

Grammarly check: OK

How We Should Advance Genome Editing Study

Do you want to get your baby who has all features you want? Would you like to select any talents of your baby? Tall or Short? The hair color is black or blond? Funny or clever? When you have done selecting, it is time to start creating your new child. It is not an SF story. We could do it in real by using the technology of genome editing when the research is advanced enough. Nevertheless, it has bioethical problems, and there are still many controversies about how we should advance the study. Genome editing has not yet been advanced enough to make such as designer babies but the publication rate of genome papers is increasing, and once it reaches the point, our lives will be changed rapidly because its field is directly related to our daily lives (Smith). Therefore, now it is necessary to discuss how we should advance genome editing. In this essay, I will explain statements of both sides of agreeing and disagreeing to promote this study and suggest possible solutions.

Genome editing is a technology that can select DNAs and then edit them however the person like by controlling artificial enzyme to insert, delete, modify or replace DNA in the genome of a living organism (Spies). The origin of this study was in 1972, but there were many problems to be solved, such as accuracy and applicability (Nemudryi). However, as rapid development of recent scientific studies, these problems were almost solved, and the news Chinese science team succeeded to edit human fertilized egg by using genome editing in 2015 surprised all over the world (Callaway). The development of this technology is expected to improve the world issues, such as poverty and diseases. Yet, there are also many people who

have fear about this technology because of ethical and biological points. According to the survey asking there should be designer babies, it showed over 70% people said: "No" ("Should there be designer babies?"). Based on these facts, in 2015, the international conference about genome editing was held to decide how to advance this study by hundreds of people. The content of the policy they decided was that we should advance the basic study, and clinical study should not be advanced. However, this policy does not have legal effects so whether legal or illegal to advance clinical study depends on each country. In fact, the clinical study is still advanced in China, and the scientists in the Chinese team reported their study using human fertilized egg in 2016. Under this situation, it is difficult to unify how this study is advanced and to make a common thought between the groups promoting this study and objecting group in the world.

First of all, the reasons why there are many people who want to advance to genome editing study is mainly they think it can solve medical issues. Genome editing can directly edit each DNA of not only human being but also all animals. Thus, if we insert DNA that has immunity to malaria virus into mosquitos and release the mosquitos, it is expected to extinct malaria completely in the world (Ghorbal). According to the recent study of WHO, there were over 445,000 deaths from malaria in the world in 2017 ("World malaria report 2017"). Therefore, this technology is expected to be able to save many people's lives in the world. Moreover, if we use this technology to the human being, it could treat diseases that are supposed to be impossible to treat such as cancer because many diseases are happened by mutation of DNA in the body. Thus, if we could delete the DNA that causes cancer in the body, it can be easily treated. This technology could be used before diseases are detected. For example, if the doctor finds your DNA has a characteristic that causes some diseases, you can be treated the DNAs order before

some diseases happen. Therefore, genome editing could be used as the same process that now we use prophylactic drugs, and it is much easier. In the same way, genome editing in fertilized eggs prevents the inheritance of genetic disorder from parents to a child (Ma). There are many people who have genetic diseases, and they have fear to birth their babies because their diseases might inherit the babies. Thus, advancing genome editing could solve many medical issues by

extincting virus, and editing in fertilized eggs.

Second, genome editing could be used in other fields, such as foods. It could save many people in poverty by developing animals as foods. In fact, it is already succeeded to develop fish with about 1.5 times the meat than ordinary fish, and cattle with resistance to tuberculosis (Wu). If the study is advanced more, we can solve food problems by ourselves by developing foods to all people in poverty.

In addition, there are other reasons about laws because even if an international organization makes a law that punishes people who advance clinical study using genome editing, the person who first find new technologies can get intellectual property right. Besides, because this technology can be used business easily, getting intellectual right about it supposed to make a large amount of money. Thus, the people think that making the law does not have to mean to stop to advance the study.

In contrast, there are the people who do not want to advance this study for several reasons. The first reason is about inheritance because once we create new animals by changing DNA to extinct diseases such as dengue fever, and malaria, the original ecosystem that is created in nature for a long time never returns again. The people think that everyone should concern about animals ecosystem and breaking ecosystem for just human being is wrong. In another case,

if you manipulate the genome such as fertilized eggs to make designer babies, the influence extends beyond the generation of children and grandchildren. The people feel that changing human's DNA that is inherited from ancient time is the ethically wrong thing even it can improve themselves.

The second reason is worry that it might make two classes of a human beings: those who can access to enhancement technologies, and those who must make do with their natural capacities. If the enhancement could be passed down the generations, the two classes might eventually become subspecies (Sandel). Thus, once someone use genome editing to enhance his or her capacity, such as IQ, and appearance, two classes of human being appear in the world, and other people who can access it have to do the same thing to belong to the higher class. This process cannot be stopped, and then all kind of human disparity become much more huge than now.

As a solution, we should have international laws to regulate to advance this study, and intellectual property should be opened to prohibit illegal studies until we can make a common thought about genome editing in the society. In an increasingly connected world, making laws in each country no longer has to mean to manage people because people can move wherever they want to bring the technology. In short, if there is at least one country where are no law to regulate genome editing in the world, people can advance the study there. This is the reason why we need international laws, not policy. Besides, it is necessary to prohibit illegal study by making intellectual property about genome editing be opened. It can lose main incentive to commit crime because they cannot get the intellectual property to get money. Therefore, this solution can set the

environment to discuss fairly even though it takes a long time to make a common thought about genome editing in the world.

Genome editing has possibilities to improve our daily lives dramatically and solve many issues in the world. Especially, it will affect the fields of medical care and foods. In contrast, it can break original ecosystem and widen all kinds of things amount people. Today, there are no international laws to regulate in this study, and it would not be a surprising thing that designer babies are created tomorrow. Therefore, we have to make a common thought by making the international laws and opening intellectual property about genome editing. (1373 words)

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