Usage Of Human Genetic Modification

In modern society, human genetic modification is a topic that receives a lot of controversial opinions. Human genetic modification is the direct manipulation of the genome using molecular engineering techniques; two separate ways to apply genetic modification are somatic genetic modification and germline genetic modification (Genetics and, n.d.). A recent milestone in human genetic modification history is a Chinese scientist, He Jiankui, who edited embryos of twin girls to resist HIV last year (Ramzy, & Chen, 2018). However, at the present many countries ban human genetic editing because of uncertainty about the consequences of human genetic modification, increase in the division in society and threat of biological war. Thus, scientists should not carry out genetic modification on humans.

A huge risk of human genetic modification is that scientists cannot know exactly how a change in the gene code will affect the entire DNA. Current technologies cannot predict all the effects of editing genome in human embryos on future generations (Lanphier, Urnov, Haecker, Werner, & Smolenski, 2015). In 2012, research of Koopman, Willems and Smeitink showed that “although it has been elucidated that mutations in 228 protein-encoding nuclear DNA genes and 13 mtDNA genes are linked to mitochondrial diseases, it is less clear how specific genetic defects are linked to dysfunction at cellular, organ and systematic levels.” it is obvious that only a small change in 228 protein-encoding nuclear DNA genes and 14 mtDNA can cause serious diseases, so what can happen if scientists change a lot of phrases in our gene codes? In fact, the precise effects of genetic editing to an embryo may be impossible to recognize until after birth (Lanphier, et al., 2015) and it is too late to modify it again. Thus, if scientists continue making human genetic modification today regardless of unpredictable consequences, they may rob the chance of future generations to live healthily and to be normal.

Besides exacerbating the contemporary gap between the rich and the poor, human genetic engineering will create the division between genetically modified humans and non-genetically modified humans because not all people can afford the sky-high price of genetic editing. According to Uffalussy (2014), the average cost of In Vitro Fertilization is $12,000, with $3,000 to $5,000 of add-ons for medication per cycle. The average cost of Pre-Implantation Genetic Diagnosis varies from $3,000 to $6,000. In addition, gender selection may cost as much as $20,000 according to current estimates (Farr, 2018). Therefore, even if genetic modification is legal worldwide, only rich people can make it while most people in developing countries with low income such as Sudan with $795, Haiti with $894 per year (List of, 2019) have little chance to edit genes for their children. As a result, wealthy people, who are able to pay costly bills of gene editing therapies, can possess superior features while poor people cannot. Then, genetically modified people may assume that they are at a higher level than non-genetically modified people. This attitude is ethically unacceptable because it ruins achievements of revolutions that protest dictatorial feudal system and brutal slavery, all of that because some people think they are at a higher level than others.

Human genetic modification can be used to make bioweapons and super soldiers. Enhancing physical strength of soldiers who have to do tasks and fight on the battlefield is essential in the military, this can be done by gene doping that has the ability to increase muscle size and strength (Stafford, Valdes, & Miklos, n.d.). Genetic modification has happened for a century and

in the recent decade, technology advances have helped it develops at a striking speed. Nowadays, everyone can purchase a $150 CRISPR toolkit, which is a handful but powerful tool for editing genomes by altering DNA sequences and modifying gene function (Alan Yu, 2017). However, if genetic engineering experiments are made without strict control, scientists may lead the human race to the apocalypse by biological wars.

It cannot be denied that breakthroughs in human genetic modification provide extreme effective ways to treat chronic diseases that mankind has suffered from for thousands of years such as Parkinson's disease, osteoarthritis, osteoporosis, atherosclerosis and age-related macular degeneration, which occupies for three-quarters of all medical costs (Gaskin, 2014). On the other hand, there are countless reasons why scientists should not make human genetic modifications. Top of them are risks because of lacking knowledge, expansion of the gap in society and threat of biological war. Humans should not play the role of God and scientists should leave the human gene codes as how it is.