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Intervention in Fitrah in the Context of Genetic Intervention and the Problem of Mutability of Fitrah

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Abstract

This study examines the impact of genetic interventions on the Islamic concept of fiṭrah, a foundational notion that plays a determining role in shaping human nature, belief structures, moral orientation, and the overall framework through which individuals relate to their existence. This study first explores the linguistic, theological, and philosophical dimensions of fiṭrah, outlining its classical definitions in Islamic thought and emphasizing its dual function as both an innate disposition toward recognizing divine truth and a moral-spiritual orientation embedded within human creation. In this context, the study highlights the distinction between fiṭrah and ṭabīʿah, noting that while ṭabīʿah refers to biological or instinctual human characteristics open to alteration, fiṭrah is traditionally understood to reflect a deeper spiritual constitution. Building on this conceptual framework, this study investigates whether advancements in biotechnology—particularly genetic modification, epigenetic interventions, and neurobiological manipulation—pose a potential challenge to the integrity of fiṭrah. Through a comparative analysis, classical Kalām positions on human nature and divine endowment are examined alongside contemporary scientific findings on genetic variability, brain plasticity, and the dynamic interplay between heredity and the environment. This interdisciplinary approach allows the study to assess not only whether genetics can shape human behavior, cognitive tendencies, or predispositions, but also whether such alterations could extend to the metaphysical and moral aspects associated with fiṭrah. The findings suggest that while genetic interventions may significantly influence biological structures and even contribute to shaping certain behavioral or cognitive features, these changes do not penetrate the core of the fiṭrah. The moral and spiritual dimensions that constitute fiṭrah remain unaffected by material alterations because, according to Islamic thought, fiṭrah is grounded in divine orientation that cannot be biologically engineered or dismantled. However, this study acknowledges that human choices, upbringing, cultural conditions, and environmental factors may obscure, distort, or suppress the expression of fiṭrah without altering its essential nature. Ultimately, the study concludes that although biotechnology can transform aspects of human biology and potentially expand the limits of human capability, it does not possess the capacity to fundamentally modify the divinely endowed structure represented by the fiṭrah. This conclusion reaffirms fiṭrah as a stable ontological constant within Islamic anthropology, which remains intact regardless of scientific or technological intervention.

Keywords: Kalam, Biotechnology, Genetic Intervention, Fitrah, Epigenetics.

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Genetik Müdahale Bağlamında Fıtrata Müdahale ve Fıtratın Değişebilirliği Sorunu

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Öz

Bu çalışma, genetik müdahalelerin İslam'ın, inanç yapılarını, ahlaki yönelimini ve bireylerin varoluşlarıyla ilişki kurduğu genel çerçeveyi şekillendirmede belirleyici bir rol oynayan temel kavramı olan fıtrat üzerindeki etkisini incelemektedir. Çalışma, fıtrat kavramının dilbilimsel, teolojik ve felsefî boyutlarını inceleyerek İslâm düşüncesindeki klasik tanımlarını özetlemekte; ayrıca fıtratın hem ilahî hakikati tanımaya yönelik doğuştan gelen bir eğilim hem de insana yaratılıştan verilen ahlaki ve manevi yönelim olarak iki temel işleve sahip olduğunu açık bir biçimde ortaya koymaktadır. Bu bağlamda çalışma, fıtrat ile tabiat arasındaki ayrımı netleştirmekte; tabiatın değişime açık biyolojik ya da içgüdüsel özellikleri ifade ettiği, buna karşılık fıtratın gelenekte daha derin bir manevi yapı ve yaratılış düzenini yansıttığı vurgulanmaktadır. Bu kavramsal çerçeveden hareketle çalışma, biyoteknolojideki—özellikle genetik modifikasyon, epigenetik müdahaleler ve nörobiyolojik manipülasyon alanlarındaki—gelişmelerin fıtratın bütünlüğüne potansiyel bir meydan okuma teşkil edip etmediğini incelemektedir. Çalışma, karşılaştırmalı bir analiz yoluyla insan doğası ve ilahî donanım hakkındaki klasik Kelâm yaklaşımlarını, genetik değişkenlik, beyin plastisitesi ve kalıtım-çevre etkileşimine ilişkin çağdaş bilimsel bulgularla birlikte ele almaktadır. Bu disiplinler arası yaklaşım, genetik müdahalelerin insan davranışını, bilişsel eğilimleri veya yatkınlıkları ne ölçüde şekillendirebileceğini ve bu etkilerin fıtratla ilişkilendirilen metafizik ve ahlaki boyutlara kadar uzanıp uzanamayacağını değerlendirmektedir. Bulgular, genetik müdahalelerin biyolojik yapıları belirgin biçimde etkileyebileceğini ve hatta bazı davranışsal ya da bilişsel özelliklerin oluşumuna katkıda bulunabileceğini ancak bu değişikliklerin fıtratın özüne nüfuz etmediğini ortaya koymaktadır. Fıtratı oluşturan ahlaki ve manevi boyutların maddi müdahalelerle değişime uğramadığı belirtilmektedir; zira İslâm düşüncesine göre fıtrat, biyolojik olarak mühendisliği mümkün olmayan ilahî bir yönelime dayanmaktadır. Bununla birlikte çalışma, insanın seçimleri, yetiştiği çevre, kültürel etkenler ve diğer çevresel koşulların, fıtratın özünü değiştirmeksizin onun görünümünü zayıflatabileceğini, bastırabileceğini veya çarpıtabileceğini kabul etmektedir. Sonuç olarak çalışma, biyoteknolojik müdahalelerin insan biyolojisini dönüştürebilse de fıtratın temsil ettiği ilahî ve asli yapıyı temelden değiştirme gücüne sahip olmadığı kanaatine varmaktadır. Böylece fıtrat, bilimsel ya da teknolojik müdahalelerden bağımsız olarak varlığını koruyan, İslam antropolojisi içinde ontolojik bir sabite olarak yeniden teyit edilmektedir.

Anahtar Kelimeler: Kelam, Biyoteknoloji, Genetik Müdahale, Fıtrat, Epigenetik.

Atıf
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Introduction

The concept of fiṭrah has gained renewed importance, especially in light of current biotechnological advances, genetic interventions, and attempts to reshape humans. The biological foundation of human ṭabīʿah (natural constitution)—its variability and openness to external interaction—triggers philosophical inquiry into the existential structure of human beings while simultaneously creating the need for new interpretations of the basic concepts and belief systems of religion. In Islamic thought, it is crucial to distinguish between ṭabīʿah (the biological or natural constitution of humans) and fiṭrah (the divinely endowed moral and spiritual disposition of humans). While ṭabīʿah may be open to physical change and environmental influence, fiṭrah represents the immutable aspect of human essence that connects humans to the divine order and moral responsibility. From this perspective, the question of whether human nature is a permanent structure or a feature shaped by external factors gains theological significance. This is central to understanding the divine purpose of creation. Some scholars argue that radical interventions in ṭabīʿah—especially through biotechnological means—may contradict Islam's perception of human beings as divinely guided creatures with a fixed fiṭrah. The concern is that such interventions, by exceeding the limits set by divine wisdom, might lead humans to question their existential meaning and may even be perceived as a challenge to divine providence. The question of whether human nature is fixed or variable has long been debated in both philosophy and in theology. With the development of genetic interventions, this issue has gained increasing urgency.

The concept of fitrah, which has a deep-rooted history in Islamic thought, plays a central role in understanding the essence, creation, and purpose of human existence. In this context, the number of studies on fiṭrah is considerable. However, no comprehensive study has directly examined the relationship between the concept of fiṭrah and modern science, particularly biotechnology. While fiṭrah has been widely discussed in theological and philosophical contexts, its relevance to contemporary scientific attempts to modify or redefine human nature has not been systematically addressed. This absence reveals a significant research gap that calls for a re-examination of fiṭrah in light of biotechnological and genetic interventions' implications. The main purpose of this study is to re-evaluate the concept of fitrah in Islamic thought, especially in the context of genetic interventions in today's world, where human body interventions are becoming increasingly common. The most important point that differentiates it from existing studies is that it is considered not only a theoretical concept but also a biological reality, and the potential effects of genetic interventions on human nature are analyzed from an Islamic perspective. This study sought answers to questions such as what the concept of the fitrah corresponds to in human nature, whether this nature is changeable, and the effects of genetic interventions on the concept of the fitrah. In this context, we examine in detail whether genetic interventions change fitness, whether this change is acceptable from an Islamic perspective, and theological problems that may arise.

1. The Concept of Fitrah

In Islamic thought, "fitrah" can be defined as the state of being in a divine order that constitutes the ontological and epistemological basis of human beings. Derived from the Arabic root *faṭṭara,* refers to the unique and fundamental characteristics of human creation, that is, the innate disposition with which human beings are endowed. This disposition encompasses both the natural tendencies inherent in human existence and the spiritual orientation that predisposes humans to recognize divine truth and turn toward God.[1] From an Islamic perspective, it is addressed with definitions such as "the ability to recognize and accept God's divinity and rubûbiyyet, the will to accept Islam as a religion, the creation of human beings in a structure capable of accepting religion (Islam), the covenant given at bezm-i elest".[2]

The concept of "fıtrah" mentioned in the Qur'ân al-kerîm, plays a central role in understanding the essence, creation, and purpose of human beings' existence in Islamic thought. In particular, verse 30 of Surat al-Rûm reads, "And set your face to religion as a khîf, and persevere in the pure nature that Allah has created in mankind. There were no changes in Allah's creations." This verse is considered a verse that most clearly expresses the concept of nature. The word "fitrah" refers to the innate, unchangeable, and divinely ordered basic characteristics of human beings. These fundamental characteristics shared by all humans in their creation encompass a religious and moral dimension. fitrah refers to human predisposition toward the true religion and belief in tawhid, that is, the instinct to turn toward Allah. This points to divine programing in the creation of man and indicates that the purpose of human existence is to know and worship Allah. Another important part of the verse, "There is no change in Allah's creation" emphasizes that nature is determined by a divine order and that this order is fixed. This indicates that the

1 Muhammed b. Mükerrem İbn Manzûr, *Lisânu'l-Arab*, critical ed. Muhammed eş-Şâzelî et al. (Kahire: Dâru'l-Maârif, no date), 4/3433; Seyyid Şerif Cürcânî, *Kitâbu't-Ta'rifât*, critical ed. İbrahim Ebyar (Beyrut: Dâru'l-Edyân li-Türâs, 1982), 141.

2 İsmail Yalçın, "Değişim ve Yenileşmede Fıtrat Çizgisi," *Tevilat* 1/1 (June 30, 2020), 99,102.

nature of human beings cannot be changed by human will or environmental factors. Thus, human nature is unchangeable. Islamic scholars have associated the concept of fitrah with "marifatullah" and have interpreted it as the ability to know God. According to this approach, nature is an inner urge that drives people to recognize God and turn toward Him. This indicates that the purpose of human existence is the endeavor to discover a divine truth.[3] Rāgib Isfahānī (d.1108/1109) is the scholar who stands out especially from this perspective. According to Isfahānī, fitrah is an innate characteristic placed on human beings, defined as the ability to recognize God in particular.[4] This view has been widely accepted in Islamic thought.[5] Many scholars such as Abū Ubaydah (d.639), al-Tabari (d. 310/923), al-Māturīdī (d. 333/944), and al-Ghazālī (d. 505/1111) were close to this view of Rāgib Isfahānī.[6] Other important scholars such as Ibn Taymiyah (d. 728/1328), Ibn al-Qayyim (d. 751/1350), and Imam al-Nawawi (d. 676/1277) argued that there is a tendency toward both faith and disbelief in human nature but that the tendency toward faith is more dominant.[7] Ibn Ashūr (d.1973), on the other hand, took the concept of fitrah in a broader framework and stated that human beings were created according to religious values, which predisposes them to accept religion.[8]

Consequently, evaluations of the concept of fitrah offer a space for debate between the more specific approach that human beings are endowed with the ability to know God and the broader approach that human beings have a general tendency to believe in a creator.[9] The main distinction between these two perspectives lies in the object of belief (Allah or a general concept of God) and the scope of that belief (the basic belief system of Islam or common beliefs in different religions and philosophies).[10]

2. The Biological Basis of the Concept of fitrah and Methods of Intervention

Genes, the fundamental building blocks of heredity, contain instructions that regulate the biological functioning of an organism. Each gene carries encoded information for the synthesis of specific proteins, which play an essential role in the formation of tissues, organs, hormones, antibodies, and other cellular mechanisms.[11] In this respect, genes serve not only as determinants of an individual's physical characteristics but also as key factors influencing physiological processes, overall health, and integrity of personal identity. Consequently, genetic structure constitutes the biological foundation of both human corporeality and individual distinctiveness. From this perspective, it seems reasonable to discuss the mutability of fiṭrah within the framework of interventions targeting genetic structures.

Genetic intervention involves the deliberate alteration of specific DNA sequences.[12] With such an intervention in the human being, it becomes possible to modify cognitive structures, identity, temperament, or sexual orientation.[13] For example, people will be able to choose genes that increase their cognitive abilities (memory, attention and processing speed), empathy, greater practical intelligence, and intellectual and emotional development.[14]

All behaviors, such as human personality, language abilities, and sexual behaviors, have genetic components.[15] The behavioral criteria of any living being are shaped by its innate genetic inheritance. Today, this genetic inheritance is called the "ed" "phylogenetic psyche." Behavior is a product of genetic code in the cells of the body, particularly the cells of the nervous system. The neural network surrounding

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3 Ebû Mansûr Mâtürîdî, *Te'vîlatü'l-Kur'an Tercümesi*, trans. Kemal Sandıkçı (İstanbul: Ensar Neşriyat, 2017), 7/218; İrem Ceyhan, "İslam Kelamında Fıtratın Bilgisel Değeri," *Mesned İlahiyat Araştırmaları Dergisi* 12/1 (June 30, 2021), 136.

4 Şaban Ali Düzgün, "İnsanın Doğası (Fıtratı) ve Özgürlüğü Üzerine," *KADER Kelam Araştırmaları Dergisi* 14/2 (2016), 323.

5 Muhammed Ali Tekin, "Kur'ân ve Hadislerde Fıtrat Kavramının Anlamı Üzerine," *Tasavvur / Tekirdağ İlahiyat Dergisi* 6/2 (2020), 1452.

6 Adil Bor, "Din ile İlişkisi Bağlamında Fıtratın Mahiyeti," *Cumhuriyet İlahiyat Dergisi* 21/3 (2017), 1768; Osman Nuri Demir, "İmam Mâtürîdî'de Akıl, İnsanî Doğa (Tab') ve Fıtrat," *Diyanet İlmi Dergi* 56/1 (2020), 1678; Mâtürîdî, *Te'vîlatü'l-Kur'an Tercümesi*, 7/218.

7 Yalçın, "Değişim ve Yenileşmede Fıtrat Çizgisi," 103.

8 Muhammed Tâhir İbn Âşûr, *et-Tahrîr ve't-Tenvîr* (Tunus: Dâru's-Sahun, 1984), 88–90.

9 Yaşar Kurt, "Kur'ân'da Fıtrat Kavramı", *Dinbilimleri Akademik Araştırma Dergisi* 5/3 (2005), 79–80; Bor, "Din ile İlişkisi Bağlamında Fıtratın Mahiyeti", 1779; Mustafa Akçay, "İnsanlığın Ortak Dini Temeli:Fıtrat", *Sakarya Üniversitesi İlahiyat Fakültesi Dergisi* 13/23 (June 15, 2011), 156; Demir, "İmam Mâtürîdî'de Akıl, İnsanî Doğa (Tab') ve Fitrat", 194.

10 Ceyhan, "İslam Kelamında Fıtratın Bilgisel Değeri," 126; Osman Zahid Çifçi, "Naturalist Verilerin Teistik Sonuçları (Fıtrat Kavramı Özelinde Bir Yorum Denemesi)," *EKEV Akademi Dergisi* 63 (2015), 353.

11 Aarathi Prasad, "Genomik ve Genetik Mühendislik," trans. Tevfik Uyar, *Gelecek Nasıl Gelecek*, ed. Jim Al Khalılı (İstanbul: Domingo Yayınevi, 2022), 58; Berat Sarıkaya, *Genlere Müdahale-İlahi Kader İlişkisi* (İstanbul: Pınar Yayınları, 2014), 13 vd.

12 Maide Barış, *Umut ve Kaygı Arasında Genetik Müdahale* (İstanbul: BETİM, 2022), 85.

13 Siddhartha Mukherjee, *Gen*, trans. Cem Duran (İstanbul: Domingo Yayınevi, 2021), 11; Elif Akçay, *Biyoteknolojinin Transhümanizm ve Evrim Bağlamındaki Yeri: İnsan Genom Projesi ve Etik Tartışmalar* (İstanbul: Marmara Üniversitesi Sosyal Bilimler Enstitüsü, Gazetecilik Anabilim Dalı Bilişim Dalı, Yüksek Lisans Tezi, 2020), 87.

14 Newton Lee, "Brave New World of Transhumanism," *The Transhumanism Handbook*, ed. Newton Lee (Switzerland: Springer, 2019), 19.

15 Ali Osman Engin et al., "Davranışlarımızın Genetik ve Çevresel Boyutları," *Kafkas Üniversitesi Fen Bilimileri Dergisi* 1/2 (2008), 38.

the body electrochemically transmits information. Behavior is the result of increased gene activity under the influence of environmental and epigenetic factors.[16] The science of genetics, which studies human biology and bodily structure, is now investigating the effects of this heritage on our behavior and psyche, often making remarkable claims.[17]

Discussions of genetic interventions are generally divided into two main categories: genetic interventions in the line of descent and somatic genetic interventions.[18] This distinction is shaped by the aims and objectives of the interventions and is evaluated ethically. In particular, whether such genetic interventions are carried out for treatment or development and enhancement is at the center of ethical debate.[19] Genetic interventions in the family line aim to transmit genetic changes to future generations by introducing genetic material into an individual's germ cells (eggs and sperm). This is a highly ethically sensitive issue because such interventions can have an impact on not only the individual but also all of his or her descendants. Somatic genetic interventions, on the other hand, are usually applied to an individual's body cells and have an effect only on the individual being treated; these effects are not passed on to subsequent generations. These characteristics make somatic interventions less controversial than genetic interventions. However, both types of interventions raise ethical questions in their contexts.[20] Somatic genetic intervention, also known as gene therapy, aims to treat a specific organ or tissue. This intervention can be performed immediately after birth or in adulthood. However, the effects of such interventions are usually temporary and may need to be repeated periodically throughout an individual's life. Another important feature of somatic interventions is that they only affect intervening individuals and are not genetically transmitted to subsequent generations.[21]

In terms of the manner in which genetic interventions are applied, genetic interventions for line of descent mean interference with human genetic heritage, whereas somatic interventions focus more on solving individual health problems. The distinction between treatment and enhancement plays a critical role in the ethical evaluation of genetic intervention. Treatment-oriented interventions generally aim to eradicate diseases, whereas enhancement-oriented interventions aim to increase human capabilities or to modify individual characteristics.[22] In this context, the interventions that we will discuss in the context of interference with vitrata and which are the main subject of debate are genetic interventions on the line of descent. Almost all discussions on genetic interventions are based on those related to line of descent. Such practices are often theologically opposed to and objected to. This is because genetic interventions in the family line are permanent and are passed down from generation to generation.[23] This phenomenon of hereditary transmission indicates that genetic interventions in the family line interfere with human nature.

3. The Relationship Between Nature and Genetic Determinism

Before moving on to the issue of the mutability of nature, it would be useful to remind us of theological problems that such a situation may raise. In our opinion, the most important issue that arises when we criticize interventions from a theological perspective is genetic determinism. This idea implies that humans are genetically endowed with imprecise and do not change throughout life. Such an idea leads to genetic determinism, and proponents of this view argue that human life and actions are inevitable consequences of the biochemical properties of the cells that make up an individual. These biochemical properties are, in turn, caused by elements in the genetic makeup of individuals.[24] To put it more clearly, genetic determinism is the view that in addition to human existence, intelligence, behavior, development, health, disease and all physical characteristics, behaviors, values, beliefs, emotions, sportive abilities, religious tendencies, antisocial behaviors, gender identities, cultural characteristics are determined by genes.[25] The proponents of genetic determinism, acting scientifically on the process of protein synthesis,

16 Engin et al., "Davranışlarımızın Genetik ve Çevresel Boyutları", 39.
17 Engin et al., "Davranışlarımızın Genetik ve Çevresel Boyutları", 46.
18 Seyithan Can, *Biyoteknoloji ve İnancın Ahlakı* (Ankara: Bilgesina, 2023), 30.
19 Barış, *Umut ve Kaygı Arasında Genetik Müdahale*, 141.
20 National Academies of Sciences, Engineering, and Medicine, *Human Genome Editing: Science, Ethics, and Governance* (Washington, DC: National Academies Press, 2017), 83.
21 Can, *Biyoteknoloji ve İnancın Ahlakı*, 31.
22 Can, *Biyoteknoloji ve İnancın Ahlakı*, 31.
23 Barış, *Umut ve Kaygı Arasında Genetik Müdahale*, 9–10.
24 Matthew Gildersleeve - Andrew Crowden, "Genetic Determinism and Place," *Nova Prisutnost* 17/1 (2019), 142; Türker Kılıç, *Yeni Bilim: Bağlantısallık Yeni Kültür: Yaşamdaşlık* (İstanbul: Ayrıntı Yayınları, 2022), 28; Esra Kartal Soysal, *Gen Ötesi-İnsan Sonrası* (İstanbul: Ketebe Yayınları, 2022), 265; Sibel İnan, "Genin Ötesine Geçmek: Biyoloji Eğitiminde Epigenetik," *İnönü Üniversitesi Eğitim Bilimleri Enstitüsü Dergisi* 8/15 (2021), 81; Bernhard Kegel, *Epigenetik*, trans. Sema Özgün (İstanbul: Say Yayınları, 2022), 44.
25 Niklas Gericke et al., "Exploring Relationships Among Belief in Genetic Determinism, Genetics Knowledge, and Social Factors", *Science & Education* 26/10 (2017), 1226; I De Melo-Martin, "Firing up the Nature/Nurture Controversy: Bioethics and Genetic Determinism", *Journal of Medical Ethics* 31/9 (2005), 526; Sümeyye Güngör - Ramazan Erdem, "Genetik Determinizme Dair

treat the process of protein synthesis as a one-way process. They assumed that information is transferred from DNA to RNA and then to proteins, and that this process is irreversible. This one-sided perspective treats organisms as innate results caused by their genes. Thus, it is implied that human life is under the control of genes and not our own control, and that human destiny is determined by our genetic makeup.[26] Accepting that human beings are born with certain codes supports genetic determinism's claim that human beings are equipped with many qualities that we have identified above and which express human characteristics. The most important theological problem of genetic determinism is human freedom.[27]

In Islamic thought, the concept that an individual is endowed with certain qualities offers a structure that is both theoretically and functionally different from genetic determinism. In genetic determinism, the influence of environmental factors and the free will of individuals is limited. Genetic codes are considered absolute determinants of all individual characteristics. Therefore, it largely ignores human free will and developmental potential. In contrast, the phenomenon of fitrah in Islamic thought does not support the understanding that human beings are endowed with innate potential characteristics but that these potentials are necessarily shaped in a single direction in individuals' developmental processes. While fitrah is recognized as a basic structure or disposition inherent to human beings, it is a dynamic structure that can be shaped and transformed under the influence of external factors, such as growth and cultural and social interactions. From this perspective, instead of imposing a fixed line of destiny on individuals, it offers a wide range of potential that can be shaped by free-will. This understanding emphasizes that human beings can reveal and suppress their inherent potentials. According to Islamic thought, humans can achieve structural and spiritual ascendancy by developing their nature, and neglecting or misdirecting this potential can lead to individual and social collapse.

4. Basis for Nature Flexibility: Epigenetics and Brain Plasticity

Recent developments in genetic science, particularly since 2016, have led to radical changes in our understanding of genetic coding. Emerging as a new paradigm that transcends the limits of traditional genetic coding, epigenetics involves the study of inherited mechanisms that influence gene expression levels without any changes in the DNA sequence. This concept was introduced by British embryologist Conrad Waddington, who proposed that environmental factors can influence the development of an organism by altering how genes work.[28] Epigenetic research has revealed that genetic coding is not limited to DNA sequences, but involves a much more complex and dynamic regulatory system.[29] Epigenetic theory emphasizes that human phenotypic traits (personality, behavior, intelligence, physical characteristics) are shaped not only by genetic makeup and environmental factors.[30] According to this theory, human behavior cannot be evaluated independently of time, space, and culture.[31] Environmental factors (nutrition, stress, social interactions, etc.) and internal experiences (thoughts, emotions) that people encounter throughout their lives can lead to chemical changes on DNA and affect the activity of genes.[32] Therefore, it can be said that cultural, social, and environmental factors, in addition to genetic inheritance, are also determinants in shaping human nature, thus gene-environment interaction offers a more comprehensive explanation.[33]

Brain plasticity plays a central role in the understanding that human nature is shaped by experience rather than being fixed. Studies on the variability of human nature have focused on the concept of brain plasticity. Brain plasticity, one of the most striking findings in neuroscience, shows that although the brain is built on a genetic foundation, it is constantly shaped in response to lifelong learning and experiences. [34] In this process, changes in neuronal connections and synaptic activity lead to the development and change of cognitive, emotional, and behavioral characteristics of the individual. [35] This

Kavramsal İnceleme", *19 Mayıs Sosyal Bilimler Dergisi* 2/3 (2021), 663; Gildersleeve - Crowden, "Genetic Determinism and Place", 142; Soysal, *Gen Ötesi-İnsan Sonrası*, 265; İnan, "Genin Ötesine Geçmek", 81; Kegel, *Epigenetik*, 44.

26 Kılıç, *Yeni Bilim: Bağlantısallık Yeni Kültür: Yaşamdaşlık*, 92.

27 David B Resnik- Daniel B Vorhaus, "Genetic Modification and Genetic Determinism", *Philosophy, Ethics, and Humanities in Medicine* 1/1 (2006), 313.

28 İnan, "Genin Ötesine Geçmek," 77.

29 Kılıç, *Yeni Bilim: Bağlantısallık Yeni Kültür: Yaşamdaşlık*, 28.

30 Barış, *Umut ve Kaygı Arasında Genetik Müdahale*, 73.

31 İnan, "Genin Ötesine Geçmek," 81; Kegel, *Epigenetik*, 303; Barış, *Umut ve Kaygı Arasında Genetik Müdahale*, 83; Soysal, *Gen Ötesi-İnsan Sonrası*, 136–137.

32 Bahri Karaçay, *Mutlu Beyin*, ed. Nurulhude Baykal (Ankara: TÜBİTAK Popüler Bilim Kitapları, 2018), 50–51; Barış, *Umut ve Kaygı Arasında Genetik Müdahale*, 62–63; Kılıç, *Yeni Bilim: Bağlantısallık Yeni Kültür: Yaşamdaşlık*, 27–28.

33 Barış, *Umut ve Kaygı Arasında Genetik Müdahale*, 200; Richard C. Lewontin et al., *Genlerimizden İbaret Değiliz* (İstanbul: Yordam Kitap, 2015), 354–355.

34 Karaçay, *Mutlu Beyin*, 79–80; Mehmet Ödemiş, "Determinizmin Yeni Savunması: Nörobiyolojik İndirgemecilik", *Kader* 19/1 (2021), 44.

35 Norman Doidge, *Kendini Değiştiren Beyin*, trans. İbrahim Şener (İstanbul: Pegasus Yayıncılık, 2019), 101.

finding emphasizes the interaction between nature and nurture, revealing that human nature is not fixed and predetermined, but rather dynamic, shaped by experience.[36]

Throughout life, the human brain is continuously rewired through a process known as neuroplasticity. Synaptic connections and neuronal circuits are continuously shaped by experiences and learning.[37] This dynamic process indicates that individual psychological characteristics, such as identity, personality, beliefs, and behavior, are also in a constant state of change. Repeated activation of mental representations strengthens neuronal networks, resulting in the formation of habits. This indicates that both positive and negative behaviors can be permanent.[38] These findings emphasize that the brain continues to change even in adulthood and that human nature is flexible and open to learning. [39]

Nature is often perceived as a fixed and unchanging essence in the context of human nature and creation. However, modern science has revealed the necessity to re-evaluate this perception by revealing the variability of genetic and neurological structures. When we consider human nature considering the data of modern science, epigenetics, and the dynamism of the brain, we find that human biological nature has a certain degree of flexibility and adaptability.

5. Theological Reflection on Genetic Intervention in Fitrah

Although rapid developments in genetic engineering have opened new horizons for the manipulation of the human genome, this has also paved the way for theological and ethical debate. In particular, the evaluation of human genetic interventions as interventions in an individual's nature is at the center of these debates. However, the concepts of "nature" and "genetics" should be distinguished from each other. The relationship between "genetic intervention and nature," which is frequently encountered in discussions on human nature, is handled without considering that these two concepts have different meanings and cannot be reduced to each other. While genetic intervention can change an individual's physical characteristics or susceptibility to diseases, the motive to believe, which is defined as fitrah, refers more to spiritual and metaphysical dimensions. Therefore, the claim that genetic engineering is a direct intervention in Fitrah is based on a weak foundation.[40] While genetic interventions can affect the biological structure of human beings, the instinct to believe, which is defined as fitrah, has a more spiritual and spiritual dimension. Therefore, the assertion that genetic engineering is a direct intervention in fitrah is a misconception that arises from confusion between these two concepts.[41]

As emphasized in previous chapters, although human biological structure is open to external intervention, it is dynamic and resistant to change. Findings in the field of modern biology and neuroscience, where human nature is examined within the framework of epigenetic mechanisms and brain plasticity, show that the permanent orientation of this structure to a certain pattern of thought, emotion, or behavior is extremely limited. It does not seem scientifically possible to shape the biological or psychological nature of humans in a particular direction through genetic or biotechnological interventions. Epigenetic research has shown that environmental factors can have an impact on gene expression, but these effects are usually temporary and do not alter the basic biological nature of the individual. Similarly, studies of brain plasticity have revealed that neural connections can change throughout life, but these changes do not fundamentally transform the fundamental mental or moral nature of human beings. Therefore, it is possible to state that scientific or technological interventions in the biological nature of human beings do not fundamentally change their ontological and spiritual structures.

This emphasizes that human nature is not altered by genetic or biotechnological interventions, which agrees with verses in Islam's Holy Book, the Holy Quran. The following statement in verse 30 of Surah Rum supports this: "Turn your face toward religion as one who turns toward the truth. Hold fast to the nature of how Allah created mankind. There were no changes in Allah's creations. This is the true religion. But most people do not know."[42] In this verse, human nature is presented as a foundation that is

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36 David Eagleman, *Beyin: Senin Hikayen*, trans. Zeynep Arık Tozar (İstanbul: Domingo Yayınevi, 2019), 10,6,21; Ödemiş, "Determinizmin Yeni Savunması," 43; Robert Winston, *Evrenin En Karmaşık ve Gizemli Nesnesi İnsan Beyni* (İstanbul: Say Yayınları, 2012), 113; Kılıç, *Yeni Bilim: Bağlantısallık Yeni Kültür: Yaşamdaşlık*, 105; Doidge, *Kendini Değistiren Beyin*, 293-294,217; Catherine Malabou, *Beynimizle Ne Yapmalıyız?* trans. Selim Karlıtekin (İstanbul: Küre Yayınları, 2018), 39; Mert İnan, *"Beyin Nedir?"den "Yaşam Nedir"e: Bir Hayat Serüveni Türker Kılıç* (İstanbul: Epsilon, 2021), 153; Marc A.T. Muskavitch, "Genetic Determinism in the Post-Genomic Age," *Integritas: Advancing the Mission of Catholic Higher Education* 3/1 (October 15, 2014), 19.

37 Eagleman, *Beyin: Senin Hikayen*, 6.

38 Doidge, *Kendini Değistiren Beyin*, 217.

39 Eagleman, *Beyin: Senin Hikayen*, 21.

40 Akçay, "İnsanliğin Ortak Dİni Tem", 167.

41 Çifçi "Naturalist Verilerin Teistik Sonuçları (Fıtrat Kavramı Özelinde Bir Yorum Denemesi)", 353.

42 al-Rūm 30/30.

shaped in accordance with Allah's creation and is closed to change. The expression "the nature that Allah created mankind with" in verse 30 of Surah Rum emphasizes that the structures and spiritual structures of human beings are shaped in accordance with Allah's will. This verse emphasizes that this "search for the truth and the freedom to find the truth" inherent in the creation of human beings is of divine nature, and the verse goes on to say, "There is no change in the creation of Allah", indicating that this naturalness built into human nature is in fact imperishable. This implies that Islamic thought is an inherently unchangeable reality. The foundation of the tawhid, moral, and human values that Islam represents is inherent in human nature. However, the quality of this type of material does not change. This is also supported by the concepts of religion and nature mentioned in the verse on nature, except that people can act contrary to their innate beliefs, which is possible through being influenced by sensory desires.[43] Therefore, it can be said that genetic interventions or biotechnological applications to human nature do not change the spiritual and moral orientations or the natural structure of the individual. This also reveals that such interventions do not pose any problems in terms of interfering with nature from a religious perspective. This understanding of human creation can be considered in harmony with both modern scientific data and statements in the Holy Qur'an.

Conclusion

In Islamic thought, the concept of fiṭrah is emphasized in various dimensions. It primarily refers not to the biological nature of human beings but to the divine inclination embedded within them — the innate disposition or readiness to recognize and accept divine unity (tawḥīd). Although different interpretations have been offered regarding the scope of the religion or belief this disposition corresponds to, fiṭrah may be broadly understood as the human tendency or need to believe. When interpreted in this sense, it becomes evident that this spiritual and moral potential, which expresses humanity's orientation toward God, cannot be altered by genetic or biotechnological interventions.

However, acknowledging that fiṭrah is immutable does not imply that human beings are incapable of distorting, neglecting, or corrupting their innate dispositions through their choices. The Qur'an and classical Islamic scholarship emphasize that while fiṭrah itself remains a constant divine endowment, individuals may obscure it through moral deviation or heedlessness. Such corruption reflects a deviation from the fiṭrah, not a transformation of its essence. Hence, human beings cannot change the divine core of fiṭrah, but they may fail to actualize it in their moral and spiritual lives.

In contrast, ṭabīʿah, human nature in its philosophical sense encompassing the biological, instinctual, and sensual aspects of existence, is subject to change and modulation. Modern scientific findings, particularly in genetics, epigenetics, and neuroplasticity, demonstrate that these biological and behavioral dimensions of humanity are dynamic, adaptable, and open to positive and negative transformations. This distinction underlines that while human ṭabīʿah may evolve or deteriorate under various influences, divinely grounded fiṭrah remains beyond alteration.

Therefore, we may conclude that all forms of scientific or biotechnological intervention—especially genetic interventions —can influence human ṭabīʿah but not fiṭrah. The theological understanding of fiṭrah as the divine disposition to believe, recognize truth, and incline toward tawḥīd remains unaffected by any material or biological alteration. This view aligns with the Qur'anic verse, "There is no change in the creation of Allah" (al-Rūm 30:30), affirming that while the human biological nature may undergo transformation, the divine orientation constituting fiṭrah is immutable and eternally safeguarded by divine will.

[43] Bor, "Din ile İlişkisi Bağlamında Fıtratın Mahiyeti", 1785.

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