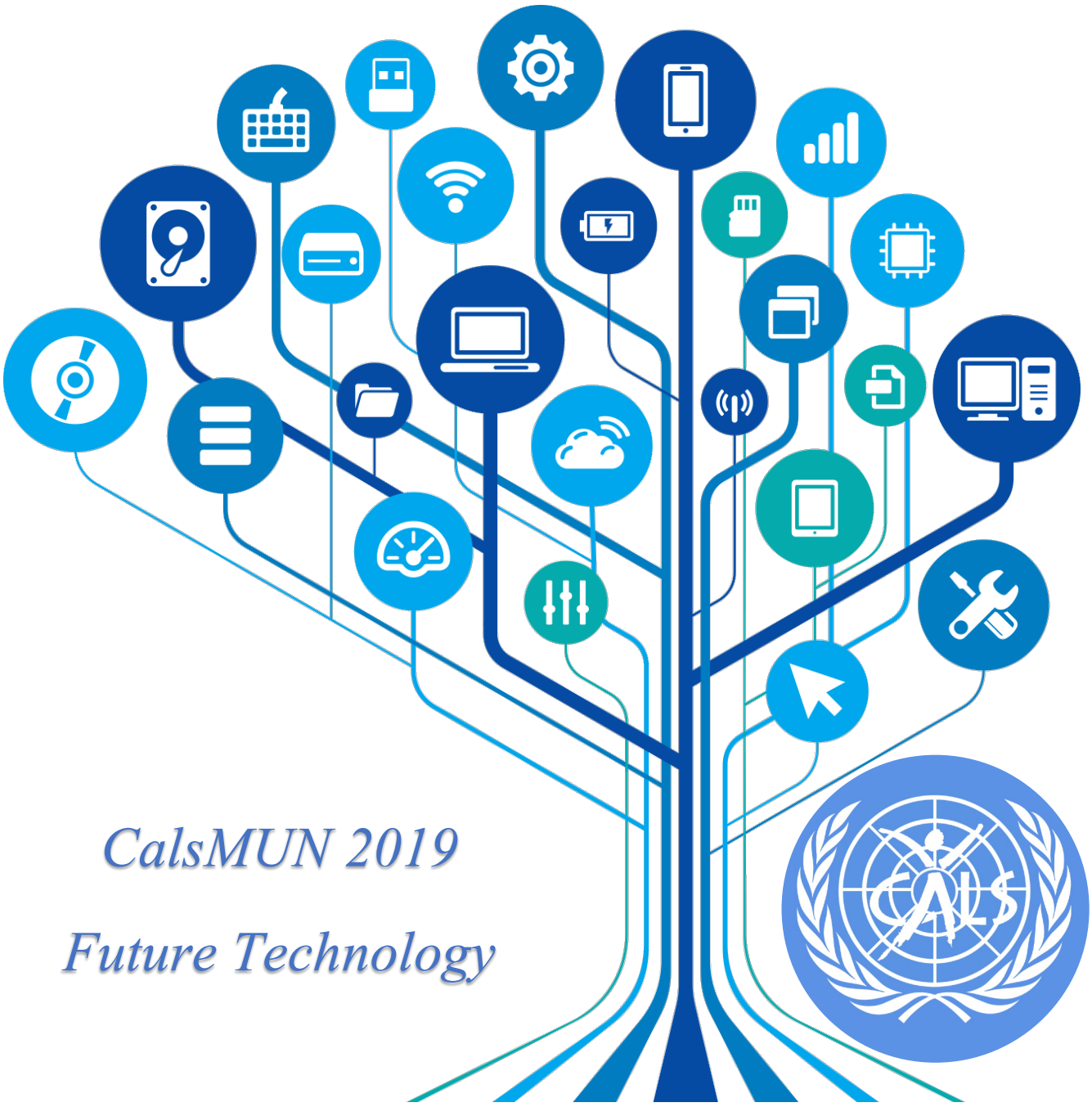

Research Report

Forum: Human Rights Council

Issue: The morality of genetic modification

Chairs: Bart van Donselaar and Labib Ehsan

Personal Introduction

Labib Ehsan

Hi, I'm Labib, and I'll be the co-chair for the Human Rights Council. I've participated in various conferences, but this is my first time chairing HRC. I'll be coming all the way from the US, and I look forward to seeing you all here at CalsMUN 2019.

Introduction

'The morality of genetic modification' is one of our committee's two issues. After reading this document, you should have enough information to be able to write a proper policy statement/position paper and resolution on this issue. Of course, we still encourage you to research your nation's stance on the issue and any past actions they have taken relating to it. This report serves to give you the background information on genetic modification (GM) in order to form an argument in line with your country's position.

Genetically Modified Organisms (GMO's) are living beings (animals, plants, fungi and bacteria) that have had their genetic material modified by humans. These modifications can result in organisms with longer life spans or with characteristics that are more preferable to humanity. Examples of these characteristics for some specific organisms are tomatoes with a stronger red colour, apples with a sweeter taste and chickens that mature faster.

These interventions in the lives of other organisms raise many questions on the morality of it. 'To what extent should we allow ourselves to genetically modify organisms, and should we genetically modify humans themselves?' and 'Will genetically modified organisms outnumber and eventually outlive their non-modified peers?' are a few of the questions around this issue.

Definition of Key Terms

GMO

An acronym for Genetically Modified Organism. This means in short that an organism's DNA is modified in order to gain or remove a specific characteristic or quality.

GM

An acronym for Genetically Modifying.

Crispr-Cas9

An enzyme (Cas9) that works together with CRISPR fragments (short pieces of DNA) to enable humans to put fragments of DNA into cells, or cut out certain fragments.

General Overview

As you now know, GMO's and the use of GMO's are very controversial. The questions above become even more difficult to answer when you take domesticated animals or plants that we have crossbred for many years into consideration. These organisms also are GMO's, and because of their long-shared history with humans we take them for granted. Throughout the ages humankind has been able to make carrots bigger and tame wolfs, just by breeding the individuals in a species with the preferable characteristics. Most of the controversy around GMO's, however, is about the quite recent developments in GM. Since the latter part of the twentieth century, humankind has been able to directly manipulate the genomes of

organisms, further extending our possibilities to change the genome of other organisms to our liking.

The most recent invention in this area is CRISPR-Cas9. With this, we are able to adjust any genome to our liking, by cutting and pasting pieces of DNA directly out of and into the organism's genome. Using CRISPR-Cas9, we now can modify organisms faster and easier. Besides all of the positive outcomes this might bring, it does raise an ethical question: should we modify ourselves? Because we can attribute characteristics to humans that make them last longer, they will most likely outlive their non-modified peers. In the future, non-modified humans will most likely be outlived by their modified counterparts if we allow ourselves to modify humankind. Since this is a fairly new ethical issue, not many countries have formed an opinion on the matter, though we encourage you to form an opinion on the matter based on your country's previous statements.

GMO's currently are in a grey area where no UN-member is completely in favour of their use, nor are they against it. Due to the many different controversies around GMO's, we encourage you to carefully assess the statements made by your country on this issue.

Major Parties Involved

A lot of GMO innovation and development is done in the United States of America and in the countries of the European Union. Therefore, we will focus on those entities' position on GM.

European Union

The regulations on GM by the European Union are in contrast rather strict, where a centralized premarket approval and labelling process is mandatory. For every such product, a centralized scientific assessment is conducted by the European Food Safety Authority (EFSA), where health risks, the product's nutritional composition and other relevant features are assessed, before regulatory legislation is to be voted on by the member states. Moreover, as opposed to the American system, a quite strict labelling system is in place. Occasionally, this has led to conflicts within the European Union, as the authority of the EU over the member states had implications on the national restrictions of GM. An example is the lift of the ban on a particular kind of corn in France, which was overruled by the EFSA and therefore rendered unlawful. However, more liberty is granted to individual countries following a new piece of legislation from 2015, which allows more locally specific decisions on restriction, for instance also on socioeconomic and cultural grounds. Generally, it is to be noted that approval for GM products is given in the US significantly faster for a significantly larger number of products.

United States of America

In 1986, the Reagan administration formulated the so-called "Coordinated Framework for Regulation of Biotechnology" which distinguished only the final products rather than the methods employed to produce them. It was maintained that, concerning food, the regulations for production of conventional foods and those, where GM was used, ought not to be distinguished regarding significant differences between the different types of production, hence not perceiving reasons to regulate the two types differently. As far as final products

are concerned, the testing of GM substances is conducted among other regular controls, such as of colour dyes or artificial sweeteners. Genetically modified products hence do not require further approval, and, although government authorities recommend voluntary additional testing, there are only legal requirements if the food contains certain levels of toxic substances or allergens. For some authorities, however, information concerning the crop yield or conditions during transport as well as the use of potentially used pesticides for human and environmental health must be submitted. For details please consult the quoted study by a member of the Harvard T.H. Chan School of Public Health and the respectively quoted authority documents.

Timeline of Key Events

Time	Description
Before the discovery of genetics	While our ancestors had no concept of genetics, they were still able to influence the DNA of other organisms by a process called “selective breeding” or “artificial selection.” These terms, coined by Charles Darwin, describe the process of choosing the organisms with the most desired traits and mating them with the intention of combining and propagating these traits through their offspring. Repeated use of this practice over many generations can result in dramatic genetic changes to a species. While artificial selection is not what we typically consider GMO technology today, it is still the precursor to the modern processes and the earliest example of our species influencing genetics.
Modern age	An enormous breakthrough in GMO technology came in 1973, when Herbert Boyer and Stanley Cohen worked together to engineer the first successful genetically engineered organism. The two scientists developed a method to very specifically cut out a gene from one organism and paste it into another. Using this method, they transferred a gene that encodes antibiotic resistance from one strain of bacteria into another, bestowing antibiotic resistance upon the recipient.
The future	There are countless potential uses of GM technology in development. These include plants with superior disease and drought resistance, animals with enhanced growth properties, and strategies for more efficient pharmaceutical production. Likewise, GM technology itself is quickly advancing. Recently, researchers have developed a new technology called CRISPR. This technology could be used to expedite development of useful GM crops, facilitate disease elimination, or even alter entire ecosystems. Interestingly, recent advances in plant breeding techniques may increase the utility and rebound the popularity of the more traditional GMO method of selective breeding. Indeed,

new drought resistant strains of various crops have been recently developed using traditional breeding methods.

Previous Attempts to Resolve the Issue

The European Union has passed strict legislation on the use of GMO's. The EU's legislation and policy on GMO's, based on the precautionary principle enshrined in EU and international legislation, is designed to prevent any adverse effects on the environment and the health and safety of humans and animals, and it reflects concerns expressed by skeptical consumers, farmers, and environmentalists. GMO's and food or feed made from GMO's can be marketed in or imported into the EU, provided that they are authorized after passing strict evaluation and safety assessment requirements that are imposed on a case-by-case basis. Authorizations are granted for a ten-year period by the European Commission through a centralized procedure. At the EU level, the European Food and Safety Authority (EFSA) conducts the required risk assessments. GMO's, or food and feed consisting of or containing GMO's, are assigned a unique identifier and are labeled as such to ensure traceability and enable consumers to make informed choices.

The USA, however, has taken a much more passive stance. The United States does not have any federal legislation that is specific to genetically modified organisms. Rather, GMO's are regulated pursuant to health, safety, and environmental legislation governing conventional products. The US approach to regulating GMO's is premised on the assumption that regulation should focus on the nature of the products, rather than the process in which they were produced.

Possible Solutions

The use of GMO's suggests some ethical issues. There is not a lot of research in the field of the morality of GM, but we have two ideas for operative clauses that you can build on.

- More research on GMO's, their disadvantages and their benefits;
- Education on GMO's, their disadvantages and their benefits, should be improved.
- Involvement of philosophy on ethics in development of GMO's.

Bibliography

Below you can find the sources we used and some others to further expand your understanding of this issue.

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