the reports necessary to justify a possible proposal for deregulation. In 2025, experts from the European Network of GMO Laboratories (ENGL) delivered their report on the detection and analytical identification of GMMs[i]. This report only concerns the use of GMOs in food and feed, not their release into the environment (in the soil, on plants) or their use in other sectors, such as the production of agrofuels.

Which products are we talking about?

Prior to considering the detection and identification capabilities of GMOs obtained through new techniques of genetic modification (so-called "*new genomic techniques*", NGT), it is important to remember the different uses of these GMMs. The issue of GMMs in food and feed chains concerns both the GMMs themselves and the batches of products obtained from them, in the event of contamination by the producing GMM. These different situations have been summarised by the ENGL in the introduction to their report with four scenarios:

- Molecules produced by GMMs, purified and with no remaining trace of the GMM or its DNA (amino acids, vitamins, hormones, etc.);
- "*Complex products*" in which no trace of the GMM or its DNA is found (cell extracts, enzyme preparations, etc.);
- Products obtained from GMMs in which the GMM is no longer capable of multiplying, but where its DNA is still present (inactivated culture starters, "*biomasses single-cell protein preparations*"[ii] and cell extracts, etc.);
- Products consisting of or containing GMMs capable of multiplying or transferring DNA (live cultures for fermented foods, etc.).

It is important to bear these four situations in mind from a theoretical point of view. The 3rd and 4th cases involve the presence of GMMs or their DNA. The first two cases involve their presence only in the event of contamination, due to insufficient purification of the molecules, for example, which does not rule out other possible signs of their use that are currently unidentified. In the event of commercial authorisation of molecules or GMMs themselves, the European Union will need to establish the necessary protocols for their detection and identification.

Detection and differentiation are already possible in a (very) large number of cases

When asked whether GMMs obtained through NGTs are detectable and identifiable, experts respond quite simply, stating that "*the genetic modifications found in NGT-Ms are similar to those in plants obtained by targeted mutagenesis and cisgenesis, and the analytical challenges, therefore, will also be similar as well*". For the ENGL, these challenges will arise "*in somecases*" due to detection and identification methods that "*may not always meet the requirements*". This rhetoric has already been adopted for the detection and identification of plants genetically modified by NGTs, which has led the European Commission to generalise "*certain cases*" to "*all plants*" modified in this way[iii].

These few specific cases would be those of genetic modifications involving the change of a single nucleotide (a single building block of DNA) or "*short mutations of a few nucleotides*". In these cases, experts consider that the most commonly used method, PCR, which is quite old and basic,

may not meet regulatory requirements, which stipulate that a method must be sufficiently sensitive and specific to a given genetic modification. They emphasise that such a PCR method would be insufficient to establish that a particular modification detected was produced by a new technique of genetic modification.

For the ENGL, combining PCR with other analytical methods represents an "*attractive option*". For example, it explains the possibility of "*whole genome sequencing (WGS) and simultaneous detection of several key targets composing a unique genetic fingerprint associated to the specific*" GMM. Such an analytical approach can be used for bacteria and viruses, allowing "*specific identification*" of a particular strain. The same applies to analysis protocols combining complete genome sequencing and bioinformatic analysis. However, once again, experts highlight certain cases in which such analysis protocols would provide uncertain results. This is the case for "*the analysis of mixed samples containing several microorganisms [which] is still very complex*". Another special case is that of GMMs that have not been authorised, described as unknown, for which the ENGL considers that quantification would be very complex. However, the ENGL points out that this quantification step is not mandatory in legal procedures for regulatory measures to be taken, making this complexity of quantification an invalid argument for deregulating GMMs.

Finally, the experts consider that PCR or sequencing-based methods are functionning for GMMs obtained by new techniques that are known or declared. The challenge, in their view, concerns unknown GMMs, especially those in which the genetic modification involves only a few nucleotides. A similar situation for unknown GMMs arose for transgenic plants in the early 2000s, in response to which the European Union nevertheless enacted mandatory labelling, detection and identification requirements. It had also set up a research and management programme, the Co-Extra programme, which had worked to establish protocols for identifying unknown GMMs. Such a programme could be set up and funded by the European Union for unknown GMMs.

A proposal to deregulate GMMs in the pipeline

This opinion from ENGL experts is part of a wider drive by the European Commission, which appears to be gathering the reports it needs to formulate a proposal to deregulate GMOs.

In August 2022, it asked the European Food Safety Authority (EFSA) to provide it with an "*overview* " of GMMs already on the market. This report was provided in December 2023[iv]. In 2022, the Commission had already mandated EFSA on the subject of the risks associated with GMMs obtained by NGTs, a mandate to which EFSA responded in June 2024[v], after opening a consultation two months earlier[vi]. The documents required by the European Commission to produce a proposal for deregulation were therefore missing an opinion from experts in GMO detection and identification.

Also in 2024, the European Parliament confirmed the European Commission's position on this issue. It responded to the proposal to deregulate numerous GMO plant (including certain micro-organisms) presented in 2023 by including a request that was anything but insignificant. MEPs wrote that the "*available knowledge on other organisms, such as microorganisms, fungi and animals should be reviewed with a view to future legislative initiatives on them*"[vii]. They therefore asked the European Commission to present "*a report to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions evaluating the specificities of and needs for other sectors not covered in this legislation, such as microorganisms, including a proposal for further policy actions*"[viii].

i Sowa, S., Broothaerts, W., Burns, M., De Loose, M., Debode, F. *et al.*, "Detection of microorganisms, obtained by new genomic techniques, in food and feed products", Publications Office of the European Union, Luxembourg, 2025.

ii This would be, for example, the production of protein preparations obtained from the cultivation of bacteria or yeasts (unicellular organisms).

iii Eric Meunier, "GMO/non-GMO equivalence: the Commission turns "*certain cases*" into a general rule", *Inf'OGM*, 17 décembre 2025.

iv Eric Meunier, "Few micro-organisms modified by Crispr are already on the market", *Inf'OGM*, 30 janvier 2024.

v EFSA GMO Panel (EFSA Panel on Genetically Modified Organisms), Mullins, E., Bresson, J.-L., Dewhurst, I. C. *et al.*, "New developments in biotechnology applied to microorganisms", *EFSA Journal*, vol. 22, issue 7, e8895, 22 July 2024.

vi (in French) Eric Meunier, « An ongoing public consultation on GM micro-organisms », *Inf'OGM*, 2 April 2024.

vii European Parliament, « Plants obtained by certain new genomic techniques and their food and feed - European Parliament legislative resolution of 24 April 2024 on the proposal for a regulation of the European Parliament and of the Council on plants obtained by certain new genomic techniques and their food and feed, and amending Regulation (EU) 2017/625 (COM(2023)0411 – C9-0238/2023 – 2023/0226(COD))», see whereas 9, 24 April 2024.

viii *Ibid.*, see article 30, point 5b.
Sowa, S., Broothaerts, W., Burns, M., De Loose, M., Debode, F. *et al.*, "Detection of microorganisms, obtained by new genomic techniques, in food and feed products", Publications Office of the European Union, Luxembourg, 2025.
