

## Genetic Engineering: For or Against Perfection?

*Courtney LaPrelle*

Envision a future in which individuals would know which ailments or disabilities they would suffer from in their lifetime. What about a future in which people could design a child to be a replica of themselves or a future in which a child could come from the genes of two men or two women? Would this new genetic age establish a better world, or a distorted one? Would modern civilization be victorious, or would society realize that a dark side is taking over? When the time comes for me to have a child, I will be utilizing every known medical technique to assure that my child will be born free of genetic illnesses. I believe that if we could use genetic engineering and medical advancements thereof to cure mental and physical diseases and handicaps, thereby preventing at least some of the pain and suffering, we would be a very lucky generation. I do not, however, believe that these advancements should be used to make athletic-based or intelligent-based super-humans. In my opinion, the federal government should not prohibit parents from having their unborn child's DNA altered to eliminate the possibility of disease or handicaps; however, I do feel that the government should prohibit parents from enhancing the genetic traits of their children.

At present, people seem to forget that things were not always how they are now. In the 1970s, as the first human embryos were being produced outside the human body (Cohen and George, 2011), in vitro fertilization was an equally significant development. Test-tube babies became routine very quickly. “We barely pause to consider the strangeness of originating human

life in the laboratory, of suspending nascent human life in the freezer, or of treating procreation as a species of manufacture and a child as the operational objective of an application of technique” (ibid). Nevertheless, it has satisfied the desire of many couples to have a child of their own. Furthermore, from what geneticists and scientists have already discovered, human genome technology will soon be able to help with “aging, replacement of human body parts . . . and incurable diseases” (Williams, 2012).

This leads me to the topic of genetic engineering with the intent to cure disease. When it comes down to it, curing diseases inside of the womb or outside of the womb come from the same objective: to save a human life. In a New Jersey clinic, “embryos undergo pre-implantation screening for disease genes” (Brave, 2011). If scientists could find a way to cure diseases like sickle-cell anemia and down syndrome while the fetus/baby is still inside the womb, these would be the types of medical advances we should be grateful to have in our generation. Humans have around 100,000 genes in their body. According to Eric Lander of MIT’s Whitehead Institute, “some of the genes identified are linked to diseases like cancers of the breast and colon, Alzheimer’s, Glaucoma and Parkinson’s. Figuring out how the genes work promises to lead to prevention and or advanced treatment” (cited in Williams, 2012). Furthermore, researchers want to go beyond transplants and into the laboratory manufacturing of organs and body parts including “human heart valves, breasts, ears, cartilage, and noses. Researchers in this field predict that by the year 2020 ninety-five percent of human body parts will be replaceable with laboratory-grown organs” (ibid). So instead of waiting for someone to die or donate, a person in need would be able to order one from a lab.

In the early 1900s, those living did not have these new developments. Even more unfortunate were the people who lived a few centuries ago who did not even have the knowledge

of disinfectants. Needless to say, we have come a very long way, and we have “re-habituated” to the never-ending progress and developments of science (Saletan, 2007). So why not further the research of “in utero” genetic therapy? In regards to the genetic engineering of human beings, “researchers have already created human artificial chromosomes to administer gene therapy to humans” (Sanders, 2005). In this way, the safety of our unborn children would be the focus; their potential would not. When talking of safety and keeping the possibility of danger out of the equation, Eric Cohen and Robert P. George (2011) explain their ideas to “review different genetic tests and therapies for safety and efficacy with a view to identifying regulatory procedures to protect and inform vulnerable patients undergoing gene therapy trials.” Those who are worried about the danger of genetic engineering should be put at ease by this statement: “[Genetics] aims to correct disease-causing mutations by direct intervention and to use our growing understanding of the human genome to diagnose and treat human disease with greater precision” (Cohen and George, 2011). These aims are still carried out with caution, in large part because the scientists are still learning, and they are still developing new methods to carry out these procedures. Their knowledge grows and improves every day; in my opinion, these geneticists are wary but excited about their discoveries and cannot wait to find more failsafe methods to help the human race with this newfound knowledge.

After much diligence and research on this topic, I have found that the Fourth, Fifth, Ninth, and Fourteenth Amendments of the Constitution are those which give people the right to make the decision to alter the DNA of their unborn child. These fundamental rights are guaranteed by the Constitution of the United States of America. They have been used in previous

court cases to argue laws that have been considered an invasion of an individual's right to privacy and therefore could be used in an argument for genetic engineering research and practice. The Fourth Amendment explains that a person will get protection of his/her freedom and privacy except when it seems clear that he/she has broken the law. In the Fifth Amendment, it explains that a person denies the government certain dictatorial powers over his/her life, freedom, and property. The Ninth Amendment explains that a person gets protection against interference with any rights that were not thought of in 1791 and he/she gets further guarantee that the people's power will not be taken away by a dictator. In the Fourteenth Amendment, it explains that a person gets protection from the federal government if the state limits or interferes with any of his/her rights. All of these laws talk about our right to privacy and our freedom. With these Amendments taken into account, Skylar Sherwood (2001), a lawyer at the Riddell Williams firm, states that a "parent's decisional authority would not be as severely restricted if the genetic alterations were for the purpose of eliminating an incurable disease the child could develop, as it would be if the alterations were made for other purposes." So even though our rights as Americans are clearly defined explaining that we do have a right to privacy and to raise our children the way we see fit, there are obviously lines that have been drawn and possibilities of future decisions to worry about. There are a few lines that some might want to draw on this next issue, no matter how beneficial. There are some newly discovered plant-animal-human DNA combinations which could hold a vaccine to non-Hodgkin's lymphoma, for example: "one in which the DNA of mouse and human tumor fragments is inserted into tobacco DNA. By incorporating a human protein into bananas, potatoes, and tomatoes, researchers have been able to create prototypes of edible vaccines against hepatitis B, cholera, and diarrhea" (Glenn, 2004). These vaccines are proving to be very successful, yet still controversial.

Unfortunately, the reality is that once we discover the means to manipulate DNA for therapeutic purposes, we will have discovered the means for manipulating DNA for genetic enhancement of traits; there is a big possibility of exploitation in this case. By being turned into a luxury, is the abuse of such a genuine and righteous field of study a respectable use of such an important medical technique? Not only would a child have the difficult task of explaining to people that he/she is not a naturally-created human, but the psychological welfare of this child would be compromised by the knowledge that he/she was designed as a product and manufactured for a certain purpose. Imagine parents having to explain this to their child! Parents are already trying to mold, improve, and love their children in excessive and outrageous ways (Sandel calls this “hyper-parenting”). So where will the stopping point be? It won’t be enough to just pick the sex and eye color of one’s unborn child. “The most tempting reason to engage in genetic engineering is . . . to design children with certain desirable human attributes: children with high IQs, perfect pitch, beautiful appearance, remarkable strength, amazing speed, and photographic memories” (Cohen and George, 2011). There are some who fear that a “super genius” will be preferred over those with natural intellectual abilities, which could be a possibility one day. Creating a so-called “superior human being” might be what is “in” right now, but centuries down the road when every baby has been genetically engineered for a specific purpose, it might not satisfy our craving anymore.

After reading Michael Sandel’s book, *The Case Against Perfection*, I found that he gives the reader both a warning about the future and a request for people to look at their moral lives and social values. Those who support the practice of genetic enhancement of traits argue that the

technology is not too different from other forms of enhancement we use to improve our lives and the lives of our children. In my opinion, Sandel seems to agree, but he does not argue about how a person is enhanced, but rather a man's power of superiority. He worries that our wonder and respect would fade in the sense that "our talents and powers are not wholly our own doing, nor even fully ours, despite the efforts we expend to develop and to exercise them" (2007). Any person who thinks our society is too competitive and consumer-driven would probably agree with Michael Sandel's diagnosis. So what happens when biotechnology is used more specifically, for example, to design the perfect athlete? Again, I agree with Sandel in that it is not the means of enhancement that is important. Even if the enhancements of these athletes are safe, it still corrupts a human being's natural gift. From steroids to growth hormones and surgery to genetic engineering, these facts undermine the nature of a sport and instead emphasize the skills of the players. Aristotle provided the oldest known definition of perfection: "That is perfect which is complete — which contains all the requisite parts; which is so good that nothing of the kind could be better" (cited in Ostrer, 2007). So why is perfection so important to today's society? Today, when a basketball player misses the rebound, his coach might blame him for not being in position. Tomorrow, the coach may blame him for his lack of height. The use of performance-enhancing drugs in professional sports today is changing the expectations players have for each other; on some teams players are criticized for "playing naked" when they play with no drugs in their system!

The Amendments mentioned earlier can also be used when arguing for a governmental ban on genetic engineering of traits (or cloning). According to Skylar Sherwood (2001), "No health care facility, fertility clinic, physician, or research facility . . . shall enter, through the use of recombinant DNA technology, the genetic structure or sequence of a human pre-embryo

except for purposes of eliminating or significantly reducing . . . the likelihood of disease for the resultant individual.” (Recombinant DNA technique is defined as, “the incorporation of natural or synthetic DNA into the genome of a human pre-embryo in a way that permanently changes that pre-embryo’s naturally occurring genetic code” (Sherwood, 2001)). She also lists punishments for these violations: anywhere from a \$200,000 to \$500,000 fine depending on whether or not it is a person’s first offense. Not too long ago, “a New Jersey fertility clinic announced that it had developed and performed an in vitro fertilization procedure that inadvertently resulted in the newborns having genes from three adults--and that this new genetic hybrid was evidenced in all the cells of the babies, including their germ-line cells” (Brave, 2001). This clinic has now been put under FDA authority and can only proceed with its approval.

From what I have learned, the choice of choosing the genetic traits of children has never before been provided to parents, so the Supreme Court has not yet had the opportunity to address whether or not the parents have the right to exercise it. Unfortunately, seeing as how people have the right to privacy and to procreate, the above-mentioned statement seems inevitable. “Genetic engineering will be the focal point of disagreement about whether parents, if they are permitted to engineer their children, will be exercising their rights to raise their children as they see fit, or will be engaged in child abuse or inappropriate efforts to control rather than educate their children — thus requiring the intervention of the government to protect and promote the welfare of these future children” (Sanders, 2005). Unfortunately, some parents might not think about how the child would feel, possibly because many are known to think that they know what is best for their children.

In regard to the subject of human cloning, I can definitely understand why many people are uneasy. I am sure most have heard about “Dolly,” the cloned sheep. When it comes to human beings, however, the science of cloning hits closer to home. Some say that “cloning is wrong because it violates the child's right to an open future” (“The Case,” 2004). With their entire life planned out for them, these genetic clones may never feel like a real human being, but a robot sent to Earth to do their parent’s bidding. It is my belief and opinion that cloning research (for the sake of creating or designing a human being) should be completely banned, even though it might be, along with stem cell research, of some benefit to humans. Despite the fact that genetic engineering could be dangerous or used as a path to more developed medical phenomena, I would have to acknowledge that the benefits could someday outweigh the risks.

Imagine fifty years from now traveling to the United Kingdom to see the London Symphony Orchestra in concert. Their program contains Respighi’s *Pines of Rome*, Dvořák’s *New World Symphony*, and the finale to Shostakovich’s *Symphony No. 5*; upon arriving it is evident that the only instruments performing on stage are flutes. As a paying audience member, this would be terribly anti-climactic and would infuriate me. This is how the world might look if everyone was genetically engineered. There would be no more diversity; “unique and “special” would not be in our vocabulary. This helps segue into the fact that many human beings have their own talents and a special ability to do their job well. Those jobs could include a painter, car salesman, waiter, garbage collector, or an electrician. Now fast forward to next century, where there might only be above-average, supernatural beings. Which of these “super-humans” would want to do jobs like these? A genetically-altered person would probably be unhappy and unfulfilled working these jobs. Even more likely, on the other hand, is the fact that there is a possibility that only the rich could afford these genetic alterations. According to Carolyn

Williams (2012), some feel that “the rich and the powerful will dictate who is cloned or how those clones will function in society.” So we are faced with the “haves versus have nots” dividing factor once again.

What role should government play? I believe our government should mind the Constitution, but only to a certain extent. With this generation growing in knowledge and advancing in genetics, our Founding Fathers could not have known this time would come, hence, their lack of focus on the topic of governmental restrictions on “child designing.” I think that decisions must be made and policies should be passed, including a national ban on all human cloning, a ban on the patenting of human embryos, the prohibiting of the destruction of embryos for research, new regulations monitoring the safety of new reproductive techniques, and “having the power to restrict those techniques that raise legitimate concerns about their long-term impact on the children whose lives are initiated or impacted in the early embryonic stage by these techniques” (Cohen and George), and the ban of the creation of human-animal hybrids. As for curing diseases in-utero, I believe that geneticists and scientists alike should be allowed to work together to coordinate their efforts in finding more cures.

Genetic engineering can be seen as "the ultimate expression of our resolve to see ourselves astride the world, the masters of our nature . . . But that vision of freedom is flawed. It threatens to banish our appreciation of life as a gift, and to leave us with nothing to affirm or behold outside our own will" (cited in Lamb, 2007). If our traits were not a gift and we started to view those less fortunate than we are as disadvantaged and in need of genetic “repair,” with all of our focus on self-improvement, we would never be interested in improving anything else. Let me

end with a quote from C.S. Lewis: “If any one age really attains by eugenics and scientific manipulation, the power to make the descendants what it pleases, all men who live after it are patients of that power. They are weaker not stronger.”

## References

- Bill of Rights. Cornell University Law School: Legal Information Institute. Retrieved from <http://www.law.cornell.edu/constitution/billofrights>
- Brave, R. (2001). Governing the genome. *The Nation Company, L.P.* Retrieved from <http://www.thenation.com> and <http://online.sfsu.edu/~rone/GEessays/GoverningGenome.html>
- Cohen, E. and R. P. George. (2011). The problems and possibilities of modern genetics: A paradigm for social, ethical, and political analysis. *The Brookings Institution*. Retrieved from [http://www.brookings.edu/papers/2011/0705\\_genetics\\_cohen\\_george.aspx](http://www.brookings.edu/papers/2011/0705_genetics_cohen_george.aspx)
- Glenn, L. M. (2004). Ethical issues in genetic engineering and transgenics. *American Institute of Biological Sciences*. Retrieved from <http://www.actionbioscience.org/biotech/glenn.html>
- Lamb, G. M. (2007, June 5). Michael Sandel makes “The case against perfection”. *Christian Science Monitor*. Retrieved from <http://www.csmonitor.com/2007/0605/p17s01-bogn.html>
- Ostrer, H. (2007). The case against perfection: Ethics in the age of genetic engineering. *The Journal of Clinical Investigation*, (117)10. Retrieved from <http://www.jci.org/articles/view/33471>
- Press, M. (2007, November). [Review of the book *Enhancing evolution: The ethical case for making better people*]. *Scientific American*, (297)5. Retrieved from EBSCOhost Academic Search Complete database.

Saletan, W. (2007, July 8). [Review of the book *Tinkering with humans.*] *The New York Times*.

Retrieved from <http://www.nytimes.com/2007/07/08/books/review/Saletan.html>

Sandel, M. (2007). *A case against perfection*. Cambridge: Belknap Press of Harvard University Press.

Sanders, J. (2005). Revising humans: U.S. constitution provides framework for debate on genetic engineering of human beings. *Georgia Tech Research News*. Retrieved from <http://www.gtresearchnews.gatech.edu/newsrelease/constitution.htm>

Sherwood, S. A. (2001). Don't hate me because I'm beautiful . . . and intelligent . . . and athletic: Constitutional issues in genetic enhancement and the appropriate legal analysis. *Health Matrix: Journal of Law-Medicine*, (11)2. Retrieved from EBSCOhost Academic Search Complete database.

Simmons, D. (2008). Genetic inequality: Human genetic engineering. *Nature Education*.

Retrieved from <http://www.nature.com/scitable/topicpage/genetic-inequality-human-genetic-engineering-768>

“The case against perfection.” (2004). *The Atlantic Monthly*, (293)3. Retrieved from <http://www.theatlantic.com/past/docs/issues/2004/04/sandel.htm>

Williams, C. (2012). “Human cloning, genetic engineering and privacy.” *Yale-New Haven Teachers Institute*. 2012. Retrieved from

*Teachers Institute*. 2012. Retrieved from

<http://www.yale.edu/ynhti/curriculum/units/2000/3/00.03.07.x.html>