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The Ethicality of Gene Alteration In Human Embryos

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ABSTRACT

Gene modification is not a new field. However, human rights and ethics should be considered when implementing alteration. Historically, science has only sometimes been conducted ethically, and with the design of new technology, rules and legislation should be put into place. Changing a gene for the better livelihood of the mother and child is permissible. Altering the genome of one generation to preserve the health of countless generations to come is ethically supported. However, many believe changing genes is controversial because it cannot be undone, and it may provide an unfair advantage to those who have the resources to afford and implement that is as new and uses expensive technology such as gene modification.

INTRODUCTION

It is ethical for biological engineers to modify human organisms if the change is made ethically and upheld by legislative guidelines. Producing so-called 'designer babies' is morally acceptable, although the name is misleading. These reasons should be to terminate the reproduction of harmful diseases and better humankind. Conditions such as cancer could be eradicated just by changing one's DNA. This could be done at the level of egg and sperm and then implanted within the mother's uterus. However, if the technology is developed, it should be implemented and managed within ethical guidelines, not to make a superhuman with desired traits. Crops and various animals have been altered for generations for the evolution of agriculture. However, gene therapy could improve the lives of many humans if applied to it- and the technology being developed is needed to achieve this level of science. Designing one's child seems unethical; children should be loved for how they are created, not ordered from a catalog. God allowed humans to grow and reproduce, learn new things, and evolve as a species. He gave

us the tools to do that, not 'playing' God, He created humanity in His image, and He is, after all, more powerful than other species, and thus humans take after Him in that way.

The benefit of designer babies is the elimination of diseases passed through one's family line. According to BBC, "modern studies show that genetic modification is the only way to deal with multiple disease-associated genes within an embryo," displaying modification's importance and specific function in humans (BBC). Scientifically, no other options exist to eradicate genetic diseases such as Down Syndrome. An alteration in the genome within an embryo that has proven to hold genetic material for a genetic disorder can be altered to better one's quality of life and offspring's life after that. Heritable genome editing would improve the human quality of life for those whose traits were changed and for the caretakers and offspring in the next generations who would no longer carry the potentially harmful gene.

BENEFITS

There is an extensive list of diseases that can be eradicated by mutated genes. The health benefits alone are reasons to implement gene modification. That list includes but is not limited to; Alzheimer's disease, some cancers, cystic fibrosis, down syndrome, and sickle cell disease (Cleveland Clinic). The lives that are changed and bettered generationally cannot be underscored enough. Both types of genetic mutations could be corrected; somatic and germline. Somatic mutations occur before an organism's conception, versus germline mutations that occur post-conception in an embryo (Clevland Clinic). Technologies such as gene editing have revolutionized the agricultural industry and brought numerous advantages.

Similarly, the same outcome would happen if this technology were utilized on human organisms. It would forever change the public health field and could be used to eliminate health

disparities. More usage of developing technologies, in addition to integration, will result in more precise and successful studies. Furthermore, safety laws regarding research and implementation in the field will cause a sense of autonomy and responsibility among scientists and their work as it is closely related to the human themselves. However, legislators and researchers must remember that gene alteration is based on necessity, not preference. It is done for the betterment of a child's life, not for the sake of how far the limits of science can be pushed.

New technology, such as gene modification, creates a new market, similar to the agricultural market of GMOs and seeds in the agriculture field. However, in humans, this field would have stricter laws and regulations. This new market would create jobs for those lawmakers creating and working to pass said laws. In addition, there would be jobs for practitioners and researchers who make and do the work. Additionally, opportunities for nurses, technicians, clerks, and all support staff would ensue. Education would be vital for all aspects of the career of what is deemed a necessary change rather than a preferred change, resulting in more jobs.

SOCIAL STRUCTURE IMPACT

Arguably, the implementation of designer babies makes having a baby a market-like enterprise where one can buy their child. Some feel this is unethical. ExploreBiotech emphasized the importance of legislation to fight only changing genes for physical attributes "Because most people will seek out good-looking, intelligent babies with other optimum characteristics, everyone will be relatively similar," which would result in a smaller gene pool over time (BioTech). The need for an attractive, smart baby is unethical. Parents should be happy with the child they are raising through who that child is and what they value as a person. They should not

be concerned with arbitrary traits such as looks or if their intellect is better than others. Creating a being only to be superficially attractive will fade over time, and will increase intelligence as one ages. These ideas that may be held are fleeting. Genetic changes only for improving intelligence or cosmetics will further decline the stigma surrounding body image in youth today.

Additionally, these embryonic procedures are costly. In vitro fertilization, a technique associated with gene implantation, costs "$10,000 to $15,000" per implant (Phaneuf). Many insurance companies do not cover or compensate clients for procedures such as this one. The outrageous costs of these treatments limit only those with money the ability to access the treatment. Another problem this could cause is "a gap in society… 'Designer' babies would most likely be better looking, smarter," which could lead to a class difference (BioTech). I would argue that although this process would be expensive, so are other alternative child services to natural pregnancies. Using a surrogate or adoption is also costly. Many Americans struggle to afford these services as well.

DRAWBACKS

What is ethically acceptable to alter, and what is the reason for the change? Changing traits that will result in better health of the being are morally permissible. However, changing traits that cause the being to be better or advantaged than other humans is unethical. For example, "The Council on Ethical and Judicial Affairs released a statement in 1994 in support of using the genetic selection as a means to prevent, cure or specific diseases, but that selection based on benign characteristics was not ethical" (Embryo Project ASU). Qualities such as gender and color should not be changed unless it results in the embryo not having a disease. Changing the rates mentioned earlier will encourage racism and sexism.

Additionally, many Americans who were surveyed by the Pew Research Center "support the idea of using gene editing to deliver direct health benefits for babies…a majority considers the use of such techniques to boost a baby's intelligence something that takes technology 'too far' (Pew Research). Increasing intelligence creates an unfair advantage and thus would make the modification unethical. One's brilliance and success are up to one to achieve and should not be predetermined by medical procedures.

Not enough control and regulation of embryonic alteration will cause a new class of citizens; ensuring the social structure isn't affected will maintain ethics. When Charles Darwin invented his theory of natural selection- the idea the fittest organism will survive and reproduce- it eventually gave way to Social Darwinism. Social Darwinism led to numerous terrible forms of scientific racism, such as eugenics. It spurred the theory used to justify ideas of imperialism, racism, eugenics, and social inequality. The United States has a shady history with unethical false claims of improved heredity (The Luthern Witness). Numerous accounts of unfair sterilization or reproductive laws have occurred globally, all stemming from controlling who can reproduce. If genetic modification were embryonically implemented, there would need to be numerous legislative policies in place that have not been previously. The Luthern Witness takes an understanding and wise stance of, "Christians…are opposed to using technology in ways that fight against God's intent for human life," which aligns with the need for ethics involving equity and equality. They make this claim because of the patterned injustices plaguing racial and reproductive views explained by 'science' historically. Again and again, 'fallen human nature will favor the strong over the weak, the rich over the poor.' Still, if used correctly, alteration of genes for specific purposes can be done relatively (The Luthern Witness). Gene alteration can be done, just with a result that is at the expense of the lower socioeconomic classes.

COUNTERPOINTS

Who is to decide what is inherently unethical in such a diverse country? MIT Technology Review looks at the issue from all sides; financial, ethical, scientific, etc. The author asks, "… wasn't the point always to understand and control our biology—to become masters over the processes that created us?" If allowed to grow and evolve and learn more about ourselves and improve as a human race as we have over time, shouldn't we continue? Some may argue altering the genome is not true evolution in a Darwinian sense. Counterarguments regarding the ethicality of gene modification would discuss the selection of the fittest could not indeed happen if the human genes are altered to be different or better.

AUTHOR'S OPINION

With the correct intentions, the genetic mutation of an embryo is ethical. However, the use and implication of gene editing at the embryonic stage are unnecessary to change genes that are not harming the child. For example, changing the hair color of one's child should not be necessary as the child can dye their hair as they choose. Physical features and intelligence should not determine how much a parent values their child. For example, my sister has bright red hair, inherited from my mom, who also has red hair. My mother loves this trait she shares with my sister. Contrarily, my sister detests the natural color of her hair and chooses to bleach it every time a trace of red hair is found on her hair. Even if my mother could have hand-picked the red color of my sister's hair, she could not have stopped her from inevitably changing it. One can pick what they want for their child, but they cannot foresee what the child will enjoy. Parents choosing the specific genes for their offspring in cosmetics takes away a sense of autonomy from the child.

The Bible, which helps lead the ideals of many Christians, says, "God created mankind in his image" (Genesis 2:27). If designer babies were to occur, I think the market it would create and promote would be detrimental. It would encourage the idea of looking and acting a certain way which is already harming the moldable minds of the youth. Most Christians are thankful for the way God made them and should not alter that if not for a reason. If the reason will save or better the fetus's life, then the action is commended, and the same principle applies if an alteration betters the mother's physical life. Human life and human rights are both important aspects to consider, but ultimately, each life is meaningful and deserves a chance at a quality life; if altering the embryo results in better health and longevity of the living organism, it is an ethical decision. This is the broader application of the double effect, which many Catholics call the 'lesser of two evils.' It may seem like 'playing God' to alter your child's genes, but I see no harm if it saves a life and preserves something good that God created.

Imagine a technology developed to eradicate the genes carrying cancerous cells. Destroying the genome would be able to save millions. Additionally, new jobs could be created from the rise of genome editings, such as clinics, technicians, nurses, lawmakers, and politicians who would all be involved in the care of patients and future generations of humans. This would help the market. Communities with specific disparities could have specific mutations targeted as a new window for the public health field to work within, such as the genetic risk factors of diabetes.

CONCLUSION

State genetic modification to produce designer babies can be achieved ethically. If it is to be done, a nation must agree upon and follow the legislation to control a new market and ethical

ideas. Like many medical practices, there must be laws to prevent how and when a medical procedure is conducted. It must be used for a better life, but not to the point of creating a new class of humans. This is a change that, if implemented correctly, can significantly help the human race.

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