
Genetically engineered microorganisms on the rise

Potential applications encompass humans, animals, plants and many ecosystems

4 June 2020 / The number of projects aiming to genetically engineer microorganisms has increased strongly in recent years. More effective techniques of analysis and re-synthesis of gene sequences can now be used as starting point for seeking new markets for 'SynBio' organisms. Projects include microorganisms which, for example, colonise the gut of humans or bees, live on the surface or inside plants or are abundant in soils. In addition, there is further ongoing research into viruses, bacteria or microbial fungi known as pathogens, which can be developed for use in vaccines, pesticides or for the military. The risks are especially relevant if SynBio microorganisms are allowed to spread without sufficient control.

In this context, the European Food Safety Authority (EFSA) is warning about substantial problems in risk assessment. In a draft document published for public consultation which ends today, it states that: "Even with the complete genetic information of a synthetic microorganism, it is beyond the capacity of any existent bioinformatic analysis to fully predict the capability of a synthetic organism to survive, colonise and interact with other organisms under natural conditions, given the uncountable diversity of potential microhabitats and their temporal variability."

There are already some initial trials with SynBio microorganisms being conducted outside the labs. In Burkina Faso, for example, tests were conducted with genetically engineered fungi that produce a spider toxin. The spores produced by the fungi are meant to kill mosquitoes that can transmit malaria. The experiments were harshly criticised by organisations active in this region.

In dealing with the risks of SynBio microorganisms, Testbiotech is demanding that the precautionary principle is strengthened: "Where there is uncertainty about safety, releases cannot be allowed. Furthermore, we are demanding an international register for all genetically engineered organisms planned for release or which might escape unintentionally", Christoph Then summarises for Testbiotech. "Such a register is needed to enable detection of the organisms in the environment and, as far as possible, to take measures to prevent uncontrolled spread."

In addition, according to Testbiotech, the COVID-19 pandemic has shown that international regulations are needed to control laboratories able to synthesise the genome of pathogens. For these institutions, storage of specific data has to be mandatory. Such data can be useful to determine the origin of new viruses. In addition, intentional misuses, by re-synthesising known viruses, may be efficiently stopped by such measures.

Testbiotech now is raising these demands at the public EFSA consultation as well as in a letter to the German government.

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Further information: [Draft document of EFSA on risk assessment of Synbio microorganisms for public consultation](#) [2]

[Testbiotech input to public consultation](#) [3]

[Letter to German government](#) [4]

[Critical analysis of experiments with genetically engineered fungi in Burkina Faso](#) [5]

[Testbiotech report about species protection and genetically engineered organisms](#) [6]

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