
Why New Genetic Engineering needs to be regulated

New report - frequently asked questions about CRISPR & Co

22 October 2020 / Testbiotech is publishing a new report today on New Genetic Engineering (New GE) that shows why these techniques need to be strictly regulated. New GE - or 'genome editing' - opens up new possibilities which go way beyond conventional breeding and previous methods of genetic engineering. One of the most important tools in this scenario are CRISPR/Cas gene scissors (nuclease). In contrast to chemical or physical mutagens used in conventional breeding, tools such as CRISPR/Cas can directly interact with biological mechanisms in the cells.

Recent research clearly shows that there are major differences in New GE compared to conventional breeding: over the course of evolution, mechanisms have emerged which can protect specific genomic regions against too frequent mutations. These mechanisms can be described as the 'flexible safety barriers' of evolution, and are also effective in conventional breeding. They appear to be relevant to regions in the genome that are of some importance to the survival of a species. New GE is designed to circumvent these mechanisms.

In particular, the nuclease CRISPR/Cas has for the first time now made the whole genome available for technical interventions and alterations. Genomic conditions, which until now could hardly be influenced via breeding, can now be accessed.

The technical potential of New GE can be used to achieve profound changes in the biological characteristics of organisms without introducing any additional DNA sequences. These changes can exceed the range of characteristics developed gradually through evolution or previous breeding methods. It is obvious that specific risks are connected to these organisms.

Besides the intended new biological characteristics, there are other risks associated with the introduction of New GE organisms: a wide range of unintended effects have been observed that are specific to New GE applications. These effects arise, for example, from the multi-step process of the genetic intervention which in many cases is also linked to the use of Old GE methods. Further causes of unintended effects include a lack of precision in the use of the CRISPR/Cas gene scissors. Therefore, the risk assessment of New GE organisms must always be process-oriented.

Risks associated with the release or usage of the genetically engineered organisms for food production need to be thoroughly examined in every case. If strict regulation of New GE is not in place, the uncontrolled release of large numbers of organisms with characteristics not gradually developed through evolution can be expected within a short period of time. This would result in the substantial likelihood of damage to ecosystems, agriculture, forestry and food production.

Without sufficient regulation of New GE, Testbiotech warns that:

- severe damage to biological diversity is likely,
- risks to food production may be introduced and accumulate unnoticed;
- access to data needed for risk assessment by independent experts will not be made available;
- no measures can be taken against the uncontrolled spread of the organisms in the environment;
- no data will be available to track and trace the New GE organisms and products derived thereof;
- agriculture and food production relying on GE free sources can no longer be protected.

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Further information: [The new report](#) [2]

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