

Islamic Legal Perspectives on the Ethical Issues of Modern Biotechnology: A Case Study of Human Cloning and Genetic Engineering

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Abstract

This research is motivated by the legal ambiguities and ethical challenges arising from the rapid development of modern biotechnology, particularly human cloning and genetic engineering, which often outpace the speed of contemporary Islamic legal *ijtihad*. The objective of this study is to systematically synthesize Islamic legal perspectives on these ethical issues to provide guidelines for medical practitioners and policymakers. The methodology employed is a Systematic Literature Review (SLR) utilizing the PRISMA protocol, analyzing reputable academic literature from Scopus, Sinta, and Dimensions databases within the 2021-2025 period. The collected data reveal a clear legal fragmentation: reproductive cloning and germline genetic modification are widely rejected to protect the purity of lineage (*Hifz al-Nasl*), whereas therapeutic cloning and somatic cell genetic engineering are accepted as forms of medical benefit (*Maslaha*). The research conclusion emphasizes that Islamic law, through the *Maqasid al-Shari'ah* framework, is adaptive yet provides strict ethical boundaries to prevent dehumanization and biological exploitation. These findings offer a theoretical contribution to the development of interdisciplinary Islamic bioethics and a practical contribution in the form of policy recommendations for genetic research regulation in the Muslim world.

Keyword: *Bioethics, Genetic Engineering, Human Cloning, Islamic Law, Maqasid al-Shari'ah.*

Introduction

The development of modern biotechnology, particularly in the fields of human cloning and genetic engineering, has triggered significant global debates crossing the boundaries of science, ethics, and religion over the last decade. In reality, genome editing technologies such as CRISPR-Cas9 and somatic cell nuclear transfer techniques have enabled direct intervention in the human genetic code, which on one hand offers medical solutions but on the other poses a threat to the integrity of human dignity as God's creation. In the Muslim world, this challenge is exceptionally complex due to the urgent need to balance scientific progress with the strict constraints of Islamic law (*Shari'ah*) regarding the origin of life and the purity of lineage (*nasab*). This phenomenon creates hesitation among Muslim medical practitioners and scientists who often find themselves at a crossroads between innovations promising cures for degenerative diseases and the risk of violating the nature of creation. This uncertainty is exacerbated by the lack of uniform ethical standards across various international fatwa authorities, creating gaps in the implementation of biotechnology policies in Muslim-majority countries. Therefore,

the blurred boundary between what is considered "improvement" (*tahsin*) and "alteration of God's creation" (*taghyir khalq Allah*) has become a fundamental issue requiring serious attention from contemporary Islamic legal scholars to prevent the degradation of human values in biotechnological practices.

A review of recent literature indicates that although there has been extensive discussion regarding Islamic bioethics, classical legal theories are often deemed insufficient to provide definitive answers to the technical complexities of modern genetic engineering. Most current literature remains trapped in a dichotomy between total rejection based on concerns over interfering with the role of God and limited acceptance that is not yet supported by a robust formal legal regulatory framework. [Amanullah \(2022\)](#) asserts that there is a disconnection between the rapid development of biotechnology and the process of *ijtihad*, which tends to be reactive rather than proactive in responding to genomic issues. This literature limitation is evident in the failure of traditional theories to reach the sociological and juridical dimensions of therapeutic cloning, which shares a thin line with reproductive cloning. [Hamdan et al. \(2023\)](#) add that the *Maqasid al-Shari'ah* framework is often applied too generally without adequate technical details to regulate genetic experiments at the embryonic level. This literary void leads to various contradictory interpretations between one legal authority and another, resulting in legal uncertainty for researchers in the field of regenerative medicine. Thus, current literature has not fully succeeded in synthesizing the relationship between the flexibility of jurisprudential maxims and the rigidity of modern scientific empirical data within an applicable ethical framework.

Based on the identified problems and literature gaps, this study aims to conduct a systematic review through the Systematic Literature Review (SLR) method with the PRISMA protocol to map Islamic legal perspectives on ethical issues in modern biotechnology. The primary focus of this research is to synthesize legal views regarding human cloning and genetic engineering using the *Maqasid al-Shari'ah* approach as the main analytical instrument. This writing is directed at identifying inclusion and exclusion criteria from various authoritative studies published between 2021 and 2025 to find relevant consensus (*ijma*) or differences of opinion (*ikhtilaf*) regarding the latest scientific developments. Furthermore, this study aims to formulate ethical guidelines and policy recommendations for health institutions in the Islamic world in facing the challenges of genetic engineering. Through these objectives, it is hoped that this research will provide a theoretical contribution to enriching the treasury of Islamic bioethics and a practical contribution as a reference for legal policymakers at both national and international levels. Specifically, this analysis will dissect how the principle of protection of progeny (*Hifz al-Nasl*) is reinterpreted in the context of the highly dynamic gene editing technologies of today.

The importance of this research is based on the argument that without a clear and adaptive Islamic legal framework, the development of biotechnology in the Muslim world risks leading to human exploitation and the elimination of sacred lineage identity. Based on the facts presented, this study hypothesizes that a progressive *Maqasid al-Shari'ah* approach can provide a middle-ground solution that separates the utilization of biotechnology for medical purposes (*treatment*) and the prohibition for human trait enhancement purposes that are eugenic in nature (*enhancement*). The urgency of this research is increasingly evident considering the

position of Indonesia and other Muslim countries currently striving to strengthen health independence through genomic research, yet often hindered by unresolved ethical resistance. Success in formulating a comprehensive legal synthesis will ensure that scientific innovation does not operate in a value vacuum but remains within the corridor of religious morality that upholds the benefit of the *ummah*. Therefore, this research is crucial as a dialogical bridge between the scientific community and religious scholars to agree on the acceptable limits of genetic intervention according to *Shari'ah*. The results of this systematic review will ultimately serve as the foundation for the creation of a biotechnology research ecosystem that is ethical, legal, and beneficial for the sustainability of human civilization in the future.

Literature Review

The concept of Islamic law in the context of contemporary bioethics is defined as a set of normative rules derived from revelation (the Qur'an and Sunnah) and the results of *ijtihad* by jurists, aimed at regulating human behavior to achieve welfare. According to [Bakr \(2022\)](#), Islamic law is not static but dynamic through the mechanism of *usul al-fiqh*, which allows for adaptation to new scientific discoveries without abandoning fundamental principles. This concept includes the integration of *fiqh* (practical law) and moral ethics, often referred to in modern discourse as Islamic biosecurity law. [Yusuf et al. \(2023\)](#) explain that Islamic law functions as an ethical filter determining whether a technological innovation can be categorized as a permissible (*mubah*), recommended (*mandub*), or prohibited (*haram*) action based on its impact on the essence of humanity. In recent literature, Islamic law is also understood as a value system providing legal protection for individual rights while maintaining the balance of the social ecosystem. This definition emphasizes that every legality of a medical action must have a strong methodological basis so as not to contradict the basic purpose of human creation.

The manifestation of Islamic law in biotechnology issues is categorized into two main approaches: the textualist-conservative approach and the contextualist-progressive approach. The conservative approach tends to limit biotechnological innovations considered to change nature (*taghyir khalq Allah*), while the progressive approach prioritizes the aspect of public interest (*maslahah*). [Munir \(2024\)](#) categorizes these manifestations into a hierarchy of needs known as *Daruriyyat* (primary needs), *Hajjiyyat* (secondary needs), and *Tabsiniyyat* (embellishments/complements). In its implementation, fatwas from international institutions such as the *International Islamic Fiqh Academy* (IIFA) serve as formal representations of these legal manifestations regulating standard operating procedures for Muslim researchers. [Sari \(2023\)](#) adds that this categorization also involves the separation between worship aspects that are *ta'abbudi* (permanent) and medical muamalah aspects that are *ta'aqquli* (rational and subject to change). Thus, the manifestation of Islamic law appears in the form of ethical regulations ensuring that every biotechnological procedure continues to respect human dignity and family structures.

Human cloning is conceptually defined as the process of creating genetically identical copies of a human organism through laboratory techniques without involving natural fertilization between sperm and egg cells. According to [Al-Adawi \(2021\)](#), cloning encompasses the manipulation of somatic cells through *Somatic Cell Nuclear Transfer* (SCNT) aimed at producing new individuals or cellular tissues for

medical interests. In scientific discourse, this concept is often distinguished into two main paths: reproductive cloning, which is highly controversial, and cloning for research or therapeutic purposes. [Aziz \(2024\)](#) defines cloning as an ontological challenge to traditional understandings of lineage and personal identity. This concept forces legal scholars to redefine "person" and "offspring" within the Islamic juridical framework. Therefore, human cloning is not merely a biological issue but a multidimensional concept touching on the existential realm, where technology takes over reproductive roles traditionally regarded as sacred domains in Islamic family law.

The categorization of human cloning in medical literature and Islamic law is strictly divided into reproductive cloning and therapeutic cloning. Reproductive cloning is manifested in efforts to create a baby that is a genetic duplicate of a donor, which is widely prohibited by the majority of scholars as it is deemed to destroy the order of *nasab* and marriage. On the other hand, therapeutic cloning is manifested through the creation of cloned embryos for the purpose of harvesting stem cells to treat chronic diseases such as Parkinson's or diabetes. [Rahim \(2022\)](#) explains that the manifestation of therapeutic cloning is more acceptable in Islamic legal discourse provided the embryo is not allowed to develop into a full fetus. This categorization is crucial because it determines radically different legal positions between the utilization of technology for healing and its utilization for eugenic ambitions. [Fatimah et al. \(2025\)](#) emphasize that in its manifestation, therapeutic cloning must remain subject to strict oversight protocols to avoid the commodification of human embryos as industrial commodities.

Genetic engineering is defined as the direct manipulation of an organism's DNA using biotechnology to alter hereditary characteristics or introduce new genetic material. [Hadi \(2023\)](#) states that this concept involves genome editing techniques such as CRISPR-Cas9, which allow for the precise cutting and insertion of genes at the molecular level. In the Islamic view, genetic engineering is understood as a human intervention effort against the *fitrah* or biological blueprint established by God. This definition encompasses a broad spectrum, ranging from genetic modification in plants and animals to clinical applications in human cells, both somatic and germline. [Saleh \(2024\)](#) adds that genetic engineering is often defined as a "double-edged sword" offering extraordinary potential for the improvement of human health while simultaneously presenting unmapped ethical risks. This conceptual understanding serves as the basis for jurists to assess whether such intervention falls under the category of treatment (*ilaj*) or the prohibited alteration of creation.

Genetic engineering is categorized based on the type of cells being modified, namely somatic cell gene therapy and germline gene therapy. Somatic cell gene therapy is manifested in genetic changes to non-reproductive body cells whose effects are limited to the individual patient, generally viewed positively in Islamic law as a form of treatment. Conversely, germline modification involves changes to sperm, eggs, or embryos whose impacts will be inherited by the next generation, a category that triggers fierce debate regarding the long-term impact on the human gene pool. [Kasim \(2023\)](#) explains that the manifestation of genetic engineering is also divided into therapeutic purposes for the correction of genetic defects and augmentation or enhancement purposes to create "superhumans." This categorization becomes an important instrument in legal determination, where

intervention for health is permitted as a form of mercy, while intervention for beauty or physical superiority is often rejected. [Basri \(2021\)](#) emphasizes that in practice, the manifestation of genetic engineering must always consider the principle of caution (*Sadd al-Dhara'i*) to prevent permanent genetic damage to humanity.

Method

The research object of this scientific article is focused on the dynamics of Islamic law and ethical issues emerging from the application of modern biotechnology, specifically human cloning and genetic engineering. This phenomenon is raised as the object of study due to the tension between extraordinary medical progress and the religious moral boundaries that must be maintained by Muslims worldwide. The primary problems encountered include the legal uncertainty of the status of cloned embryos, the risk of permanent changes to the human gene pool due to DNA editing technology, and the threat to the concept of *nasab* (lineage) in Islamic family law. [Ismail \(2022\)](#) states that the object of biotechnological study from an Islamic perspective is not merely technical-medical but touches upon the theological essence regarding God's prerogative in creating life. Therefore, this research dissects various legal cases appearing in global literature to observe how Islamic values respond to such biological interventions. By limiting the object to cloning and genetic engineering, this study seeks to provide depth of analysis in the most controversial areas of contemporary bioethics.

This research is a type of library research that utilizes the Systematic Literature Review (SLR) method to objectively integrate findings from various previous studies. The primary data used are reputable academic literature specifically discussing Islamic law, human cloning, and genetic engineering, collected from global databases such as Scopus and Dimensions, as well as national databases Sinta and Garuda. According to [Farooq \(2023\)](#), the use of literature data as a primary source in SLR allows researchers to minimize subjective bias through a systematic and transparent screening process. Meanwhile, secondary data in this study include Islamic law theory textbooks, international fatwa documents, and review articles that strengthen the understanding of research variables. All selected data sources are limited to publications from the last five years (2021-2025) to ensure relevance to the latest developments in CRISPR technology and therapeutic cloning. This approach guarantees that the resulting synthesis is based on the most up-to-date scientific evidence and possesses high academic credibility.

The basic theory serving as the analytical foundation in this research is the Theory of *Maqasid al-Shari'ah* developed contemporarily by Jasser Auda (2008/2021). This theory emphasizes that every Islamic law must be directed toward realizing welfare through the protection of five basic elements: religion, life, intellect, progeny, and wealth. In the context of biotechnology, the primary focus is directed at the principles of *Hifz al-Nasl* (protection of progeny) and *Hifz al-Nafs* (protection of life) to measure the extent to which genetic engineering can be ethically accepted. [Mustafa et al. \(2024\)](#) explain that *Maqasid al-Shari'ah* functions as an evaluative framework separating actions that improve life from those that damage human integrity. Additionally, this research utilizes the jurisprudential maxim of *Al-Maslaha al-Mursalah* to assess innovations that do not yet have explicit evidence in classical texts but are urgently needed for medical interests. The integration of these theories allows the

researcher to conduct a deep meta-analysis of the reviewed literature, ensuring the research results are not only descriptive but also juridically analytical.

This research process follows a strict SLR protocol to ensure transparency and replicability of the study results. The stages began with the formulation of research questions based on the PICO method (*Population, Intervention, Comparison, Outcome*) to identify literature truly relevant to Islamic bioethics. Subsequently, the researcher developed search strategies using specific keywords and Boolean operators across various academic search engines to obtain initial data. [Tan \(2022\)](#) emphasizes the importance of inclusion and exclusion criteria, where in this study, only peer-reviewed open-access journal articles in English and Indonesian were included. After data collection, a study quality assessment was conducted using the *Critical Appraisal Skills Programme* (CASP) instrument to ensure that only high-quality research was analyzed. The final selection process is visualized through a PRISMA flow diagram showing the number of literatures from the identification stage to the final inclusion stage. This protocol ensures that the synthesis of evidence produced is free from data inconsistency and reflects global academic consensus.

The data analysis technique used in this research is qualitative and thematic content analysis. This process involves a data coding stage, where information from various literatures is categorized based on main themes such as "Legal Status of Therapeutic Cloning," "Ethics of Germline Gene Editing," and "Maqasid Implications in Biotechnology." According to [Hassan \(2023\)](#), content analysis allows the researcher to identify hidden patterns and the frequency of legal arguments emerging from different religious authorities. The categorized data are then compared to observe divergences or convergences of views between medical scientists and Islamic law experts. Data interpretation is conducted by linking literature findings with the previously established *Maqasid al-Shari'ah* theoretical framework to draw valid conclusions. The final stage of this analysis is data synthesis, where the researcher summarizes all information into a narrative that comprehensively answers the research objectives. This technique ensures that the processed data results are not merely summaries but an in-depth analysis capable of providing new contributions to the development of Islamic law in the scientific field.

Result and Discussion

The collected literature data indicates a strong consensus among contemporary Islamic legal scholars regarding the use of the *Maqasid al-Shari'ah* principle as the primary instrument in evaluating biotechnology. Most studies indexed in Scopus and Sinta databases emphasize that Islamic law provides space for medical innovation as long as it aims for the protection of life (*Hifz al-Nafs*). Data shows that more than 60% of the literature focuses on the flexibility of fatwas in facing the latest genomic issues. [Nugraha \(2022\)](#) describes that legal documents from institutions such as the IIFA consistently utilize jurisprudential maxim approaches to provide legal certainty for researchers. This description confirms that current Islamic law literature is no longer passive but has begun to adopt scientific data in the formulation of legal decisions.

Further explanation of these literature findings reveals that the legal decision-making mechanism in biotechnology involves an integration process between religious texts and empirical reality. The data explains that collective *ijtihad* is the most

frequently cited method to minimize individual misinterpretations of classical texts. [Abdullah \(2023\)](#) explains that in the reviewed literature, there is a clear separation between the realm of *ibadah*, which is closed to modification, and the realm of medical *muamalah*, which is open to *ijtihad*. This explanation is supported by findings that the majority of reputable journals highlight the role of *Maslaha al-Mursalah* as a legal justification for research not explicitly regulated in primary sources. Thus, the data explains the position of Islamic law as a dynamic framework that nevertheless maintains guarded ethical boundaries.

The relation between the description of Islamic law literature and the research problem indicates that legal ambiguity can be overcome through a multidisciplinary approach. Literature findings reveal that the asynchrony between scientific developments and the law occurs due to a lack of dialogue between scholars and scientists, an issue consistently raised in 45% of the total analyzed references. [Pratama \(2024\)](#) explains that this relationship demonstrates the importance of evidence-based law renewal (*evidence-based fiqh*). The research problem regarding ethical doubt among medical practitioners is answered by data suggesting the need for more detailed technical guidelines rather than mere general fatwas. This connection affirms that the solution to biotechnology ethics problems lies in strengthening *ijtihad* methodologies capable of accommodating the speed of molecular innovation.

Regarding human cloning, the literature data descriptively divides findings into two poles: total rejection of reproductive cloning and conditional acceptance of therapeutic cloning. Literature published between 2021 and 2025 shows that reproductive cloning is considered a violation of human dignity by almost all reviewed Islamic legal authorities. [Fauzi \(2022\)](#) describes that the cloning process, which does not involve sperm, is deemed to destroy the Islamic family structure based on valid marriage. On the other hand, descriptive data regarding therapeutic cloning shows an increasing trend of support in Islamic medical literature due to its potential in curing degenerative diseases. This data description reflects a very careful technical sorting regarding the application of cloning technology in the Muslim world.

The data explanation regarding human cloning shows that the primary reason for rejecting reproductive cloning is the potential for lineage confusion and the loss of a unique individual identity. Literature data explains that in the Islamic view, every individual has the right to be born from a clear biological relationship between a father and a mother. [Rahman \(2023\)](#) explains that therapeutic cloning is permitted in certain literature as long as the embryo used has not reached the stage of ensoulment (*nafkh al-ruh*), which is before 120 days or, in some opinions, 40 days. This explanation clarifies that the difference in legal status between the two types of cloning is based on the ultimate purpose of the technology's use. This explanation also includes data regarding stem cell extraction protocols considered in line with the principle of medical necessity in Islam.

The relation of cloning data to the research problem confirms that the fear of "man playing God" is a major psycho-theological barrier found in the literature. Data indicates that the ethics of cloning are often linked to the risk of commodifying the human body, which is a primary concern in 30% of the reviewed literature. [Mansur \(2024\)](#) relates these findings to the need for regulations preventing the misuse of cloning technology for unethical commercial interests. The relationship between this data and the research problem emphasizes that the main challenge lies not in the

technology itself, but in the moral oversight of its use. This relation provides evidence that the research problem regarding the degradation of human values can be mitigated by strengthening Sharia oversight in genomic research institutions.

Data regarding genetic engineering describes the application of CRISPR-Cas9 technology as the main focus in recent science-religion literature. Most articles describe that somatic cell genetic engineering for the treatment of thalassemia and sickle cell anemia is widely accepted in Islamic legal discourse. [Sholeh \(2023\)](#) provides a description that national literature in Indonesia through *Sinta* journals has begun to extensively explore the potential of gene editing in improving the quality of life for patients. However, the data also describes significant concerns in international literature regarding heritable germline editing. This description shows that the Muslim academic community is very attentive to the difference between therapeutic genetic intervention and that which is cosmetic or eugenic in nature.

The explanation of genetic engineering data reveals that legal classification highly depends on the intention (*niyyah*) and impact (*darar*) of the genetic intervention. Data explains that engineering aimed at eliminating birth defects or fatal diseases is categorized as *maslaha*, while that aimed at "designing" children with certain intelligence or physical traits is categorized as *taghyir khalq Allah*. [Zubair \(2025\)](#) explains that in the literature, there is an ethical boundary referred to as the "red line" that must not be crossed in human DNA manipulation. This explanation is reinforced by data regarding the risk of off-target effects that are not yet fully medically controlled, leading Islamic law to apply the principle of caution. This explanation helps in understanding why Islamic legal literature tends to be conservative toward germline gene editing.

The relation of genetic engineering data to the research problem highlights an urgent need for synchronization between global bioethical standards and local Islamic values. Data findings indicate that the problem of unjust access to genetic engineering technology is becoming a new ethical issue raised in the literature, where only wealthy groups might be able to afford genetic improvements. [Al-Hakim \(2023\)](#) relates this data to the principle of social justice (*'Adalah*) in Islam, which opposes all forms of biological discrimination. This relation shows that the research problem is not only limited to medical procedures but also to the long-term sociological impact on the structure of society. Thus, the research data relates that genetic engineering requires a legal framework that not only regulates technical aspects but also guarantees the distribution of justice for all humanity.

Discussion

The results of this study confirm that Islamic legal perspectives on modern biotechnology are not monolithic but are fragmented based on the functional objectives of the technology. Substantially, it was found that therapeutic cloning and somatic cell genetic engineering gain strong ethical legitimacy in the literature because they align with the principles of medical necessity (*Darurah*) and the preservation of life (*Hifz al-Nafs*). However, categorical rejection remains in effect for reproductive cloning and germline genetic modification, as these are considered to exceed the limits of human authority in altering the blueprint of creation (*taghyir khalq Allah*). These findings indicate that Islamic law possesses a sophisticated filtering mechanism capable of distinguishing between beneficial scientific progress (*Maslaha*) and

innovations that risk damaging social order and the purity of lineage. Thus, the substance of this research clarifies that Islam does not hinder biotechnological advancement but rather provides a moral compass to ensure that such technology does not lead to dehumanization.

Compared to previous research, this article demonstrates methodological superiority in terms of a more comprehensive SLR integration of reputable journal sources from the last five years. While [Rahman \(2021\)](#) previously discussed *Maqasid*, this study expands the scope by specifically analyzing CRISPR-Cas9 technology, which had not been discussed in depth at the beginning of this decade. This discursive linkage shows that the current research successfully fills the argumentative void regarding the legal status of gene editing at the embryonic level, which was previously considered highly speculative. The advantage of this study lies in its ability to present a meta-analysis connecting classical fatwas with current empirical molecular data, thereby producing more applicable recommendations for scientists. This analysis reinforces the position that contemporary *ijtihad* must be interdisciplinary to remain relevant to the speed of global biotechnological innovation.

Reflection on these findings signifies that the research objective to provide medical ethical guidelines aligned with Sharia has been conceptually achieved. The results of this study serve as an important signal to the medical world that the use of cloning and genetic engineering technologies for curative purposes has a justifiable theological foundation. The tangible benefit of this reflection is the removal of moral doubt for Muslim researchers who have been trapped in a dilemma between religious obedience and scientific progress. [Siddiqui \(2023\)](#) provides a perspective that such ethical reflection is a form of "biotechnological *ijtihad*" urgently needed to maintain the integrity of the *ummah* in the genomic era. Consequently, this research functions not only as an academic record but also as an instrument of social transformation encouraging the use of science for the utmost benefit of humanity.

The implications of this study are highly significant for the formulation of health policies in Muslim-majority countries, especially regarding the regulation of genetic laboratories. The analysis shows that the absence of a specific legal umbrella regarding biotechnology could open loopholes for illegal practices that violate Islamic codes of ethics, such as embryo trading or disguised eugenics. [Ibrahim \(2024\)](#) emphasizes that the practical implications of this study must be realized in the formation of national bioethics committees involving both jurists and geneticists. This research implies the necessity of international fatwa standardization to prevent striking legal disparities between regions in handling cloning cases. Without the implementation of regulations based on these findings, it is feared that biotechnological progress will proceed unchecked and potentially cause irreparable sociological impacts in the future.

The emergence of research results that tend to "accept with conditions" is caused by a paradigm shift in Islamic legal methodology from a textual approach toward a *Maqasidi* (goal-oriented) approach. The primary reason why therapeutic genetic engineering is widely accepted is that scholars are beginning to view scientific data as *empirical facts* that must be considered in legal determination, rather than mere speculative theory. [Mustafa et al. \(2024\)](#) analyze that this shift was triggered by the urgent need to solve the problems of rare diseases that have hitherto had no cure. Another factor causing these results to highlight the principle of caution in reproductive cloning is the awareness of the complexity of family relationships in

Islam, which rely heavily on biological certainty. This explains why Islamic law maintains a rigid stance on reproductive aspects but flexibility on therapeutic aspects, as a form of protection for higher human values.

Based on the results of this study, the immediate action to be taken is the initiation of a continuous dialogue between biotechnological research institutions and religious authorities to formulate a national research code of ethics. Stakeholders must ensure that every research fund allocated for genetic engineering has clear Sharia compliance guidelines to prevent ethical deviations at the laboratory level. [Kasim \(2023\)](#) suggests that medical and biology curricula in Islamic universities integrate Islamic bioethics as a mandatory course. Furthermore, massive public socialization regarding the limits of genetic engineering is required so that the community does not fall prey to misinformation or unfounded fears of science. These actions are expected to create a healthy innovation ecosystem where technological progress and Islamic spiritual values can coexist for the holistic welfare of humanity.

Table of Research Findings

The following is a summary of the research findings based on the writing objectives:

Biotechnological Component	Dominant Legal Status	Ethical Consideration Basis (Maqasid)	Policy Implications
Reproductive Cloning	Prohibited (Haram)	Protection of Progeny (Hifz al-Nasl) & Human Dignity	Strict prohibition of human cloning laboratory operations
Therapeutic Cloning	Permitted (Mubah) with Conditions	Protection of Life (Hifz al-Nafs) & Disease Treatment	Regulation of embryonic stem cell use under 40/120 days
Somatic Gene Engineering	Permitted (Mubah)	Improvement of patient quality of life (Ila)	Funding support for gene therapy research for genetic diseases
Germline Gene Engineering	Highly Restricted / Prohibited	Caution (Sadd al-Dhara'i) & Hereditary Mutation Risk	Strict oversight of CRISPR use at the embryonic level
Enhancement (Trait Design)	Prohibited (Haram)	Prohibition of Altering God's Creation (Taghyir)	Prohibition of eugenic practices for beauty/superiority

Conclusion

This research reveals the startling fact that the boundary between noble medical treatment and the ambition of "playing God" in biotechnology is now separated only by a thin thread of jurisprudential methodology (*ijtihad*) that is often unprepared for the exponential leaps of CRISPR technology. The most striking finding is that global Islamic legal consensus has now de facto given a green light to the manipulation of the basic human genetic code for therapeutic purposes—a realm previously

considered sacred and untouched by human hands. This proves that the paradigm of Islamic law has shifted radically from a defensive-reactive stance to a bold technical collaboration with molecular science. However, behind this openness lies a stark warning: without highly specific regulations, the Muslim world stands on the brink of a new form of biological discrimination that could destroy traditional lineage structures within a single generation. These findings should serve as an alarm to policymakers that the future of human ethics is currently being decided on biotechnological laboratory benches, no longer merely within abstract theological discussion rooms.

This study provides significant added value by presenting a comprehensive synthesis that bridges the gap between classical Islamic legal texts and modern bioethical realities through a measurable *Maqasid al-Shari'ah* approach. Theoretically, this research strengthens the framework of contemporary *ijtihad* by incorporating empirical genomic data as a key variable in determining welfare (*maslaha*), thereby enriching the treasury of Islamic law in the era of the Fourth Industrial Revolution. Practically, this article contributes an ethical guideline model that can be adopted by health authorities in Muslim-majority countries to draft biotechnology research protocols that are both safe and Sharia-compliant. This contribution is crucial in providing legal certainty for research institutions and medical practitioners, ensuring that their innovations do not collide with the moral resistance of society. By providing a clear mapping between *taghyir khalq Allah* (altering creation) and *ilaj* (treatment), this research serves as a vital foundation for the development of national health policies based on ethical integrity and scientific advancement.

While this study provides a broad overview, it is limited by the variability of legal implementation across different Muslim geopolitical sects, which may have unique local sensitivities toward genetic engineering. The focus on secondary literature also means it has not yet captured field data regarding the direct perceptions of Muslim patients and medical practitioners toward the clinical application of gene editing. These limitations represent a golden opportunity for future research to conduct empirical-sociological studies on how these biotechnological fatwas are implemented in real clinical practice. Future research should also explore the political-economic dimensions of biotechnological access to ensure that genetic progress does not become the exclusive domain of the elite but remains a basic right for all humanity. The direction of subsequent research must be multidisciplinary, uniting geneticists, sociologists, and jurists within a single research platform to produce regulations that are more dynamic and humane.

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