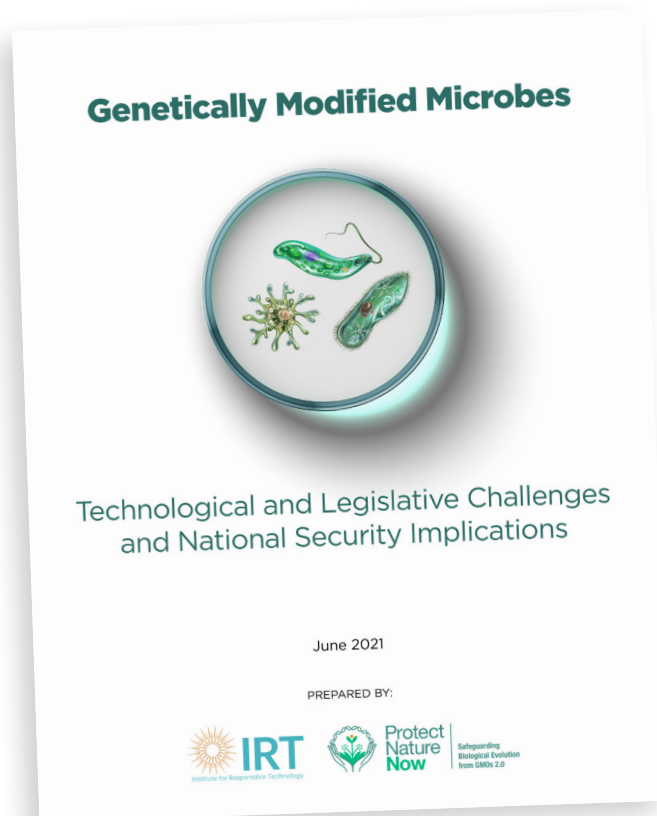




**Protect  
Nature  
Now**

Safeguarding  
Biological Evolution  
from GMOs 2.0

## Genetically Modified Microbes: Technological and Legislative Challenges and National Security Implications



Click [here](#) to read the full report.

### Genetic Engineering Creates Unpredictable Side Effects

The genetic engineering process produces a wide variety of unpredictable outcomes. In contrast to claims by proponents, the technology is not precise, and results are not reliably reproducible. Research over the past 25 years confirms this point, through analysis of the DNA, RNA, proteins, and metabolites of genetically modified organisms (GMOs) compared to their natural non-GMO counterparts, as well as the results from animal feeding studies and agronomic performance.

### Current Regulations Fail to Address GMO Dangers

No federal legislation addresses GMOs as a category. Oversight is distributed to three agencies, using laws and policies in place before the development of the technology. The current system lacks the ability to assess potential impacts on health or the environment.

- The Food and Drug Administration offers a weak “voluntary consultation;” producers declare their own GMOs as Generally Recognized as Safe.
- The Environmental Protection Agency only regulates GMOs that produce pesticides.
- The Department of Agriculture regulates GMOs only if they contain material from plant pests.

### Gene Editing: Cheap and Easy GMOs with Dangerous Consequences

Gene editing technology has made genetic engineering inexpensive and accessible. Consumers purchase DIY kits and lab robots edit genes at unprecedented speeds. Altering the genome (and gene pool) of vast numbers of species is now possible.

Although proponents proclaim gene editing as safe and precise, recent studies disprove this. CRISPR-Cas9 gene-editing, for example, used to modify human embryos, showed “large, unwanted changes to the genome at or near the target site” described as “chromosomal mayhem.”

CRISPR can also inadvertently regulate genetic expression. In one mouse study, these “epigenetic” changes were passed down for at least ten generations.

## Gene Edited GMOs Fall Through Regulatory Cracks

Over-confident regulators accepted industry assertions that gene editing is precise and predictable. This contributes to most gene edited GMOs circumventing the existing regulatory framework entirely. Some gene edited foods, for example, were waved through without government evaluation. Studies later confirmed the editing technique can create dangerous side effects.

James R. Clapper, former Director of National Intelligence, told the Senate Armed Services Committee: “Given the broad distribution, low cost, and accelerated pace of development of this dual-use technology, its deliberate or unintentional misuse might lead to far-reaching economic and national security implications.”

## GM Microbes Present Extreme Risks to Health and Environment

Genetically modified (GM) microbes, e.g., viruses, bacteria, algae, etc., can have a much greater negative impact than altered higher organisms. Outcomes can be catastrophic. Microbes:

1. Are not containable, recallable, or traceable.
2. Can rapidly travel the globe.
3. Mutate and replicate.
4. Share genetic material with other microbial species.
5. Are critical for humans and ecosystem health.

## Proper Regulation of GM Microbes is Needed to Prevent Catastrophes

GM microbes introduced into the environment can potentially upset the ecological balance and create a cascade effect permanently changing the environmental conditions and impacting future generations. Altered microbial communities within the human body are also associated with numerous diseases. Despite this well-documented body of research, regulators largely ignore the risk of unforeseen interactions of GM microbes with the microbes in the human body, the soil, or ecosystems around the world. They also do not require tests that could detect mutations or other unintended consequences.

In fact, evaluation of GM microbes is largely governed by the EPA’s Toxic Controlled Substances Act, which was crafted to regulate chemicals—not living organisms. Further, it only applies to GM microbes intended for commercial use and fails to provide regulators with the time or data needed to evaluate safety.

A 2020 Department of Homeland Security report confirms that, “The speed of innovation has outstripped regulatory policy and legislation” and therefore, “a new legislative and regulatory framework is needed to address these failings and appropriately address the risks posed by these microorganisms.”

## Potentially Pandemic Pathogens Require Even Stricter Controls

USA Today exposed hundreds of accidents and errors among labs working with the most dangerous pathogens known to man. Many of these facilities conduct “gain of function” research, which can make diseases more lethal or transmissible.

Given the lack of reliable containment and the enormous global impact of a pandemic, steps should be taken immediately to prevent research from increasing the likelihood of a collective calamity.

## Protect the Global Microbiome from Genetic Engineering

The microbial kingdoms together make up the “microbiome,” the micro ecosystems providing a basis for human and environmental health. Science is newly uncovering the microbiome’s complexity and importance. Preserving and protecting it is essential.

The nearly universal access to gene editing technology, however, could quickly and permanently disrupt microbiomes within and around us, with disastrous consequences. The technology has dangerously outpaced regulation, and this must urgently be remedied. Preventing outdoor releases of all GM microbes, and curtailing gain-of-function research on potentially pandemic pathogens form prudent and reasonable responses to the current state of science, technology, and the threat from insufficient regulation.

To watch our short film on the topic, [click here](#).