Forum: Human Rights Council

Issue: The question of ethical considerations regarding genetically modified embryos

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Introduction

It is not an exaggeration to say that the science technology of mankind has been developed to the surprising level that we are modifying the congenital characteristic of the creature. Genetic manipulation has been a source of controversy for a long time. Although the value of the science technology has to be appreciated, the moral issue which has to be overcome.

Genes is one of the original characteristic that given to each individuals of creatures. Genes usually build up with the congenitally based on the genetic characteristic from its progenitor. Therefore, the field of genetic information is considered as one of the areas that cannot be touched by a man due to the moral issue and religious concepts.

However, as the science technology developed, the significance of the genetic manipulation has been ascended and now, there are several perspectives that insist the value of genetic manipulation. The priority of the people who argue with the scientific development is superior genetic traits that can be produced by manipulating genes. Once mankind acquire the absolute genetic map of human, the realization of perfect human will be possible.

However, the journey to the ultimate technology seems far from easy due to the people who against with the genetic manipulation due to the moral issues. Especially in case of embryos, many human right activists are strongly oppose with the genetic manipulation because manipulating embryos are distinctively different from modifying the genetic characteristic of crops.

Definition of Key Terms

Genetic modification: The alternation of the genetic characteristic of the any organism by using genetic engineering technology.

Embryos: unborn offspring in the process of development

Bioethics is the study of the typically controversial **ethical** issues emerging from new situations and possibilities brought about by advances in biology and medicine

Sustainable development: Refers to maintaining the ability of the environment and the economy to continue to produce and satisfy needs and wants into the future; depends crucially on the preservation of the environment over time.

Non-GMO project: The organization began as an initiative of independent natural foods retailers in the U.S. and Canada with the stated aim to provide non-GMO labelling for products produced in compliance with their Non-GMO Project Standard.

Cloning: The replication or multiplication of a DNA molecule, cell or organism, resulting in copies that are identical to the original DNA molecule, cell or organism

Preimplantation genetic diagnosis: Preimplantation genetic diagnosis now offers prospective parents the option of detecting potential defects in an embryo within the first few days after conception

Adult stem cells: undifferentiated cells which refer to the cells from developed body. It can be multiplied by cell division and generate damaged tissues.

HISTORY

First genetically modified embryo

The first genetic manipulated embryo was made by researchers in Cornell University. The initial purpose of making manmade embryo was to research about the relationship between cells and diseases. At first, they destroyed an embryo after they used only for the purpose of research. Human Fertilization and Embryology Authority, HFEA, warned that any attempts of making manmade embryo will engender the serious issues of the public.

Key issues

The key point of the ongoing issue can be summarized as the question: Is embryo has to be considered as a living creature or resource for the scientific research?

Genetic Modification and Science Technology

The consequences of manipulating embryos last long. The outer genes that are injected into embryos affects to the whole body when the baby grows. Also, the posterity of that embryo will have the same injected genes. The reason why this technology is priceworthy is that most of the hereditary disease and complex disease like cancer can be easily cured by manipulating the genes.

Genetic engineering is not only worthy for curing disease but modification itself has significant value in terms of biology. In the perspective of pure science, cloning and genetic manipulation has considered as the ultimate level of that used to be desired by many scientists. Thus, genetic modification itself, should be exalted in terms of pure science.

Positive perspectives to the genetic modification of embryo.

Regeneration of damaged cells

Every diseases or illness is caused by damaged cells. So, in order to cure disease, we need to cure the damaged cells and this is called regeneration medical technology. If we extract stem cell from the embryos and incubate it, then we can get different cells that can be developed in to 210 different organs. Furthermore, if we adopt genetic scissor method for embryo experiment, we can copy many same embryos that have no side-effects. This is why scientists use embryos for their experiment.

Production of artificial organs

As the world became an aging society, the number of people who needs organ transplant is increasing. In order to receive organ for transplant, patients have to wait for long time because of the disequilibrium between donators and patients. Also, most of the organ transplant has certain side-effects due to the discrepancy of genes. Thus, scientists are working on the creation of the artificial organs that exactly meets with the genetic traits with the patients. Scientists use pig's organ and modify its genes similar with human's. During the process, genetic manipulation of pig embryo is required. This also causes the moral issues of the technology.

Clinical demonstration of new medicine

Embryos are expected to be used for clinical demonstration of new medicine. Although powerful medicine is developed, it takes long time to be commercialized due to the animal testing and clinical demonstration. Also, so many voices are arguing the rights of the animals by insisting that animals cannot be sacrificed due to the human activities. Even though the medicine pass the animal testing, the safety for the human is not 100 percent guaranteed. So, in order to solve this problem, Human embryo can be used. Scientists can test the new medicine with the embryos as many times as they want.

Negative perspectives to the genetic modification of embryo

Moral issues

However, moralists maintain that once human succeed in manipulating the genetics, the technology will not only limited to curing incurable disease but the **human** traits such as height, intelligence, hair colors will be modified by using the technology. Although making genetically modified embryos is strictly banned over many countries, several moralists said that the regulation can be alleviated anytime if this kind of technology is considered as profitable item for the country.

In the view of Economics, there is nothing wrong in purchasing the genetic engineering technologies however; it is something that different from plastic surgery. The birth is used to be considered as the power of the god that human cannot even approach to it. In terms of religion, especially the perspective of Christianity, it is such blasphemy that a man attempts to challenge the authority of the God.

Another moral issue about the genetic modification of embryo is that the technology harms the human right of the ovum provider. In order to launch the any research about embryo, it is essential to have embryo donor who can provide her embryo. However, donating embryo will cause serious mental and physical damage to the embryo donor. Woman who decided to donate or sell her embryo needs to take a medicine that fosters her ovulation which breaks the fundamental bio rhythm of the body.

Destroy human dignity

In the perspective of Catholic, human's life begins when embryo implants on the woman's ovum. This means, the birth creates once man's sperm and ovum meets. So the dignity of the embryo has to be preserved from the beginning to the end. Therefore, although the purpose of using embryo is to cure the disease, sacrificing embryos as the method of something else violates the morality.

Using a woman as a tool

Embryos requires woman's ovum continuously, and it is hard to estimate how many embryos has to be sacrificed before the technology's commercialization. Bio engineering use a woman's body as a tool more than any other areas of science. If the embryos are abused, it directly cause the depreciation of the woman and it will cause another severe ethical problems.

Creating Designer Babies

As it is mentioned above, once people succeed in making embryos or manipulating genetics of embryos, the technology will not be only used for curing disease. If the further research conducted, people will desire more about the technology. Due to the fact that a man has ultimate desire, they will used the genetic manipulating technology as creating designer babies. For example, the rich, who usually can do whatever they want to, can pay some money to have their child with brown hair, 186 centimeter tall and even attractive voices. If this kind of purchasing commercialized, the concept of the beauty all over the world will be standardized. If so, another problem of disequilibrium of beauty between the poor and the rich will cause the social problem.

Major parties involved and their views

CHINA

Chinese researchers made first successful in genetic editing in the world and now, they are working on reducing the change of mutation emergence. Genetic editing is one of the means of genetic modification, and allows scientists to cut and paste certain portion of the genes. Genetic editing, as known as genetic scissors, is the most efficient and accurate method to modifying the genes.

Professor Hwang, professor in Guangzhou university, already succeed in genetic editing by removing the certain genes which can cause β-thalassemia. Although Chinese government

highly encourages their scientists to work about the genetic modification, there are no outstanding developments so far.

United Kingdom

United Kingdom gives the first approve to the genetic scissors In the world. The purpose of the experiment was to figure out the gene that causes the miscarriage of infants. Human Fertilization and Embryology Authority (HFEA) recently approved the Francis Crick research team's research about the human embryo by using genetic scissors. Last year, Chinese researcher team undertook the genetic scissor experiment, using abandoned embryos, UK's governmental permission is the first case that government officially allows the genetic scissor experiment.

Furthermore, in order to alleviate the tackle from the people who insists the moral issue regarding the experiment, UK government set a stringent rule: The genetic engineered embryos must be destroyed.

France

France is used to very restrictive on any experiments or researches about the genetic modification of human embryos. However, recently, France government has alleviated the regulation of genetic engineering technology so that that of technology in France can make further development. According the current existing law in France, it is illegal to use human embryos for the experiment. However, if the experiment has scientific value, use for prove medical issues, and respect the moral issues, scientists can request for the experiment with embryos. So, France became one of the countries that partially allows the genetic modification of human embryos.

Russian Federation

Russian Federation was issued for using human embryos for experimental purpose. More than 200 human embryos were found in the forest of middle Russia and police stated that the embryos found in the forest are abandoned after used for the scientific experiment. Actually many doctors or people who works in medical science insist that many institutes are using

human embryos for the purpose of beauty and health care in Russia and Ukraine. In Russia, this kind of illegal experiment using embryo happens frequently because the government totally restricts any experiment with human embryos.

USA

USA was one of the countries that strictly ban the experiment with human embryos however, these days, the regulations have alleviated a lot compare to the past. American bio engineering company announced that the experiment with human embryo stem cell will be launched for the patient who damaged his vertebrate. According to CEO of bio engineering company , Tomas Orkarma, said that he already got a permission from the federal government, injecting stem cells that extracted from human embryos to 8 people. Dr. Orkarma stated that the purpose of the experiment is stabilization of the safety problem. Regardless of the result, this experiment of human embryos will contribute a lot to the massive development of the bio technology is America.

Position of the several countries to the human genetic modification

Partially allowed	Totally banned		
CHINA	Austria	Finland	Netherlands
INDIA	Australia	Germany	Norway
SINGAPORE	Belgium	Israel	South Africa
	Brazil	Italy	South Korea
	Canada	Japan	Spain
	Denmark	Mexico	Switzerland
	France		

Timeline of Relevant Resolutions, Treaties and Events

Date	Description of event
1885	Emergence of man-made embryo
1902	Man-made embryo of vertebrate
1928	The cell nucleus controls embryonic development
1952	First Nuclear Transfer
1958	Nuclear transfer from a differentiated cell
1975	First mammalian embryo created by nuclear transfer
1984	First mammal created by nuclear transfer
1987	Nuclear transfer from embryonic cell
1996	Nuclear transfer from laboratory cells
1996	Dolly: First mammal created by somatic cell nuclear transfer
1997	First primate created by embryonic cell nuclear transfer
1997	Nuclear transfer from genetically engineered laboratory cells
1998~1999	More mammals cloned by somatic cell nuclear transfer
2001	Endangered animals cloned by somatic cell nuclear transfer
2007	Primate embryonic stem cells created by somatic cell nuclear transfer
2013	Human embryonic stem cells created by somatic cell nuclear transfer

Possible solutions

Adult stem cell

Adult stem cell is literally refers to the stem cell from grown embryos. For example, the adult stem cell at the skin, can be modified into muscular cells, fat cells, or neuron cells. This modification of adult stem cell is free from moral issues because it is obviously not a living creature but a texture from the body. Not only moral issues, but it has also advantage in immune system. Since adult stem cells are extracted from the patient's own body, the genetic characteristics are exactly same. Thus there are no resistance from immune system.

Frankly, there are no expected solutions to the issue of genetic modification of embryos because selecting either side will bring both disadvantage and advantage. People who advocate the development of science technology has to endure the depreciation of the human dignity. Also, people who claims the importance of the human dignity has to forsake the massive improvement in terms of science technology. Therefore, each party has different opportunity costs. However, one thing is obvious that both parties have to reach consensus through compensation in order to maximize the satisfaction of the whole humanity.

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