**Committee:** World Health Organisation
**Topic of discussion:** The issue of genetic modification of embryos
**Student Officer:** Tasos Spiliopoulos
**Position:** Deputy President

## PERSONAL INTRODUCTION

Greetings delegates ,

I'm Anastasios Spiliopoulos who will be serving as your deputy president of the World Health Organization committee , alongside president Georgia Gotsopoulou and co-deputy Konstantina Grispou. I first became involved in mun 5 years ago in year 7 where I served as a security guard. Standing outside guarding my committee and the vast corridors , I started wondering how the committee works itself . I recall my past eagerness to participate in the committee and so I took part as a delegate in several muns where I finally gathered enough experience to serve as a chair this time in the World Health Organization committee.

What I have enjoyed about chairing so far is encouraging delegates to participate and watching them become more and more confident with themselves as the days of the conference go by. I am particularly interested in this committee as I find the topics through the years very significant to our world. I think it is crucial that topics like these are discussed and solutions are figured out, which is one of the main reasons why this committee fascinates me so much.

Kind regards,

Tasos Spiliopoulos

## TOPIC INTRODUCTION

The issue on genetic modification of embryos is a significant and controversial issue . Ever since Chinese scientist He Jiankui edited the genes of two baby girls with a delayed birth in 21/8 the controversial discussion and debate around human germline modification began in particular with members who wish to develop the technology of gene-editing and with those who fear it could lead to a calamity of eugenics. Some scientists disagree with Jiankui and instead of finding genetic modification of embryos ( gene editing ) effective , they instead find it inimical moral and improbable.

In Osaka, Japan , a grand invention of a powerful gene-editing gadget called the CRISPR, was invented, that can be easily applied within the genome which results to the birth of humans genetically modified with the use of a recent and complex series of procedures used to treat fertility or genetic problems called vitro fertilization (IVF). Please note that when we are referring to human genetic modification , we only refer to GERMLINE and not SOMATIC as somatic genetic modification is a completely different way of gene editing.

## DEFINITIONS OF KEY TERMS

**Germline genetic modification of embryos**

Germline genetic modification is the change of the genes in eggs, sperm, or EMBRYOS , which is often referred to as “inheritable genetic modification” or “gene editing for reproduction.” It affects reproductive genes, and modified genetic material would be passed down the person’s offspring.

**Eugenics**

The practice or advocacy of controlled selective breeding of human populations (as by sterilization) to improve the population's genetic composition.[1]

**Genetic Engineering**

The direct manipulation of an organism's genes including heritable and non heritable recombinant DNA constructs.

**CRISPR**

A segment of DNA containing short repetitions of base sequences, involved in the bacteria’s defense mechanisms.[2]

**Genetic Mutation**

A permanent alteration in the DNA sequence that makes up a gene, such that the sequence differs from what is found in most people. Mutations range in size; they can affect anywhere from a single DNA building block (base pair) to a large segment of a chromosome that includes multiple genes.5 days ago

[1] https://www.merriam-webster.com/dictionary/eugenics
[2] http://www.novateinbio.com/content/96-crispr-explained

## CAUSES

When looking into Gene editing we can comprehend what are some of the main causes of this issue . China is considered one of the most involved countries with this issue , as many scientists particularly He Jiankui have experimented with the genes of embryos. Many people are obviously concerned, and do not agree with genetic modification . It is banned in most countries because it is strongly frowned upon with the problems that it leads to. Scientists are currently not sure if there are side effects or if it is safe. Subsequently, the vast majority of opposition to genetic modification is ethical.In this decade more than ever , scientists are trying to “improve” humans and modify them with the use of technology.

Recently we have seen bionic arms legs and other things with the use of advanced technology. In genetic modification it is the same thing but with gene editing , to edit the genome in preference of a human. Scientists continue working on genetic modification as they find it extremely beneficial when preventing detrimental diseases or disorders before the individual is born . For example if an embryo has thalassemia or breast cancer ( such as B340z ) , then scientists can just remove that by just modifying the embryo.

In order to develop the use of the technology some scientists are looking deeper and deeper on how to improve genetic modification and somehow persuade people that genetic modification is a good invention and should be legalized. However we cannot really be sure that genetic modification will ever be legalized in all countries , since so many of them are strongly against genetic modification .

There is also a degree of pushback from religious communities who believe gene editing to be sacrilegious. Apart from eugenics and the prevention of detrimental diseases and disorders , scientists are also working on genetic modification to make the “Designer Babies”.People also fear that this can lead to the separation and possibly extinction of specific characteristics of humans if genetic modification takes place.

Unfortunately genetic modification holds unanswered questions which are very significant as they can determine what can genetic modification actually do. Because of this , some scientists believe that in the near future they will be able to fully accomplish the

gene editing of skin color. Some people fear that this might actually take the world a step back as it will have gene editing for racial preferences . Most tech used in genetic modification is fairly expensive, and can lead to a division between classes, as people living in lower economic statuses will have a disadvantage rather than people with a higher economic status which enforces injustice.

## POSSIBLE SOLUTIONS

Finding convenient and effective solutions is an important factor when conquering the issue of genetic modification of embryos. Possibly creating a body funded by the UN to help secure and prevent genetic modification from acquiring a negative character, would be a good solution.

Particularly in countries that have genetic modification legalized, a body to regulate modification would be most useful . This body would ensure that economic incentives and laws would be a significant adjustment to help prevention of genetic modification.

Reinforcing the laws and providing  new restrictions in countries which have genetic modification illegalized such as Canada would be a good method of ensuring and minimizing the amount of citizens who wish to use genetic modification illegally as stricter consequences will be held.

Involving NGOs, especially ones who work with health, would also help, as these organizations hold expertise on sanitary issues.

Perhaps spreading public awareness through social media, adverts , commercials etc. would enlighten people about how unscrupulous genetic modification is. As it is often a detrimental procedure, the functions and results of which are unknown to the scientific establishment. This might convince the citizens to never use genetic modification if they are aware of its dangers. Therefore genetic modification will be less frequent and illegal or legal places which have genetic modification will not be as popular and hopefully might lead to an end.

## MAJOR COUNTRIES INVOLVED

**China**

The Chinese Government has officially confirmed the claim of creating the world's first genetically engineered babies, as well as the existence of a second pregnancy with a gene-edited embryo, from many scientists involved in genetic modification of embryos. China strongly agrees and admits to the gene editing they have been doing, as well as the excessive amounts of genetic modifications that have taken place.

**France**

France has banned genetic modification and they are strongly against it . The French government found GMOs in some farmers crops and since then they have officially banned ALL types of genetic modification due to this cause which obviously includes embryos.

**Brazil**

Brazil is currently the second largest crop area in the world and has been criticized often by other countries as well as the UN. It now has a few restrictions when it comes to genetic modification specifically food, and is said that soon genetic modification germline and somatic will be more popular in the future.

**Australia**

Australia does not regulate the use of gene-editing techniques in plants, animals and human cell lines including germline and somatic genetic modification at all. When Australia was informed of the functions of gadgets used for genetic modification specifically the CRISPR Australia strongly disagreed with these.

**Argentina**

Argentina is currently the third largest grower of biotech crops in the whole world and it was also one of the first countries to use genetic modification as a whole. Fortunately for Argentina the use of technologies and other GM gadgets have excessively helped Argentina with its economy, due to the fact that 1.8 million jobs have been given ever since 2011. In general, the use of genetic modification is limited and many restrictions have been held

quite recently. Biotechnology offices have been created and Argentina is fully aware of the environmental issues that GM has caused to its country.

**U.S.A**

The United States of America has the largest grower of biotech crops in the whole world and is majorly involved with genetic modification including many different aspects of genetic modification. The US has regulated genetic modification all around its country for all different types of genetic engineering including , genetic , food, crops and so on. Scientists in the US are ty working hard on how to develop the science of genetic modification , and have been particularly interested ever since He Jiankui conveyed his actions world.

**Germany**

Germany has agreed in a controversial vote to allow the limited use of genetic modification of human embryos. Even though before Germany before completely discouraged the use of genetically modified crops and organisms which was recognized by the UN . The country has been suspected to have used genetic modification and when it was proven , apparently it was said that it was accidental . Germany has some restrictions currently with genetic modification and is now kind of uneven due to so many contrasting opinions and actions.

**Possible Alliances:**

When it comes to forming alliances it is very important to bear in mind what each country supports , how they support it and why they support it. As these reasons help determine whether the individual country recognizes possible solutions or not. Majorly involved countries are a significant source when forming alliances in order for other delegations to join or not join the majorly involved country's alliance , such as China or France.

## CONCLUSION

In the topic of genetic modification of embryos a significant aspect when looking into the topic is comprehending the development of genetic modification as a whole ; through technology and political opinions over the past couple of years. It is crucial to understand the reasons behind each speculation, action or restriction concerning genetic modification. Calculating the intricacies of the views of different countries we can comprehend that the topic is very controversial. Chinese scientist He Jiankui was the first person to use genetic modification; mainly inaugurating to the world this topic, and ever since then the discussion on genetic modification has risen. In general research must be precise and effective when conquering the issue of genetic modification. Profound knowledge adjusts the understanding of the topic and can be easily conveyed . When searching for solutions , there are three vital aspects that have to be conveyed. The solution must be convenient, relatively economical , and must not put any pressure on countries. Even though it is not obligatory , it is recommended to bring in new ideas instead of having many which are similar to those expressed in this study guide.