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PROBLEMS OF GENETIC MODIFICATION WITHIN THE FRAMEWORK OF ETHICS AND LAW

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Abstract

This paper explores the legal framework of genetic modification within the context of ethics and law. Genetic engineering and modification introduce new ethical and legal dilemmas by intervening in the biological nature of humans. The field of bioethics upholds fundamental principles such as non-maleficence, social equality, and individual privacy. Genetic modification, while applicable across various domains – from medical advancements to aesthetic and social enhancements – raises serious legal and ethical concerns.

Keywords: *bioethics, human rights, genetics, law, genetic modification technologies*

Bioethics and Genetic Modification: A Conceptual Framework

Bioethics is a field that explores ethical issues affecting human life, health, and well-being. The principles of bioethics encompass a wide range of areas, from health policies to medical decision-making. One of the most fundamental principles is the principle of autonomy, which upholds an individual's right to make decisions regarding their own body and health. Autonomy signifies the right of individuals to control their lives and make independent decisions regarding their well-being. This principle does not only involve the right to be free from external intervention but also includes the right to self-determination and independent decision-making regarding one's life (Beauchamp, 19).

In the field of genetic modification (GM), the application of this principle becomes more complex, as the issue extends beyond the immediate medical procedures to interventions affecting the genetic structure of future generations. Ethical concerns in genetic interventions arise both from an individual and a collective perspective: while an individual may have the right to alter their genetic makeup, such interventions may also impact the lives of future generations.

The application of the autonomy principle requires that individuals provide fully informed consent regarding decisions affecting their bodies and health. This is particularly critical in the medical field, as procedures – especially complex interventions like genetic modification – can significantly alter a per-

son's life. Informed consent demands that individuals fully understand the benefits, risks, and possible consequences of a given medical intervention before agreeing to it (Faden & Beauchamp, 1986).

When it comes to genetic modification, particularly in cases of embryonic or genetic testing, obtaining informed consent becomes even more intricate. Even if an individual consents to a modification, its consequences may have far-reaching ethical and legal implications for future generations. If a parent decides to modify their child's genetic structure, this decision not only affects that child but also has potential consequences for subsequent generations (Savulescu, 780–781). This situation highlights the challenges of the autonomy principle and the ethical complexities of genetic manipulation.

The implementation of genetic modification raises significant interventions affecting human bodies and lives, bringing legal concerns to the forefront. Firstly, there must be clearly defined legal boundaries regarding genetic interventions. For instance, laws and policies governing an individual's right to alter their genetic code are still evolving and vary across different countries (Rothstein, 555). While some nations have implemented strict regulations limiting genetic modifications to medical purposes, others allow such interventions with greater freedom. These legal discrepancies raise serious concerns regarding the protection of individual rights.

Additionally, the impact of autonomy and individual rights on society and collective well-being must be considered. Genetic modification, while enhancing individual choice, may also have implications for societal welfare. For instance, issues such as how genetically modified individuals integrate into the labor market, whether they confer social advantages, or whether they foster discrimination against those with natural genetic variations become pertinent (Buchanan, 2019).

Bioethics serves as a field that examines ethical issues in medicine and science while considering human well-being, rights, and social justice. A fundamental principle in bioethics is justice and equality. These principles aim to ensure that every individual in society is treated fairly, that resources are allocated equitably, and that decisions affecting quali-

ty of life are made justly. Justice and equality in bioethics play a crucial role, particularly in ensuring equitable access to medical services and resources.

2. Ethical and Legal Issues of GMOs in Azerbaijan

Legislation on import, circulation and use of GMO products in Azerbaijan. Although efforts have been made to define the regulatory framework, legal mechanisms in Azerbaijan regarding genetic modification are yet to be fully developed. For instance, while laws such as the “Law on Environmental Protection” and the “Law on Consumer Rights Protection” address GMOs indirectly, the absence of a dedicated legal framework creates a significant legal gap. This gap poses serious risks both for public health and the preservation of ecological balance (Mammadov, 155–156).

From an ethical standpoint, the principal concern lies in the lack of clearly defined boundaries for human intervention in nature and the potential misuse of such technologies for commercial purposes. According to certain bioethical principles, interference with the genetic structure of human beings or nature should only be permitted under specific conditions – such as medical necessity and public consent. This necessitates the development of a comprehensive normative framework for bioethics in Azerbaijan.

Although international instruments such as UNESCO's Universal Declaration on Bioethics and Human Rights provide ethical guidelines for genetic interventions, the effective implementation of these principles at the national level remains unresolved. Institutional structures in Azerbaijan – such as the Institute of Philosophy and Sociology of the Azerbaijan National Academy of Sciences (ANAS) and the UNESCO Chair in Bioethics – have initiated several projects in this area. However, their integration into the formation of practical legal and social mechanisms is still limited (Mustafayeva, 22–24).

The philosophical dimensions of bioethics hold particular significance in Azerbaijan. One of the most prominent scholars in this field is Professor Ilham Mammadzade, whose research offers an in-depth philosophical grounding of bioethical issues by analyzing

ethical principles not only from medical and legal perspectives, but also from ontological and anthropological viewpoints. His work underscores that bioethics should not be perceived merely as a normative system, but as a philosophical foundation that safeguards human moral integrity and the freedom of individual choice. Several projects have been undertaken at the Institute of Philosophy and Sociology of ANAS to develop a philosophical framework for ethical concepts (Mamedzade, 123–124).

In addition, the low level of public awareness on this subject significantly impacts the quality of ethical decision-making. The lack of public debate and limited transparency regarding genetic modification hinders the establishment of accountable and ethical decision-making mechanisms.

Scientific controversies surrounding the environmental and health-related effects of GMOs also contribute to the uncertainty in ethical judgment. While the application of the precautionary principle is deemed necessary in ethical decision-making, its insufficient reflection in the Azerbaijani legal system further exacerbates existing gaps.

In conclusion, the application of genetic modification technologies in Azerbaijan raises not only scientific and technological questions, but also profound ethical and legal challenges. It is crucial to strengthen institutional initiatives, improve relevant legislation, and promote public dialogue in this domain. At the same time, ethical decisions should be

justified not only within legal frameworks but also through philosophical and cultural contexts, in order to foster a more balanced and responsible approach to genetic modification.

Conclusion

Legal and ethical regulation in the field of genetic engineering remains a challenging issue. The application of genetic modification should not only be guided by medical and scientific approaches but must also align with the ethical and legal values of society. Ensuring that genetic interventions are carried out solely for health-related purposes is crucial for defining ethical and legal boundaries. The global implementation of these regulations through joint cooperation is essential. Strengthening international collaboration and oversight mechanisms can help protect ethical standards in genetic engineering.

Furthermore, the regulation of genetic engineering should not be limited to medical and scientific aspects but must also be applied in accordance with social equality and human rights. The protection of genetic data and the assurance of personal privacy are fundamental principles for the successful implementation of ethical frameworks in this field. Legal regulations should also emphasize the importance of informing society and implementing ethical education programs. Raising public awareness in this area will facilitate the adoption of ethical and legal approaches in decision-making processes.

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