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Human Dignity and the Limits of Genetic Manipulation: An Analysis of Sandel's Critique of Bioethical Engineering

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ABSTRACT

In an age where science is no longer content with merely healing the human body but increasingly seeks to redesign it, the question of what it means to be human has become more urgent than ever. The rapid growth of genetic technologies has opened possibilities that were once unimaginable, raising deep concerns about whether humanity is gradually crossing moral boundaries that safeguard human worth and identity. Against this backdrop, the ethical debate surrounding genetic manipulation has become central to contemporary bioethical discussions. This paper is guided by the problem: to what extent can human beings manipulate genetic structures without undermining the dignity that defines human life? *In addressing this question, the study critically examines the philosophical concerns raised by Michael Sandel on genetic enhancement and bioethical engineering. Using analytic method, the findings reveal that while genetic engineering holds significant benefits in medicine and the improvement of human life, its application in enhancement raises serious ethical concerns. These include the risk of treating human beings as designed products, the erosion of humility and gratitude, and the deepening of social inequality. Sandel's critique highlights that the core issue is not merely technical capability but the moral attitude of control over life itself. The paper concludes that human dignity must remain a guiding principle in the development and application of genetic technologies. It further recommends that scientific progress should not come at the expense of reducing human life to an object of design and manipulation. Instead, a balanced ethical approach is necessary one that recognises both the benefits of biotechnology and the moral limits that protect human identity.*

Keywords: Human dignity, genetic manipulation, bioethics, enhancement, Michael Sandel, giftedness, moral limits, biotechnology

INTRODUCTION

Advances in modern science have placed humanity in an unprecedented position of power over its own biological future. Through the rapid development of genetic technologies, it is now possible not only to treat diseases but also to alter human traits in ways that were once confined to imagination. From gene editing to reproductive selection, these innovations promise to eliminate suffering and improve the quality of life. Yet, alongside these promises emerges a profound ethical concern: at what point does the manipulation of human life begin to undermine the very dignity it seeks to enhance? This question lies at the heart of contemporary debates in bioethics. Human dignity has long been regarded as a foundational principle in moral philosophy, underpinning ideas of human worth, autonomy, and equality. It affirms that human beings possess an intrinsic value that ought not to be reduced to mere objects of design or control. However, the growing capacity to engineer human characteristics challenges this principle by introducing a shift from accepting life as given to actively shaping it according to preference. This transformation raises difficult questions about the limits of human intervention in nature and the moral consequences of treating human life as a project to be perfected.

It is within this context that Michael Sandel offers a compelling critique of bioethical engineering. Rather than focusing solely on issues of safety or fairness, Sandel draws attention to the deeper moral implications of genetic enhancement. He argues that the pursuit of mastery over human nature risks eroding an appreciation for life as a gift, thereby weakening the moral fabric that sustains humility,

responsibility, and solidarity among individuals. His position challenges the dominant view that technological progress is inherently beneficial, urging a more cautious and reflective approach. This paper examines the relationship between human dignity and the limits of genetic manipulation through a critical analysis of Sandel's arguments.

Concept of Human Dignity

The concept of human dignity occupies a central place in moral philosophy, law, and contemporary ethical discourse. At its core, human dignity refers to the inherent worth or value that belongs to every human being simply by virtue of being human. This worth is not earned through achievement, social status, intelligence, or physical ability; rather, it is intrinsic and equal in all persons. The idea serves as a moral foundation for human rights, justice, and respect for persons, shaping how individuals ought to be treated within society.

Historically, the notion of human dignity has evolved through different philosophical traditions. In classical thought, the Stoics emphasized the rational nature of human beings as the basis of their dignity, arguing that all humans share a common capacity for reason that sets them apart from other forms of life. This idea was later deepened in religious traditions, particularly within Judeo-Christian thought, where human beings were regarded as created in the image of God, thereby possessing a sacred and inviolable worth. In modern philosophy, the concept reached a more systematic formulation in the work of Immanuel Kant, who offered one of the most enduring interpretations of human dignity. For Kant, dignity is rooted in the autonomy and rationality of human beings.[1] He maintained that individuals are moral agents capable of making choices guided by reason, and for that reason, they must never be treated merely as tools for achieving other ends. This idea is captured in his famous moral principle that humanity must always be treated as an end in itself. What this means, in practical terms, is that no human being should be reduced to an instrument whether for economic gain, scientific progress, or personal ambition. Kant's perspective introduces a strong moral boundary, one that becomes especially relevant in contemporary debates about genetic manipulation and bioethical engineering.

In addition to its philosophical grounding, human dignity has become a cornerstone of modern legal and political systems. International human rights frameworks are built upon the recognition that all individuals possess equal and inalienable dignity. This recognition demands that societies uphold values such as equality, freedom, and respect for persons. It also imposes limits on practices that may undermine or commodify human life, including certain forms of technological intervention. In contemporary discussions, the concept of human dignity is often invoked in response to emerging scientific possibilities. As technological advancements make it increasingly feasible to alter human traits, enhance physical and cognitive abilities, and even design future generations, the meaning of dignity becomes more complex. Does dignity lie in our capacity to improve ourselves, or in our acceptance of the given nature of human life? This tension reveals that human dignity is not merely an abstract concept but a living moral principle that must continually be re-examined in light of new realities.

The Rise of Genetic Manipulation in Modern Science

The development of modern science has significantly transformed humanity's understanding of life itself, and one of the most remarkable outcomes of this progress is the rise of genetic manipulation. Genetic manipulation refers to the deliberate alteration of an organism's genetic material in order to achieve specific outcomes, such as improving health, enhancing physical traits, or eliminating hereditary diseases. What was once considered purely speculative science has now become a practical reality, reshaping medicine, biology, and even human reproduction. The foundation of this scientific revolution lies in advances in molecular biology and genetics, particularly the discovery of DNA as the carrier of genetic information. This breakthrough opened the door to understanding how traits are inherited and how they might be modified. Over time, technologies such as gene splicing, cloning, and genome sequencing emerged, enabling scientists to identify and manipulate specific genes. More recently, tools like CRISPR-Cas9 have made gene editing more precise, faster, and more accessible, allowing targeted changes to DNA with unprecedented accuracy.

Initially, genetic manipulation was largely confined to agricultural and medical fields. In agriculture, it has been used to develop genetically modified crops that are more resistant to pests, diseases, and environmental stress. In medicine, it has offered hope for treating or even curing genetic disorders such as

sickle cell anaemia, cystic fibrosis, and certain types of cancer. These developments have been widely celebrated as breakthroughs that enhance human well-being and improve quality of life. However, the scope of genetic manipulation has gradually expanded beyond therapeutic purposes into the realm of human enhancement. Scientists and bioengineers are now exploring possibilities such as increasing intelligence, enhancing physical strength, and even selecting preferred physical characteristics in embryos. This shift from treatment to enhancement marks a significant turning point, as it moves genetic science from healing what is broken to redesigning what is human.

The rise of genetic manipulation is also closely linked to broader social and economic forces. The demand for medical innovation, the competitiveness of global biotechnology industries, and the desire for improved human performance have all contributed to its rapid growth. In many ways, genetic engineering is no longer just a scientific endeavour but also a commercial and cultural phenomenon, driven by the pursuit of progress and optimisation. Yet, despite its achievements, the rise of genetic manipulation has sparked deep ethical concerns. As the ability to alter human life becomes more powerful, questions arise about control, inequality, and moral responsibility. If human traits can be designed or selected, who decides what counts as an improvement? And what happens to the idea of human dignity when life becomes something that can be engineered? These questions set the stage for ongoing philosophical debates, particularly those raised by thinkers such as Michael Sandel, who critically examines whether the increasing power over genetic design may come at the cost of important moral values that define what it means to be human.

Overview of Michael Sandel's Bioethical Perspective

The bioethical perspective of Michael Sandel is rooted in a deep concern about how modern technological power, particularly in genetics, is reshaping the meaning of human life and moral responsibility. Sandel does not reject scientific advancement outright; instead, he questions the moral direction in which these advancements are taking society. His central argument is that while genetic manipulation may promise greater control over human traits and outcomes, it risks undermining important moral values that give human life its depth and dignity.[2] At the heart of Sandel's perspective is a critique of what he describes as the "drive to mastery" over nature and human biology. He argues that contemporary bioethical engineering reflects a growing desire to control not only disease and suffering but also the very characteristics that define who we are. This includes attempts to enhance intelligence, physical appearance, athletic ability, and even personality traits. For Sandel, this shift represents a fundamental change in how human beings understand themselves from beings who accept life as a given to beings who seek to design life according to preference.[3]

A key idea in Sandel's thought is the notion of "giftedness." He suggests that much of human life is not something we fully control but something we receive our talents, abilities, and even our limitations are largely unchosen. According to him, this sense of giftedness fosters humility, gratitude, and solidarity, because it reminds individuals that their achievements are not entirely self-made.[4] Genetic enhancement, however, threatens this outlook by replacing acceptance with design and control, thereby weakening the moral attitude of appreciation for life as something given rather than manufactured. Sandel is particularly concerned about the social and ethical implications of genetic enhancement. He argues that if parents begin to select or design the traits of their children, it could lead to new forms of inequality and pressure. Children may come to feel that their worth is tied to engineered expectations rather than natural individuality. Society, in turn, may begin to judge individuals based on enhanced standards, increasing competition and reducing compassion for human limitation. Importantly, Sandel's critique is not only about fairness or inequality but about the moral character of society itself. He believes that the problem with genetic engineering is not simply that it may be unfair or unsafe, but that it changes the way we relate to human life. It risks turning human beings into projects of design rather than persons to be respected. In this sense, his argument is deeply connected to the idea of human dignity, as it challenges whether dignity can survive in a world where human traits are increasingly subject to technological control.

Forms and Applications of Genetic Engineering

Genetic engineering has developed into a broad scientific field with multiple methods and applications that extend across medicine, agriculture, and human enhancement. It involves the deliberate modification of an organism's genetic material to achieve specific outcomes, and its forms vary depending

on the purpose and technique used. Understanding these forms is essential for appreciating both its benefits and the ethical concerns it raises in relation to human dignity.

1. Gene Splicing and Recombinant DNA Technology This is one of the earliest and most widely used forms of genetic engineering. It involves cutting and recombining DNA from different organisms to produce new genetic combinations. Through this method, scientists can introduce desirable traits into organisms, such as disease resistance or improved biological functions. It laid the foundation for many modern biotechnological developments.

2. Gene Editing Technologies (e.g. CRISPR-Cas9) A more advanced and precise form of genetic engineering is gene editing, particularly using tools like CRISPR-Cas9. This technology allows scientists to target specific sections of DNA and modify them with high accuracy. It has revolutionised genetic science by making it easier to remove harmful genes or alter genetic sequences responsible for diseases. However, its precision also raises concerns about its use in non-therapeutic enhancement of human traits.

3. Gene Therapy Gene therapy focuses on treating or preventing diseases by inserting, removing, or altering genetic material within a patient's cells. It is primarily used for correcting defective genes responsible for genetic disorders such as sickle cell anaemia or muscular dystrophy. Unlike enhancement practices, gene therapy is often considered ethically acceptable because it aims at restoring normal health rather than improving human abilities beyond natural limits.

4. Genetic Screening and Embryo Selection This form of genetic engineering involves examining embryos or unborn children for genetic conditions before implantation or birth. Techniques such as preimplantation genetic diagnosis (PGD) allow parents to select embryos free from certain diseases. While this can prevent suffering, it also introduces ethical debates about selection, discrimination, and the possibility of choosing preferred traits.

5. Agricultural Genetic Modification (GMOs) In agriculture, genetic engineering is widely used to produce genetically modified organisms (GMOs). These include crops that are resistant to pests, drought, or diseases, as well as animals bred for improved productivity. Although this application is not directly related to human genetics, it reflects the broader expansion of genetic control over living organisms.

6. Human Genetic Enhancement One of the most controversial applications is genetic enhancement in humans. This involves modifying genes not to cure disease but to improve traits such as intelligence, physical strength, appearance, or lifespan. This form of genetic engineering is central to contemporary ethical debates, particularly in relation to the work of Michael Sandel, who argues that such practices may undermine human dignity by turning human life into a product of design rather than a gift of nature.

The Concept of "Playing God" in Sandel's Argument

One of the most provocative ideas associated with the critique of genetic manipulation is the accusation that human beings are "playing God." In the bioethical discourse of Michael Sandel, this expression is not used in a purely religious sense, but as a moral metaphor describing the growing human desire to exercise complete control over life itself. It reflects the concern that genetic engineering may push humanity beyond the limits of responsible intervention into the realm of total biological design. For Sandel, the problem with genetic enhancement is not simply that it is scientifically advanced, but that it expresses an attitude of excessive mastery over nature.[5] In traditional human experience, life is largely understood as something received rather than chosen. People do not select their parents, their natural talents, or their physical constitution. This element of "given-ness" fosters humility and acceptance. However, when genetic technologies allow individuals to design traits in advance, this sense of receiving life as a gift is replaced by the ambition to manufacture it according to preference.

The idea of "playing God" in this context highlights the moral tension between creation and control. Sandel suggests that when human beings attempt to redesign fundamental aspects of life, they risk assuming a role that exceeds their moral authority.[6] This does not mean that all forms of intervention are wrong, but rather that there is a difference between healing and enhancing, between restoring health

and redesigning human nature. Crossing this boundary raises concerns about whether human beings are treating life with appropriate respect or reducing it to an object of technical manipulation. A key implication of this argument is that genetic enhancement may weaken moral responsibility. If children are designed according to parental expectations, questions arise about accountability for success and failure. For example, a genetically enhanced child may be seen less as an independent individual and more as a product of design, shaped by the choices of others. This shifts the moral relationship between parent and child, introducing expectations that may undermine genuine freedom and individuality. Furthermore, Sandel's use of the "playing God" idea is closely linked to his broader concern about humility. He argues that human beings should recognize the limits of their knowledge and power. Even with advanced technology, the complexity of life cannot be fully predicted or controlled. Attempts to eliminate uncertainty entirely may lead to unintended consequences, both biologically and socially. In this sense, humility becomes a moral safeguard against the overreach of scientific ambition.

The Threat to Human Dignity in Genetic Engineering

The rapid advancement of genetic engineering has intensified long-standing ethical concerns about the protection of human dignity. While the technology holds great promise for curing diseases and improving human life, it also raises fundamental questions about what it means to be human. The central concern is that as humans gain greater control over genetic traits, they may begin to redefine life itself in ways that undermine the intrinsic worth and equality that human dignity demands. At the heart of this issue is the possibility that human beings may increasingly be treated as objects of design rather than persons with inherent value. Human dignity, as traditionally understood, rests on the idea that every individual possesses worth simply by being human, not because of any chosen or engineered attributes. However, genetic manipulation introduces the possibility of selecting, modifying, or eliminating traits before birth. This shift risks transforming human life into a project of preference and production, where individuals are shaped according to desired outcomes rather than accepted as they are.

One major threat is the emergence of a "designer mentality," where children are viewed as products of planning rather than gifts of nature. In such a context, parental expectations may shift from care and acceptance to control and specification. This can place subtle but powerful pressure on individuals to meet predetermined standards of intelligence, appearance, or ability. When human beings are designed with expectations in mind, their freedom to define themselves may be indirectly constrained, and their sense of authenticity may be weakened. Another concern is the potential erosion of equality among human beings. If genetic enhancements become widely available, there is a risk that access will depend on wealth and social status. This could create a biological divide between the enhanced and the non-enhanced, leading to new forms of inequality that go beyond social or economic differences. Such a development would challenge the idea that all human beings share equal dignity, regardless of their physical or cognitive abilities.

This ethical tension is central to the critique offered by Michael Sandel, who argues that genetic engineering threatens to replace an attitude of acceptance with one of control. According to Sandel, human dignity is closely tied to the recognition that life is partly a gift something we receive rather than something we entirely construct.[7] When this sense of giftedness is lost, there is a danger that human relationships become more competitive and less compassionate, as individuals are increasingly judged by engineered standards rather than shared humanity. Moreover, genetic engineering raises concerns about moral responsibility and identity. If certain traits are intentionally designed, questions arise about authorship of personal achievements. Success may no longer be seen as the result of effort and character alone but as the outcome of genetic selection. This can weaken the moral significance of human effort and reduce individuals to the status of predetermined outcomes rather than self-determining agents.

The Notion of Giftedness and Its Moral Significance

The idea of *giftedness* is one of the most important concepts in the ethical thought of Michael Sandel. It refers to the belief that many of the most important aspects of human life such as talents, abilities, intelligence, physical appearance, and even life itself are not fully chosen or controlled by individuals. Instead, they are received as part of existence. Sandel uses this idea to argue that human beings should cultivate humility and gratitude rather than the desire to fully master or redesign life through technology. At its core, giftedness suggests that life is not entirely a product of human planning. For

example, no one chooses their genetic makeup, their natural abilities, or the family into which they are born. A child may grow up with exceptional intelligence or athletic ability, while another may struggle with limitations beyond their control. According to Sandel, recognising these traits as "gifts" rather than personal achievements or engineered outcomes encourages a deeper sense of appreciation for human diversity and unpredictability.[8]

This perspective carries strong moral significance. When individuals see their abilities as gifts, they are more likely to develop humility. Success is not viewed as something entirely self-made, but as partly dependent on factors beyond personal control. This understanding can reduce arrogance and promote solidarity, as people become aware that their advantages are not solely the result of effort. It also fosters compassion toward those who may not have been similarly endowed. To illustrate this idea, consider two scenarios. In the first, a student excels academically due to natural intelligence and supportive circumstances. In the second, another student struggles despite great effort. If intelligence is seen purely as a product of design or control, the successful student may feel entitled to their achievements, while the struggling student may be judged harshly. However, if intelligence is understood as partly a gift, the successful student is more likely to remain humble, and society more likely to show understanding toward differences in ability.

Genetic engineering challenges this moral framework. If parents begin to select or design traits in their children such as intelligence, height, or physical attractiveness then these traits may no longer be perceived as gifts but as products of intention. This shift could change how individuals relate to their own abilities. Instead of feeling grateful or humble, they may feel pressure to justify the expectations embedded in their design. Similarly, society may begin to view individuals less as recipients of diverse gifts and more as outcomes of technological decisions. The moral concern raised by Sandel is not simply about fairness, but about character. He argues that the loss of giftedness may weaken important virtues such as humility, gratitude, and solidarity. When everything becomes a matter of design and control, human life risks becoming overly focused on achievement and perfection, leaving less room for acceptance and appreciation of natural limits.

Sandel's Critique of Human Enhancement Technologies

The critique of human enhancement technologies by Michael Sandel is one of the most influential moral responses to contemporary advances in genetic science. Sandel does not argue against science itself or the use of biotechnology for healing diseases. Instead, his concern is directed at the growing ambition to *enhance* human beings beyond their natural capacities—through genetic selection, gene editing, and other forms of biomedical engineering. For him, the problem lies not in what these technologies can do, but in the kind of moral mindset they encourage. At the centre of Sandel's critique is the idea that human enhancement represents a shift from accepting life as it is given to designing life according to preference. Traditionally, human life has been understood as something partly shaped by chance our talents, limitations, and identities are not fully chosen. However, enhancement technologies introduce the possibility of controlling these traits in advance. Sandel argues that this shift undermines a valuable moral attitude: the appreciation of life as something received rather than manufactured.[9]

In his view, enhancement technologies promote what can be described as a "hyper-agency" mentality, where human beings begin to see themselves as total authors of their identity. While this may appear empowering, Sandel warns that it can weaken important moral virtues such as humility, gratitude, and solidarity. If every trait becomes the result of design, then individuals may begin to feel overly responsible for their success and less empathetic toward the struggles of others.[10] To illustrate this in a contemporary Nigerian context, consider the growing pressure among young people to achieve success through any available means academic shortcuts, internet fraud ("Yahoo Yahoo"), or extreme self-optimization driven by social media expectations. In such an environment, there is already a tendency to believe that success must be engineered at all costs. If genetic enhancement were added to this culture of intense competition, it could deepen the belief that human worth depends entirely on performance and design, rather than shared humanity or effort.

Sandel is also concerned about the impact of enhancement on fairness and social equality. In societies like Nigeria, where inequality in education, healthcare, and economic opportunity is already significant, access to genetic enhancement would likely be limited to the wealthy. This could create a new biological divide between those who are enhanced and those who are not, intensifying existing social

stratification. Unlike traditional advantages, these differences would be embedded in biology itself, making them far more permanent and difficult to overcome. Another important aspect of Sandel's critique is his warning about the loss of human openness and unpredictability. He argues that part of what makes human life meaningful is its unpredictability the fact that children are not fully designed but emerge as unique individuals. Enhancement technologies risk replacing this openness with control, where parents or societies attempt to pre-determine outcomes such as intelligence, personality, or physical ability. This, Sandel suggests, could weaken the parent-child relationship by turning children into projects of design rather than persons to be welcomed.

Critical Evaluation of Sandel's Critique

The bioethical position of Michael Sandel on human enhancement technologies has generated significant philosophical debate. While his critique is intellectually compelling and morally grounded, it also raises questions regarding its practical implications, scope, and assumptions about technology, human freedom, and moral progress. A balanced evaluation therefore requires both appreciation of its strengths and a critical reflection on its possible limitations.

CONCLUSION

The debate surrounding human dignity and genetic manipulation reveals a profound tension between scientific advancement and moral responsibility. On one hand, modern genetic technologies offer significant opportunities for improving human life, particularly in the treatment of diseases and the enhancement of health outcomes. On the other hand, they raise serious ethical concerns about the limits of human control over life and the possible erosion of values such as equality, humility, and respect for persons. The analysis of Michael Sandel's critique highlights the importance of reflecting not only on what science can achieve, but also on what it should not attempt to control. His argument draws attention to the idea that human life is not merely a project to be designed, but a reality that carries intrinsic value and unpredictability. In this sense, human dignity is understood as something that must be preserved even in the face of technological progress. At the same time, a balanced perspective shows that genetic engineering cannot be dismissed entirely, as it holds great promise for addressing suffering and improving quality of life, especially in contexts where medical challenges remain severe. The key issue, therefore, is not whether genetic manipulation should exist, but how it should be guided and regulated in order to prevent abuse and ethical distortion. Thus, the discussion points toward the need for careful moral reflection in the development and application of genetic technologies. Respect for human dignity should remain central, ensuring that scientific progress does not come at the cost of devaluing human life.

RECOMMENDATIONS

Based on the ethical concerns and philosophical analysis of human dignity and genetic manipulation, particularly in relation to Sandel's critique, the following recommendations are proposed to guide the responsible use of genetic technologies in society:

1. Governments and regulatory agencies should develop and enforce strict ethical frameworks to monitor and control the use of genetic engineering, especially in human enhancement practices, to ensure that human dignity is not undermined.
2. Public enlightenment programmes should be introduced to educate citizens on the ethical, social, and philosophical implications of genetic manipulation, enabling informed participation in related policy discussions.
3. Scientific research in genetics should prioritise therapeutic applications aimed at treating and preventing diseases rather than enhancement-oriented modifications that may alter natural human traits.
4. Collaboration between scientists, philosophers, bioethicists, and policymakers should be strengthened to ensure that technological development is guided by both scientific progress and moral responsibility.
5. Measures should be implemented to ensure equitable access to genetic technologies so that advancements do not deepen existing social and economic inequalities.

Endnotes

1. Immanuel Kant, *Groundwork of the Metaphysics of Morals*, trans. Mary Gregor (Cambridge: Cambridge University Press, 1998), 32.
2. Michael Sandel, *The Case Against Perfection: Ethics in the Age of Genetic Engineering* (Cambridge, MA: Harvard University Press, 2007), 5.
3. Michael J. Sandel, "The Moral Status of Enhancement Technologies," in *Bioethics and Human Enhancement*, ed. David L. Kirchhoffer (London: Routledge, 2019), 110.
4. Jürgen Habermas, *The Future of Human Nature* (Cambridge: Polity Press, 2003), 25.
5. Francis Fukuyama, *Our Posthuman Future: Consequences of the Biotechnology Revolution* (New York: Farrar, Straus and Giroux, 2002), 18.
6. Sheila Jasanoff, *The Ethics of Invention: Technology and the Human Future* (New York: W.W. Norton, 2016), 48.
7. Robert L. Klitzman, *Am I My Genes? Confronting Fate and Family Secrets in the Age of Genetic Testing* (Oxford: Oxford University Press, 2012), 75.
8. Nick Bostrom, "Human Genetic Enhancements: A Transhumanist Perspective," *Journal of Evolution and Technology* 14, no. 2 (2005): 12.
9. George Annas, Lori Andrews, and Rosario Isasi, "Protecting the Endangered Human: Toward an International Treaty Prohibiting Cloning and Inheritable Alterations," *American Journal of Law & Medicine* 28, no. 2–3 (2002): 155–162.
10. Habiba Nosheen, "Ethical Implications of Genetic Engineering in Modern Medicine," *Journal of Medical Ethics and History of Medicine* 13, no. 4 (2020): 48–54.