



Seminar

Islamic Ethics and the Genome Question

April 3-5, 2017

Center for Islamic Legislation & Ethics (CILE)

Doha, Qatar

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Program: Ethics and the Genome Question

Day 1	Monday April 03, 2017
09:00 – 09:10	Opening and orientation – <i>Mohammed Ghaly</i>
09:10 – 09:30	Genomics and Islam: The Difficult Questions - <i>Fowzan Alkuraya</i>
09:30 – 09:45	Response - <i>Ahmed Raissouni</i>
09:45 – 10:05	Conceptualizing the Human Being: Insights from the Genethics Discourse and Implications for Islamic Bioethics - <i>Aasim I Padela</i>
10:05 – 10:15	Response - <i>Oliver Leaman</i>
10:15 – 10:30	Coffee break
10:30 – 11:30	Discussion
11:30 – 11:50	In the Beginning was the Genome: Genomics, Faith and the Quest for Self-Knowledge - <i>Hub Zwart</i>
11:50 – 12:10	Genome Editing - Creation, Kinds and Destiny: A Christian View - <i>Trevor Stammers</i>
12:10 – 12:20	Response – <i>Arzoo Ahmed & Mehrunisha Suleman</i>
12:20 – 13:20	Prayer and lunch break
13:20 – 16:00	Discussion and concluding remarks
19:00 – 21:00	Dinner

Day 2	Tuesday April 04, 2017
09:00 – 09:10	Opening and orientation – <i>Mohammed Ghaly</i>
09:10 – 09:30	Genetic Balance between the Authenticity of Creation and the Flow of (Genetic) Globalization: A Semantic Interpretation and Qur’anic Approach - <i>Abbas Ameir</i>
09:30 – 09:40	Response - <i>Saadia Bendenia</i>
09:40 – 10:00	Islamic Ethics and the Genome Question Does genomics raise any new issues for Islamic ethics? - <i>Oliver Leaman</i>
10:00 – 10:10	Response - <i>Aasim I Padela</i>
10:10 – 10:25	Coffee break
10:25 – 11:25	Discussion
11:25 – 11:45	The Genome and Human Nature: An Analytical Approach Based on Islamic Philosophy and Ethics - <i>Saadia Bendenia</i>
11:45 – 11:55	Response - <i>Ayman Saleh</i>
11:55 – 12:15	On the Genome and Personhood: Why the Soul Matters - <i>Arzoo Ahmed & Mehrunisha Suleman</i>
12:15 – 12:25	Response - <i>Trevor Stammers</i>
12:25 – 13:25	Prayer and lunch break
13:25 – 16:00	Discussion and concluding remarks
19:00 – 21:00	Public Lecture: What is Human Nature? Ethical Reflections Human Genes and the Soul Panelists (TBC): <i>Fowzan Alkuraya, Hub Zwart, Saadia Bendenia, Mohammad Naim Yasin</i> Moderator: <i>Mohammed Ghaly</i>

Day 3	Wednesday April 05, 2017
09:00 – 09:10	Opening and orientation – <i>Mohammed Ghaly</i>
09:10 – 09:30	The Genome Project and Gene Therapy: Issues in the Light of Faith-Related Constraints, Ethical Guidelines, and the Objectives of Islamic Law - <i>Ali Al Quradaghi</i>
09:30 – 09:50	Paper presentation – <i>Mohammad Naim Yasin</i>
09:50 – 10:05	Coffee break
10:05 – 11:05	Discussion
11:05 – 11:25	“Altering God's Creation” as an Argument for Forbidding Genetic Modification: A Study in Islamic Jurisprudence - <i>Ayman Saleh</i>
11:25 – 11:35	Response – <i>Abbas Ameir</i>
11:35 – 11:55	Paper presentation – <i>Abdullah Aljudai</i>
11:55 – 12:55	Prayer and lunch break
12:55 – 13:55	Discussion
13:55 – 14:05	Publication plan (P.S. Van Koningsveld)
14:05 – 16:00	Discussion and concluding remarks

**The Genome and Human Nature:
An Analytical Approach Based on Islamic Philosophy and Ethics**

Saadia Bendenia

Abstract

Understanding human nature has been a core issue throughout the history of science. This is due to the fact that an objective analysis of human thought and behavior can offer invaluable insights into "pure human nature." However, our inability to predict how people may affect the course of history urges a reconsideration of what is supposedly considered as "normal behavior". This presumed human nature can be analyzed at two separate levels: biological and psychological.

A) The biological nature

Some biological changes are unpredictable, such as abnormal cellular mutations (e.g. cancer) or physical deformities that occur late in life. However, genetic mapping can help predict such changes, thanks to the recent advances in eugenics. Biological nature can even be altered to prevent such changes by inhibiting genetic proteins. Obviously, the physical aspects of human nature are not fixed.

B) The psychological nature

The psychological aspects of human nature can also be changed through analyzing IQs and the treatment of behavioral conditions, such as autism and common speech disorders. These conditions are reminders of how limited our understanding of human nature is. For example, we do not understand why individuals suffering from autism, delayed speech, or epilepsy tend to be exceptionally talented. These issues make it clear that science is currently unable to predict changes in personality or behavior. Recent developments in genetics can provide answers to such questions in the form of data included in the genes associated with such behavioral patterns.

While research on genetics can help us better understand human nature, it poses several serious ethical and ontological challenges. Can modern technologies obliterate human identity? Can research on genetics alter human nature? Will the biological applications of genetics render the human body a mere specimen in a laboratory?

At the core of this epistemological challenge is the question of whether human nature can change. This question has been subject to much debate. For example, some anthropologists, such as Levi Strauss, argue that the structure of the human mind has been stable since pre-historic times. Alternatively, Islamic history suggests that human nature is dynamic, as some population groups were significantly taller than what we now consider normal height. For example, some populations were substantially taller than modern humans, indicating that human genes have undergone unexpected biological change. We can better understand the relation between genetics and human nature by looking at these changes from different philosophical perspectives, including those of Aristotle, Descartes, Hume, and Habermas. These philosophical views allow us to analyze this relation in terms of basic philosophical concepts, such as beauty and morality, within empirical and

pragmatic frameworks. Similarly, we can analyze the relation between genetics and human nature within traditional and contemporary Islamic perspectives on ethics and jurisprudence. Our purpose here is not to see how genetics fit within Islamic ethics and jurisprudence, but to develop an Islamic framework for the ethics of genetics. This type of framework is necessary because as genomics develops, we might expect scientists to identify genes responsible for human traits, such as violence and hatred. This paper is an attempt to understand the connection between genomics and human nature within the frameworks of the philosophy of science and Islamic ethics.

It is necessary to start out with the Islamic view on Creation and how human beings came to be. Islam regards the creation of humankind as a process that does not belong to this world. In other words, the source of humanity is not material, but an act of divine Creation. Al-Bukhari narrates that the Prophet, peace be upon him (PBUH) said: "God created Adam in his image, and he was sixty feet tall." When this original human form was introduced to the earth, it became subject to the laws of this world and changed accordingly to adapt to the new environment.

This view begs the question of how much of the original human form has survived. Darwin's Theory of Evolution came out as an attempt to answer this question from a biological perspective. Regardless of the debate on whether this theory fits with Islamic teachings, it is credited with raising some critical questions regarding human biological nature and how this nature may change over time as a result of interaction with the environment.

Genomics seeks to accurately decipher human biology with the promise to prevent diseases by genetically predicting and preempting them, and to enhance the human physical form, through cosmetic surgeries and organ transplants. Nevertheless, such scientific developments are fraught with ethical challenges. These challenges include bioethical issues concerning the ethics of medical procedures and their effects, as well as religious issues, such as human intervention to alter God's Creation. Philosophy is uniquely positioned to offer a perspective urging the rethinking of human nature as a phenomenon rather than a given fact.

In the sections below, we will discuss different scientific and philosophical views on the relation between genomics and human nature in light of Islamic ethics.

Philosophical views on human nature

Human nature has always been a main topic of philosophical investigation. As a result, there are too many, sometimes radically different, philosophical perspectives on this topic to include in our study. Thus, we will focus only on the major perspectives that have had a direct impact on the scientific development of genomics. All these views try to address one question: What is human nature? This question raises several issues, such as whether human nature can change, the connection between the soul and the body, and how human nature determines behavior, among many others. This question also has to do with the orientation that should be given to human nature, in a way that leads to a better understanding of the latter.

Socrates offers one of the earliest philosophical perspectives on human nature. He was mostly concerned with the defining criteria of humanity, as he argues that "true knowledge is knowledge of the self, [so you should] know yourself!"¹ Socrates was not concerned with the natural world, but his main focus was the human "self." In Plato's *Republic*, Socrates divides the soul into three components: desire, intellect, and vitality (*Thymos* in ancient Greek). *Thymos* is the part that seeks others' approval and recognition.² Thus, Socrates views the mind as the divine part of humanity, and since this part (also called *Demon*) is divine, it is immortal.³

Socrates successfully changed the direction of philosophical investigation from its focus on the material world to the issues of the natural world and self-awareness. But it did not evolve into a comprehensive and fully-fledged school of philosophy until Plato established the self as the center of philosophical inquiry. For Plato, the soul is "the essence that gives life to matter."⁴ Thus, Plato followed in Socrates' footsteps in dividing the individual into a body and a soul. For Plato, the soul is distinct from the body or a "self-driven intellectual essence."⁵

Aristotle follows Plato in arguing for a distinction between human nature and material nature. He extensively focused on the issue of the "self" to the point that he considered it the most important object of study.⁶ However, he did not accept Plato's distinction between the soul and the body. Rather, he argued for the full unification of both forms.

In his discussion of social justice, Aristotle argues that the human notions of right and wrong, that we call nowadays human rights, were "ultimately based on human nature itself". In other terms, "without understanding how natural desires, purposes, traits, and behaviors fit together into a human whole, we cannot understand human ends or make judgments about the right and the wrong or the good and the bad."⁷ This view has had a significant effect on many contemporary sociologists.

Generally speaking, "Aristotle, together with his immediate predecessors, Socrates and Plato, initiated a dialogue about human nature that continued in the Western philosophical tradition until the early years of the modern period, when liberal democracy was born."⁸ This dialogue has continued into the philosophical works of Descartes who was inspired by Aristotelian philosophy to explore human nature. Descartes' goal was to "change the intellectual system", as he called for redefining the concept of intellect in a much broader sense, as he explained in his books

¹ F. Osmos et. al. *A Short History of Philosophy*, translated by Ibrahim Sallum, Dar Al-Fikr, Moscow, 3rd edition, 1979, page 36.

² Fukuyama, Yoshihiro, *Our Posthuman Future: Consequences of the Biotechnology Revolution*. New York, Farrar, Straus and Giroux, 2002, translated by Ihab Abdul Rahim Saad, Abu Dhabi, Emirates Center for Strategic Studies, first edition, 2006, page 62.

³ Plato, *Phaedo (On Immortality)*, translated by Izzat Qurani, Cairo, Dar Al-Nahda Al-Arabiya, 1973, page 288.

⁴ Gérard Durozoi, André Roussel, *Dictionnaire de philosophie*, éd. Fernand Nathan, Paris, 1987, p. 15.

⁵ Al-Naji Al-Tikriti, *Al-Falsafa Al-Akhlaqiyah Al-Aflāḥiyyah 'inda Mufakkirī Al-Islām* ("The moral platonic philosophy of Islamic intellectuals"), Beirut, Dar Al-Andalus, 1983, page 20.

⁶ Muhammad Ali Abu Rayan, *Tārīkh Al-Fikr Al-Falsafī* ("History of the philosophical thought"), Vol. 2: *Aristū wal-Madāris Al-Muta'akhira*, Beirut, Dar Al-Nahda Al-Arabiya, 4th edition, 1976, page 118.

⁷ Fukuyama, op. cit., page 26.

⁸ Ibid., 25.

Meditations on First Philosophy (1641) and *Principles of Philosophy* (1644).¹ Descartes called for "viewing reason as the starting point on the path of knowledge,"² thus promoting reason, and even equating humanity with reason.

Descartes' introduced reason as an essence that is independent of the body.³ His argument on the physical nature of mankind was "a major breakthrough that encouraged scientists to study human physiology in order to understand how this 'machine' works."⁴ Descartes' work was beneficial to many people as to their character and knowledge, and inspired many philosophers and scientists alike to investigate human nature. The rigor of his argumentation strengthened his intellectual influence which dominated and lingered for a very long time.

John Locke was one of Descartes' staunchest opponent, as he led a scientific movement based on empiricism and was very critical of the Cartesian *cogito*. While Descartes focused on reason as the foundation of knowledge, as seen in his famous quote "I think, therefore I am", Locke saw scientific experiments as the only source of knowledge. Locke argued that humans are born as blank slates, and it is the environment that forms the mind: "Children's minds resemble a blank slate; they contain no notions until they receive sensations through physical stimuli."⁵ Accordingly, we are all conditioned by our environment, and this is where Locke and Descartes disagree, as the latter viewed humanity through meditation and contemplation.

David Hume followed John Locke in adopting the rational approach in all investigations of human nature. For Hume, "physical experience is the only source of everything we learn."⁶ He goes on to say: "Direct observation is the source of knowledge. How can we acquire knowledge, consider the self as a unique essence and describe it as a subjects of knowledge?"⁷ In other words, the only things that exist are those we can experience, and those are the only things we can know about. Thus, Hume rejects any *a priori* knowledge about human nature. Hume's ideas were audacious, as they challenged the rational approach, which attributed knowledge to *a priori* natural notions and principles.

The main question for Hume was: How can reason become a human nature? He asserts that "human nature is the only science of man,"⁸ coming to the conclusion that "reason is influenced by two types of forces – the emotional forces and the social forces, which subsume each other."⁹ Thus, he relied on the fundamental

¹ Paul Ricœur, *Philosophie de la volonté ; le volontaire et l'involontaire*, Aubier, Montaigne, Paris, 1967, page 42.

² Ibrahim Farid Al-Dur, *Al-Usus Al-Bayulūjiya li-Silūk Al-Insān* ("Biological foundations of human behavior"), Beirut, Manshurat Dar Al-Afaq Al-Jadida, 1983, page 20.

³ "Chomsky, Foucault: on Human Nature" (debate), translated by Amir Zaki, Lebanon, Dar Al-Tanwir (Egypt, Tunisia, Lebanon), 2015, pages 29-31.

⁴ Ibrahim Farid Al-Dur, *op. cit.*, 1983, page 21.

⁵ See Fouad Zakaria, *Nadhariyat Al-Ma'rifa wal-Mawqi Al-ṭabī'ī*. Cairo, Maktabat Nahdat Misr, 1962, page 77.

⁶ See David Hume, *An Enquiry Concerning Human Understanding*, translated by Musa Wahba, Beirut, Dar Al-Farabi. 2008, page 11.

⁷ *Ibid.*, p. 13.

⁸ Gilles Deleuze. *Empiricism and Subjectivity: An Essay on Hume's Theory of Human Nature*, translated by Usama Al-Haj, Beirut, Al-Mu'asasa Al-Jami'iya lil-Dirasat, 1999, page 17.

⁹ *Ibid.*, page 5.

principles guiding the soul for defining the human nature, such as emotions and sensations.

As for methodology, Hume proposed that “the science of human nature can be treated in two different ways, each of which has its own special merit and may contribute to the entertainment, instruction, and reformation of mankind. One of the two treatments considers man as mainly born for action.”¹ Philosophers who support this approach view mankind as a moral creature, and they strive to judge human actions and promote virtue. Accordingly, the ultimate goal at this level is to regulate and straighten up human behavior. “Philosophers who do moral philosophy in the second way focus on man as a reasonable creature rather than as an active being, and try to shape his thinking more than to improve his behavior.”² What distinguishes Hume’s approach is that it is reconciliatory, as it seeks to combine both approaches. A human being is a moral being, but also an emotional being, with both sides necessary for any analysis of human nature. Moreover, Hume proposes additional aspects of humanity to examine and analyze, such as the psychological, social, and even political aspects.

Hume concludes that “the psychology of human nature is a psychology of tendencies, and even an anthropology of ethics, politics, and history and, ultimately, a true criticism of psychology”.³ Accordingly, he linked human nature several elements, foremost of which intelligence, morality, and emotions. These elements play altogether a critical role in the study of human nature, especially from a psychological point of view.

Toward the end of the 19th century, the study of human nature took a new turn with the introduction of Sigmund Freud’s theories. Freud argued that human nature can be understood through the study of the subconscious, which is “where oppressed desires and previous experiences lie.”⁴ His views proved to be quite controversial because he was the first, in modern times, to introduce the concept of the subconscious and its impact on human life.⁵ Freud’s proposal had its roots in Darwin’s idea that human instincts are a natural extension of less evolved animals.”⁶ The main difference between Freud’s and Darwin’s views is the concept of the subconscious.

While Freud and his proponents agree that the subconscious distinguishes humans from other species, Marxist philosophers argue that labor is the defining criteria of humanity. In other terms, the human being fulfills his humanity through work. Marx states in his *Economic and Philosophic Manuscripts* that “the entire so-called history

¹ Ibid., page 21.

² Ibid., page 22.

³ Ibid., page 18.

⁴ Fawz Bint Abdul Latif Kamil Kurdi, *Al-Mu’athirāt Al-Ghaybiya fī an-Nafs Al-Insāniya bayna ad-Dīn wal-Falsafa* (“The unseen metaphysical effects on human soul between religion and philosophy”), Riyadh, Markaz Al-Ta’sil Lid-Dirasat wal-Buhuth, 2015, page 26.

⁵ Ali Al-Wardi, *Fī Al-Ṭabī’a Al-Bashariya* (“On human nature”), Jordan, Mansurat Al-Ahliya, 1996, pages 113-114.

⁶ Abu Al-Yazid Al-Ajami, *Ḥaqīqat Al-Insān bayna Al-Qur’ān wa-Taṣawwur Al-’Ulūm* (“The truth of humankind between the Qur’an and the scientific vision”), Riyadh, Rabitat Al-Alam Al-Islami, 22:1, 2017, page 18.

of the world is nothing but the creation of man through human labor.”¹ In this context, and based on his historic and dialectic materialism, Marx rejected the idea that human nature is fixed. For him, human nature is dynamic, and is therefore, constantly changing.² Although dialectic materialism refused to attribute any fixed nature to mankind, it sees no issue in viewing mankind as a product of nature.³ Accordingly, mankind is an indispensable part of the universe and is subject to the laws of evolution in the same manner as all other living creatures. Finally, the concept of human nature as viewed by Marxists was relative, since humanity itself is a changeable and variable phenomenon that is subject to elevation and evolution.

A considerable number of contemporary philosophers have adopted the view that human nature is dynamic, as they believe that "human adaptability is almost unlimited, since the social environment of people can affect them and prompt them to adopt any behavior." This means that human nature is not fixed, but constantly changing, as it is the result of all the experiences acquired and the environmental variables.

In response to this view of human nature, we see the “modern bias against the concept of human nature *per se*. Many proponents of socially motivated analyses of human nature have strong hidden agendas. They hope to use social engineering in order to create just and fair societies based on a mere ideological principle.”⁴ In other words, the justifications they offer to explain human behavior aim to conceal political interests. What these views fail to recognize is that “while human behavior is flexible and variable, it is not infinitely so.”⁵ At a certain point, natural instincts and the original elements of human nature take over to affirm that the essence of humanity is the fixed innate nature. In other words, external factors and innate natural readiness are at the core of human nature.

In summary, we see that all philosophical views attempt to analyze and explain human nature. Modern and contemporary schools of thought have also attempted to present a new conceptualization of human nature beyond the issues discussed in classical philosophy, such as existence and metaphysics. However, modern philosophies suffer from the inability of their narratives to reach a fully developed analysis of human nature. Most modern philosophies focus on the elements forming human nature in an attempt to determine which elements are more dominant or effective. The answers typically depend on the particular philosophical backgrounds at play. For some, the philosophical background is a set of fixed innate elements. For others, the philosophical background features a concept referring to evolution or a relative and changing concept. Therefore, we still do not have a comprehensive view that fully accounts for human behavior. Human nature is a problematic concept that involves several elements engulfed in ambiguities and complications, which inevitably leads to diverse readings and interpretations.

¹ Zakaria Ibrahim, *Al-Ṭabīʿa Al-Bashariya fī Falsafat Kārl Mārḫ* ("Human nature in Karl Marx's philosophy"), *Alam Al-Fikr*, 2:1, 1971, page 259.

² Steven Rose et al., *ʿIlm Al-Aḥyāʾ wal-Ayduyulūjyā wal-Ṭabīʿa Al-Bashariya*, ("Biology, ideology, and human nature"), translated by Mustafa Ibrahim Fahmi, Kuwait, Al-Majlis Al-Watani Lil-Thaqafa wal-Funun wal-Adab, 1990, page 256.

³ Zakaria Ibrahim, *op. cit.*, page 91.

⁴ Fukuyama, pages 25-26.

⁵ *Ibid*, page 26.

The biological approach to human nature

The debate over human nature is not limited to philosophical discussions, but encompasses modern biology, physiology, and biomedical research, which have all witnessed massive leaps of progress. In this context, one might notice a disagreement between the perspectives of philosophers and scientists on human nature. It is a unique kind of academic debate that combines empiricism and the biological experimental approach. This debate aims to investigate the relation between the individual and nature, and to develop a better understanding of human behavior. How do biologists see human nature, especially in light of the recent advances in genetics and the recent achievements in life sciences? What are the main issues that scientists raise in this regard?

Modern biology emerged during the 17th century to study living organisms. Early efforts in modern biology aimed to conduct experiments on living organisms according to specific technical and scientific principles. However, scientists quickly shifted their interest to the possibility of changing human physiology. Results in this research area were quite limited until Darwin introduced his Theory of Evolution and the Principle of Diversity, thus opening the doors for a new way of studying living organisms. Darwin observed that the "hereditary traits are transmitted as features to offspring, regardless of (or not only through) environmental factors."¹ This perspective is based on the idea that all life forms are somehow connected.² In other words, the parents' genetic features are transmitted to children because the environment is not a determining force in shaping the human form as previously thought. More importantly, Darwin argues that some genetic elements play a critical role in determining human behavior.

Darwin's theory triggered a shift in our understanding of human nature. He decisively refuted the idea that humans are superior to other species. He even saw humans as equal to animals. His hypotheses led to raising the serious and critical issue of the "animalization" of humankind, by posing the question of whether humans are the descendants of a primate.³ Such a hypothesis led to a clash between scientists and religious scholars over the issue of Creation.

Darwin's work set the stage for other scientific developments, but his hypotheses were confirmed only when, in 1867, George Mendel, an Augustinian friar, carried out a series of successful experiments on plants, thus laying the foundations for modern genetics.⁴ Mendel's work was not widely recognized until 1900, when a group of scientists successfully replicated his experiments. Mendel's Principles of Heredity were reestablished as "genetics," a term coined by Wilhelm Johannsen. The name

¹ Karim Hasanayn, *Al-Khalq bayna Al-'Ankabūtiya Al-dārwinīya wal-Ḥaqīqa Al-Qur'āniya* ("The Creation between Darwin's bark spider and the Qur'anic truth"), Cairo, Nahdat Misr, 3rd edition, 2004, page 110.

² James Watson, Berry Andrew, *ADN: le secret de la vie*, translated into French by Barbara Hochstedt, Éditions Odile Jacob, Paris, 2003; page 14.

³ Maurice Bucaille, *Aṣl Al-Insān bayna Al-'Ilm wal-Kutub Al-Samāwiya* ("La Bible, le Coran et la Science : Les Écritures Saintes examinées à la lumière des connaissances modernes"), translated by Fawzi Shaaban, Al-Maktaba Al-Ilmiya, undated.

⁴ David Moore, *The developing genome, an introduction to behavior epigenetics*, Oxford university press, 2015, page 28.

“genetics” is derived from the Greek term *genea*, which means “generation.”¹ At the time, it was only known that some invisible organisms are responsible for the genetic make-up of plants and animals. Humans, on the other hand, were not subject to genetic research because they reproduce at a much slower pace and due to issues concerning autonomy and privacy, as scientists noted.² It was not long afterwards, however, that “genetic research started focusing on human nature in search of the defining criteria of the human race, which is sometimes threatened by the revolution in biotechnology,” as Fukuyama noted.³

By 1944, genetic research reached a point where it became clear that DNA is the genetic system that carries the entire mapping of biological life. However, the structure of DNA was far from clear and many questions remained unanswered. Scientists did not have enough knowledge to explain how all genetic information is stored in a sequence of interrelated chemical units. Nobody understood how genetic information is transmitted to offspring either after the cells break up.⁴ The main question about the nature of the genetic code remained a mystery.

The turning point in genetic research emerged in 1953, when James Watson and Francis Crick discovered the structure of DNA.⁵ They realized that genes are structured as a double helix of deoxyribose nucleic acid, which carries all genetic information. Building on these developments, Daniel Cohen and Ilya Chumakov identified the actual structure of genes and published the complete map of Chromosome 21 in the scientific journal *Nature*.⁶ They concluded that “all living organisms have a DNA that carries genetic information.”⁷

These scientific breakthroughs triggered a massive controversy regarding the role of genes in controlling human behavior. At the core of this controversy lies the question of how much of human nature is genetic and how much is acquired, which relies on the question as to why human beings carry particular traits and display particular behaviors? This controversy is still ongoing between proponents of biological determinism and proponents of social determinism.

Proponents of biological determinism see genetics as the only factor that controls human behavior. They believe that “human lives and actions are inevitable consequences of the biochemical properties of human cells”. In the end, according to them, “human behavior and consequently human society are determined by a set of specific features encoded in transmissible genes that appear in the behaviors of all individuals.”⁸ Accordingly, genetics determine human personality, and therefore, human nature is biological in essence and cannot change. Conversely, there is

¹ Charles Offrey, *Mā Al-Jīnāt* (“What are genes?”), translated by Abd-al-Hadi Al-Idrisi, Abu Dhabi, Hayat Abu Dhabi Lil-Siyaha wal-Thaqafa. 2012, pages 15-16.

² Daniel J. Kevles, Leroy Hood, *The Code of Codes: Scientific and Social Issues in the Human Genome Project*, translated into Arabic by Ahmed Mustajir, Kuwait: Al-Majlis Al-Watani lil-Thaqafa wal-Funun. 1997, p. 14.

³ Fukuyama, op. cit., p. 131.

⁴ James Watson, *Gènes, génomes et société*, translated by Jean Mouchard, Éditions Odile Jacob, Paris, 2003, pages 15, 16.

⁵ David Moore, op. cit., p28.

⁶ Paul Rabinow, *Le déchiffrement du génome*, Éditions Odile Jacob, Paris, p77.

⁷ Bertrand Jordan, *Thérapie génique, espoir ou illusion ?* Éditions Odile Jacob, Paris, 2007, p. 31.

⁸ Steven Rose et al., 18.

another view that rejects biological determinism, since biology, according to this view, "stops at the moment of birth and is replaced by social factors."¹ Proponents of social determinism see no genetic influence on personality. In fact, they even see no personality present at birth, in the first place, as they believe that personality develops through education and socialization and is not the result of dominant genetic characters.²

Biological determinists believe that "human nature is restricted by genes."³ Accordingly, all human behaviors are genetically encoded, and human traits cannot be changed. Social determinists, on the other hand, believe that "human nature is infinitely adaptable."⁴ For them, genetics have no significant impact on personality, psychology, or behavior, which all develop at an early stage in life, and thus may give the impression that they are genetically determined. By rejecting biology and recognizing only social structure, individual differences are only interpreted in terms of social power.⁵

This controversy had a political background with consequences that penetrated deep in everyday life. Ideological determinisms quickly waned in favor of more comprehensive theories that recognize individual differences and the possibility of change. Scientific developments during the first half of the 20th century have demonstrated that human life is the result of the dynamic interaction between biology and the environment, where "genetics play a critical role in human life, but is not independent of other factors."⁶ Such radical views were at the heart of the general misunderstanding regarding genetics, since "human nature is both biological and social."⁷

As genetics further developed as an academic field, life sciences have made a series of significant discoveries regarding human nature.⁸ Experiments have demonstrated that genes are not only responsible for genetic features, but they also play an important role in determining many social and psychological traits. Thus, scientists have concluded that "genes carry an actual functional program for the full human life."⁹ In other words, genes are the key to understanding human nature, and they are the very definition of human identity. A new field of genetic applications emerged, and eventually "modern biology started to offer empirical content that directly sheds light on human nature."¹⁰ New directions in biochemistry, for example, seek a better understanding of human nature. This means that "research is no longer interested in understanding the world and humankind, but also in changing and developing humankind."¹¹ By understanding the structure and

¹ Ibid., page 23.

² Alfred Adler, *op. cit.*, page 163.

³ Steven Rose *et al.*, page 18.

⁴ Ibid., page 23.

⁵ Ibid., page 23.

⁶ Charles Offrey, *op. cit.*, page 65.

⁷ Steven Rose *et al.*, *op. cit.*, page 26.

⁸ Fukuyama, *op. cit.*, 130.

⁹ Ibid., page 98.

¹⁰ Ibid., page 25.

¹¹ Ahmed Mahmud Subhi and Mahmoud Fahmi Zeidan, *Fī Falsafat Al-Ṭib* ("Philosophy of medicine"), Beirut, Dar Al-Nahda Al-Arabiya, 1993, page 148.

functioning of genes, scholars aim to investigate the possibility of changing and improving human biology.

It is now clear that "the real subject matter of scientific endeavors is human nature."¹ It is also clear that the concept of human nature is quite complex and intractable. It has evolved from the classical view into a biological view. Defining this concept is an extremely complex endeavor especially with the heated controversies surrounding it. The concept of human nature has now an empirical definition, thanks to the progress of sciences, even though it is not very specific yet. This begs the question of whether human nature can be delimited and changed. Is it possible to run experiments on humans in laboratories or is this only a mere scientific hypothesis for the time being?

The question of the genome and human nature

At the heart of all the philosophical and scientific debates over human nature, and despite all the progress in modern genetics, there are still some persisting questions. For example, it is not yet clear whether we can modify human genes and alter human nature. Some scholars argue that "we still do not have the ability to modify human genes in a truly meaningful way. We may even find out that it is not possible at all."² Others look at the recent developments in genetic engineering and claim that the ability to alter human nature, thanks to cutting-edge technology, is just around the corner, if not inevitable. This view raises the question of whether science can destroy life and corrupt nature. Is it even possible to invest in research on the human genome to improve human nature in a responsible way that helps us avoid destruction and intimidation?

A. Genomics and human engineering

When James Watson and Francis Crick cracked the genetic code, "genes became formally recognized as organisms that are responsible for the transfer of genetic information through reproduction, from generation to generation."³ While this discovery opened the doors for many others, the genetic code itself continued to be a mystery. The main question remained: "How do genes contribute to the functioning of organisms and determine which features emerge?"⁴ The mystery persisted until 1960, when Crick and his team realized that "there has to be a communication code connecting the three DNA nucleotides to the 20 amino acids that form the proteins."⁵ This genetic code is the RNA polymeric molecule, which is also called the RNA transfer.⁶ It was Crick again who finally identified all the sequences in the DNA code, which he called the "central creed of molecular biology".⁷ This discovery was a turning point in the development of genetics, as it made it

¹ Gilles Deleuze, page 27.

² Fukuyama, page 109.

³ Charles Offrey, 29.

⁴ Ibid., page 27.

⁵ Ibid., page 27.

⁶ Matt Ridley, *Al-Jīnūm wal-Sīra Al-Dhātiya lil-Naw` Al-Basharī* ("Genome: The Autobiography of a Species in 23 Chapters"), translated by Mustafa Ibrahim Fahmi. A-Majlis Al-Watani Lil-Thaqafa wak-Funun wal-Adab. 2001, page 63.

⁷ Charles Offrey, 28.

possible for biotechnology to emerge and launch explorations into genetic modification.

At this point in the development of medical and biological sciences, human genetics became a field that is recognized in its own right. Scientists have realized that it is necessary to develop a well-established, principled field that focuses on modifying human nature, based on rigorous scientific foundations. These advances in genetic research “reflect humans’ ability to control nature and human nature in particular.”¹ However, is it possible for us to understand all the genes that make up the human structure?

As a result, these advances in genetic research were not only a revolution in genetic engineering, but also in biology. With the progress in the technologies used by geneticists, the concept of genes changed in 75 years and became more exact through the development of genetic maps and sequences.² These developments paved the way for initiating a comprehensive genetic map, which came about through the Human Genome Project.

The Human Genome Project was a massive scientific enterprise funded by the US Government³ to decode the entire human genetic sequence, as well as the genomes of other species.⁴ The project started in 1990 with the purpose of studying human nature in a more precise way than ever before.⁵

The human genome revolution was based on the latest scientific technologies and the latest advances in medical and biological sciences. The objective was to decode the DNA and develop a computer database that can accurately identify genes. After all, the genetic code itself is similar to a computer database, in a certain way.⁶ The outcomes of the project, as they emerged in 2003, were quite significant. We found out that the genome includes between 30,000 to 35,000 genes. We also discovered the full sequencing of nitrogen bases that make up the DNA.⁷ Thus the human genome has become a fixed scientific fact, encompassing all hereditary traits or genes of human cells.

The Human Genome Project opened new horizons for human knowledge and for the development of beneficial applications of genetic engineering. More importantly, it made it possible to improve the human genetic structure through eugenics.⁸ For example, scientists can now identify the genes responsible for certain hereditary diseases. By targeting these particular genes, it has become possible to prevent such diseases, understand how

¹ Ahmad Mahmoud Subhi, Mahoud Fahmi Zidan, op. cit., page 148.

² Daniel J. Kevles and Leroy Hood, page 50.

³ This project involved the participation of over 1000 experts from 18 countries. It cost over US\$ 300,000,000. It was planned to be completed in 15 years, but the contributions of other countries made the completion possible in a shorter time. The project was completed in 2003. See Saad Bin Abdul Aziz Bin Abdallah, op. cit., page 66.

⁴ Fukuyama, op. cit., page 109.

⁵ Abdul Hadi Misbah, *Al-`Ilāj Al-Jīnī was-Istīnsākh Al-A`dā' Al-Bashariya* ("Gene therapy and cloning of human body parts"), Al-Dar Al-Misriya Al-Lubnaniya, 1999, page 67.

⁶ Ridley, op. cit., 63.

⁷ Saad Bin Abdul Aziz, pages 66-67.

⁸ Jack Pasternak, *Génétique moléculaire humaine*, trad. Dominique Charmot, éd. Deboeck, Paris, 2003, page 13.

genes can cause rare diseases, or at least improve the quality of life, by reducing the prevalence of certain diseases that cause pain and require high expenses.¹ Despite these positive outcomes, research on the human genome poses new biological and ethical concerns, since it has the potential to change human nature,² and it can have drastic consequences, such as the development of genetically engineered humans.³ In this context, many scientists and religious scholars have considered genetics as a relevant scientific endeavor that promotes human dignity because "humans can only be born as humans."⁴

This view does not see genetic modification as a change to the human essence. However, there is no way to know whether there are other intentions behind the Human Genome Project, such as full control over human nature or whether the potential consequences of genetic engineering are intentional. There are still many fears surrounding genetic technologies, especially "the possibility that biotechnology might, in the end, cost us our humanity"⁵ and with it, we lose our moral and religious existence. This means that genetics and human genome should be also considered from the points of view of philosophy and, more importantly, practical ethics. What are the possible future directions of genomics? Can we reach a point whereby it would be possible to biologically modify human behavior?

B. The applications of human genomics in medicine

One of the most important applications of human genetics is eugenics. Genetics, in general, aims to identify the genes responsible for making us human, and the early efforts in this field aimed to improve humankind. This is not a new idea. It actually originates in the works of Plato.⁶ The new approach to this idea comes from the work of Francis Galton, who proposed the possibility of breeding humans to select for particular traits. Jurist Oliver Wendell Holmes writes: "We want people who are healthy, good-natured, emotionally stable, sympathetic, and smart. We do not want idiots, imbeciles, paupers, and criminals."⁷ This view clearly demonstrates the potentials of eugenics.

Scholars often distinguish two types of eugenics: positive eugenics and negative eugenics. Positive eugenics aim to genetically treat illnesses in order to improve public health. This can be achieved by selecting for healthy genes and the genes that encode desirable traits, such as strength, courage, beauty, while inhibiting other genes responsible for undesirable traits. This approach

¹ Daniel J. Kevles and Leroy Hood, op. cit., pages 26, 40.

² Fukuyama, op. cit., page 18.

³ Bahaa Darwish and Khalid Al-Ali, *Mashrū'iyat wa-Hudūd Al-'Ilāj Al-Warāthī dinn Akhlāqiyāt Al-Ta'āmul ma'a At-Tiqāniyāt Al-Ḥadīthai* ("Legitimacy and limits of gene therapy, as part of the ethics of dealing with new technology"), Tunis, Al-Munadhama Al-Arabiya Lit-Tarbia wal-Ulum, 2008, page 248.

⁴ Pastermak, op. cit., page 5.

⁵ Fukuyama, op. cit., pages 30-31.

⁶ Daniel J. Kevles, Leroy Hood, op. cit., pages 14, 93.

⁷ Fukuyama, op. cit., pages 111-112.

to eugenics aims to generate "tailored children" born with desirable traits only, after determining the special gene responsible for intelligence, height, hair color, aggressivity, or self-respect.¹

Negative eugenics, on the other hand, also aims to improve humankind through a series of measures, such as limiting the spread of unhealthy genes by discouraging people with healthy genes from having children with people who suffer from hereditary diseases. The purpose here is to limit the number of children with congenital deformities.² It also attempts to reduce the rates of diseases through early genetic detection.³ When genetic disorders are detected early, it is possible to avoid their transfer to future generations by recommending to affected individuals not to get married or not to have children.⁴

Eugenics aims to promote good genes and proliferate desirable traits while limiting the spread of genes responsible for undesirable traits and diseases, thus generating an improved human species. However, "people are more than just genes"⁵ or a specimen laid in a laboratory of eugenics. There is the issue of "whether genetic engineering would one day become common practice, to the point of changing humanity."⁶ This issue is "at the heart of a raging controversy because it challenges well-established concepts such as equality, moral judgment, and even human identity."⁷ The fear here is that eugenics might lead, in the future, to social, moral, and even religious confrontations, or conflicts between science on the one hand, and the Islamic and Christian creeds on the other, which believe that God created man in His own image.⁸

Another approach within eugenics aims to identify the genes responsible for hereditary diseases, then either eliminate them safely or treat them.⁹ This approach uses genetics for preventive and medical purposes only by "introducing healthy genetic materials into the targeted cells to correct malfunctioning genes."¹⁰ While genetic medicine is still in its early stages of

¹ Ibid, page 101.

² Ali Mohyi Al-Din Al-Qura Daghi and Ali Yusuf Al-Muhammadi, *Fiqh Al-Qadāyā Al-Ṭibbiya Al-Mu'āshira: Dirāsa Fiqhiya Ṭibbiya Muqārana* ("Jurisprudence of contemporary medical issues. Comparative study in Islamic medical jurisprudence"), Lebanon, Dar Al-Basha'ir Al-Islamiya. 2006, page 314.

³ Ibid., page 314.

⁴ Ahmed Rajai Al-Jundi, *Al-Jīnūm Al-Basharī min Al-Nadhariya lil-Taṭbīq: Ru'ya Islāmiya. Buḥūth wa-Tawṣiyāt Al-Nadwa Al-'Ilmiya ḥawla Al-Wirātha wal-Handasa Al-Wirāthiya wal-Jīnūm Al-Basharī min Maḍhūr Islāmī*. (Recommendations of an Islamic scholarly seminar on human genome and genetic engineering), Imam Muhammad Bin Saud Islamic University, Riyadh, 2013, page 19.

⁵ Ridley, op. cit., page 10.

⁶ Fukuyama, op. cit., page 106.

⁷ Ibid., page 109.

⁸ Saeed Muhammad Al-Haffar, *Al-Bayūlūjiyā wa-Maṣīr Al-Insān* ("Biology and human fate"), Kuwait, National Council for Culture, Arts and Literatures, 1984, page 29.

⁹ Nur Al-Din Al-Khadimi, *Al-Jīnūm Al-Basharī wa-Ḍawābituh fī Al-Shar' Al-Islāmī. Buḥūth wa-Tawṣiyāt Al-Nadwa Al-'Ilmiya ḥawla Al-Wirātha wal-Handasa Al-Wirāthiya wal-Jīnūm Al-Basharī min Maḍhūr Islāmī* ("The human genome and the principles of Islamic Sharia" - Recommendations of an Islamic scholarly seminar on human genome and genetic engineering), Imam Muhammad Bin Saud Islamic University, Riyadh, 2013, page 286.

¹⁰ Hassan Shamsi Basha, *Al-Handasa al-wirāthiya wal-Baṣma Al-Wurāthiya: Maḥmūhā wa-Taṭbīqātuhā. Buḥūth wa-Tawṣiyāt Al-Nadwa Al-'Ilmiya ḥawla Al-Wirātha wal-Handasa Al-Wirāthiya*

development, it has already proven to be successful in treating some medical conditions, such as high blood pressure, and in preventing others, such as heart disease.¹ Nevertheless, these new technologies face many ethical and biological obstacles, as they can be dangerous, especially when dealing with viral vectors.² They can also cause psychological and social harm, as the fact of identifying one's genetic make-up might reveal the potential for certain diseases, and could possibly affect marriage plans, employment status, or personal matters.³

These downsides raise the question of whether it is possible to safely use genetics for medical purposes. People do not only need to maintain their health, but they may desire to enjoy super health as well. More importantly, genetics as a science used in medical treatment has not been proven fully successful, according to the rigorous standards of clinical trials.

Interestingly, many geneticists have been tempted by the success of genetic modifications in medical treatments to seek applications in other areas. In other words, treating hereditary diseases is no longer the Holy Grail to find. There is now growing interest in applying genetic modification for enhancement purposes, assuming that, sooner or later, it will be possible to "engineer physical and mental traits, including intelligence."⁴ This process would involve "altering the genetic make-up of reproductive cells or introducing new genetic materials into sperm and unfertilized eggs."⁵ This type of genetic technology is not very different from already available technologies. The only difference is that it targets reproductive cells.⁶ Besides, we should note that genetic modification in such cases is not limited to reproductive cells, but it has a major influence on future generations,⁷ as the same genetic change will be in effect in the reproductive cells of the fetus.⁸ This will rid the patient and his offspring from hereditary defects and will put an end to many cases of birth defects.

There are several other issues to consider. For example, it is possible to manipulate the genetic structure of reproductive cells for medical purposes? "We are used to thinking of genes", says Matt Ridley, "as features that can be edited according to social needs. In other words, we assume that genes are at the service of the body. However, it is a different story when the body becomes the victim that is manipulated, turned into a trial field, and put at the service of the genes."⁹ The danger here is that human nature could be

wal-Jīnūm Al-Basharī min manzūr Islāmī ("Genetic engineering and genetic fingerprinting: concepts and applications", Recommendations of an Islamic scholarly seminar on human genome and genetic engineering), Imam Muhammad Bin Saud Islamic University, Riyadh, 2013, page 67.

¹ Ali Mohyi Al-Din, op. cit., page 315.

² Hassan Shamsi Bacha, op. cit., page 73.

³ Ali Mohyi Al-Din, op. cit., page 315.

⁴ Saeed Muhammad Al-Haffar, op. cit., page 262.

⁵ Bahaa Darwish, op. cit., page 247.

⁶ Ibtihal Muhammad Ramadan Abu Jazar, *Al-'Ilāj Al-Jīnī lil-Khalāyā Al-Bashariya fī Al-Fiqh Al-Islāmī* ("Gene therapy of human cells according to Islamic jurisprudence"), ed. by Mazen Ismail Hanya, Islamic University, Gaza, 2008, page 66.

⁷ Ibid.

⁸ Bahaa Darwish, op. cit., pages 247-248.

⁹ Ridley, op. cit., page 129.

changing to the point of entering a post-human era,¹ which has moral, social repercussions, as well as religious and axiological pitfalls.

Genetic change to human nature

Genetic research on plants succeeded in introducing new plant species and managed to clone mammals from somatic cells.² These developments inspired scientists to pursue the idea of manipulating human genes to clone humans or generate a better species. Animal cloning technologies have been quite successful in developing medicines. For example, the gene responsible for the production of insulin in humans can be produced in lab conditions. Cloning in plants has made it possible to save some endangered plant species from extinction.³ These successes suggest that cloning humans is no longer impossible.⁴ Researchers of genetic engineering are hoping to develop new and improved generations of humans. This might not be a reality yet, but the process is well ongoing. There are even projects to develop cyborgs.⁵ This would be the end of mankind as such and the beginning of a whole new species. Such developments might cause heated tension between biologists and religious scholars, especially that cloning involves metamorphosing genes and fully obliterating human nature.

There are many other controversial issues that have surfaced as a result of the biotechnology advances, such as artificial insemination, organ transplant, sex change, abortion, and euthanasia.⁶ We have also seen new concepts introduced to the public sphere, such as extending life expectancy, *in vitro* fertilization, surrogate mothers, and cosmetic surgery, among others. We have no consensus on the ethics of any of these new concepts, which call for the development of ethical research on biosciences in general, and genetic engineering in particular, to safeguard the wellbeing of humanity.

C. Philosophical and ethical assessment of the ethics of genetic research

Bioethics is the field concerned with the study of ethical issues related to recent scientific developments in biomedical research.⁷ Bioethics critiques and evaluates the outcomes of genetics and genomics and their effects on human dignity and the new human reality. Through bioethics, philosophers attempt to restrain technological advanced in genetics while addressing certain issues that threaten human dignity and value. For example, bioethicists have developed new definitions of human nature that protect

¹ Fukuyama, op. cit., page 18.

² Saeed Muhammad Al-Haffar, op. cit., page 262.

³ Iman Mukhtar Mustafa, *Al-Khalāyā Al-Jidh`iya wa-Atharuhā `alā Al-A`māl Al-Ṭibiya wal-Jirāhiya min Mandhūr Islāmī: Dirāsa Fiqhiya Muqārana* ("The stem cells and their impact on medical and surgical activities from an Islamic perspective: a comparative jurisprudential study"), Alexandria, Maktabat Al-Wafa Al-Qanuniya, 2012, page 290.

⁴ Ali Mohyi Al-Din, op. cit., page 377.

⁵ Saeed Muhammad Al-Haffar, op. cit., page 118.

⁶ Guy Durand, *Al-Bayūtāqyā Al-Ṭabī`iya: Al-Mabādi' Al-Rihānāt* ("La bioéthique: nature, principes, enjeux"), translated by Muhammad Jadidi, Beirut: Jadawil, 2015, page 32.

⁷ Ibid., page 35.

humanity. They have also developed ethical frameworks that regulate and "moralize" genetic experimentation, at a time when genetics experts strive to conduct more experiments on humans with the newest scientific technologies.

German sociologist, Jürgen Habermas (born in 1929) is one of the most prominent contemporary philosophers who have helped develop modern bioethics. In his book *The Future of Human Nature*, Habermas discusses genetic intervention, which he sees as a complicated issue leading to the development of a "mutant human."¹ In his view, genetic research has significant consequences for our identity as humans, and leads to dangerous ethical pitfalls. He also discusses the applications of genetic technology and the controversy surrounding the human genome and genetic engineering.² Habermas calls for rethinking the entire field of genetics, especially given the failure of religion and society in regulating human life.

An Islamic perspective on human nature and the genome

Contemporary Islamic perspectives on human nature have their roots in the Islamic traditions of jurisprudence. These traditions view the soul and the body as the foundations supporting any biological or psychological understanding of human existence. More specifically, it is the soul that gives life to the body. Our purpose is not to see how genomics may, or may not, fit within Islamic ethics. We are rather seeking to identify an epistemological framework that allows Islamic ethics to invest in genomics as a scientific field, in order to create practical ethics with Islamic and civilizational dimensions. The main question here is whether genomics can change our understanding of human nature, whereby "genetic alteration" may become part of the nature itself.

A. Islam on human nature

Philosophers have long disagreed over the essence of human nature. Most of the disagreements can be attributed to the complexity of the topic and to the philosophers' tendency to focus on one particular aspect of human nature. Islam, on the other hand, offers a comprehensive view of human nature that clearly distinguishes humans from all other species.

Islam elevates human beings above all other creatures. God has created humans, but He also honored humans with His spirit. God says: "And [mention, O Muhammad], when your Lord said to the angels, 'I will create a human being out of clay from an altered black mud. When I have proportioned him and breathed into him of My soul, then fall down to him in prostration'" (Qur'an, 15:28-29). God has also honored humankind with reason, which is the essence of human nature. It is that reason that gives humans free will, responsibility, trusteeship, and the ability to make moral judgments.

¹ Jürgen Habermas, *Mustaqbal Al-Ṭabīʿiya Al-Insāniya: Naḥw Nasāla Librāliya* ("The Future of Human Nature: Toward Liberal Eugenics"), translated into Arabic by Georges Katoura, Lebanon, Al-Maktaba Al-Sharqiya, 2006, p. 20.

² *Ibid.*, 22.

Human nature also involves the complementarity of physical and spiritual properties. The physical properties "are the dust and water, from which the human physical form and basic needs developed."¹ God says: "Of His signs is that He created you from dust; then, suddenly you were human beings dispersing [throughout the earth]" (Qur'an, 30:20) and "It is He who has created from water a human being and made him [related by] lineage and marriage. And ever is your Lord competent [concerning creation]" (Qur'an, 24:54). The spiritual side is "the essence of the human existential function, without which there is no wellbeing."² God has intended for the soul, which materialists do not acknowledge, to be the reason humans are elevated above all other creatures.³

Dignity is another component in the structure of human essence. God says: "We have certainly honored the children of Adam and carried them on the land and sea" (Qur'an, 17:70). This honor is creating humans in the most elegant form on earth:⁴ "O mankind, what has deceived you concerning your Lord, the Generous, Who created you, proportioned you, and balanced you? In whatever form He willed has He assembled you" (Qur'an, 82:6-8). Since human nature is created in the most elegant form and the most perfectly balanced shape, it has dignity at its core. God commands us to protect and preserve our form the way it was created without change: "No change should there be in the creation of God" (Qur'an, 30:30). It is a priority for humans to steer away from anything that could affect their nature or damage their created forms, by seeking to protect their lives and the integrity of their bodies, especially in light of the modern scientific advances. But how can this perspective apply with the genomics revolution?

B. The ethics and jurisprudence of human nature

The recent advances in genomics pose a series of serious challenges regarding modifying the human genetic structure, thus changing human nature. These challenges are ethical and ontological in nature, due to the fact that modern applications of genomics conflict with human values. I will discuss below the Islamic ethical perspective on genetic applications.

Advances in science have become a threat to human nature, which is subjected to science and its modern technologies. Genetic mapping allows us to identify the root causes of certain biological deficiencies through eugenics, and, in turn, helps us "improve" this physical nature. Genetic engineering, on the other hand, promises to develop a "flawless generation, where people can choose the baby's eye color, hair color, sex, size, intelligence, and all other features."⁵ The Council on Islamic Jurisprudence has issued resolutions forbidding "the use of any genetic engineering technologies to tamper with

¹ Bushi Yusuf, *Al-Jism Al-Basharī wa-Athar Al-Taṭawwur Al-Ṭibbī `Alā Niṭāq Ḥimāyatih Jinā'iyān* ("The human body and the impact of medical advances on its criminal protection"), Ph.D. Dissertation, Algeria, 2013, page 13.

² Ibid, page 13.

³ Abu Al-Yazid Al-Ajami, op. cit., page 63.

⁴ Ibn Kathir, *Tafsīr Al-Qur'ān Al-Karīm*. Dar Tiba, 2002, Vol. 5.

⁵ Saeed Muhammad Al-Haffar, op. cit., page 114.

human personality, and consequently individual responsibility, under the guise of improving humankind."¹ This ban is motivated by the argument that "genetic engineering is an alteration of God's Creation,"² which is not allowed within Islamic jurisprudence, as it threatens "human dignity, individuals' rights, and morality by modifying genes, which amounts to transforming humans into machines and devices manipulated as people please."³ This view forbids genetic modification because "it can permanently change the human form if genetic materials from other sources were introduced."⁴ In other words, genetic modification can introduce offspring with unknown backgrounds and paternal lines.

The conflict is the result of treating genetic modification as a deviation from the original human nature. However, it is possible to think of eugenics as a way for modern humans to return to their true original nature. For example, Islamic history mentions human populations that were significantly taller than modern humans. This fact suggests that human genes have unexpectedly changed. Perhaps eugenics can help restore this original height in future generations. I believe this approach can resolve the presumed conflict between genomics and traditional Islamic views.

Another possibility is to focus on genetically modified social and moral behavior. What if eugenics can be used to improve human behavior by inhibiting the genes responsible for hatred and violence, while reinforcing the genes responsible for peace and love? This would inevitably dampen aggressive tendencies and affect ethical behaviors in our Arab and Muslim societies. It would be, as well, a welcome development that could benefit our societies, our monotheistic religion and the whole humanity.

Moreover, Islamic scholars allow genetic intervention for medical purposes, provided that its potential harm does not outweigh its potential benefits. This prohibition is intended to avoid genetic changes that might persist in future generations. There are religious rules for each type of medical intervention. Besides, certain procedures that can change the original human form are categorically prohibited.⁵ Therefore, Islam does not allow sex change surgeries and cosmetic procedures, such as tattoos and changing skin color, because they involve changing God's creation. The Qur'an says, quoting Satan: "I will command them to change God's creation" (Qur'an, 4:119).

Most Islamic scholars allow genetic intervention that require introducing genetic material to somatic cells because this type of intervention "restores organs to their original form that God has created." This decision presupposes that genomic applications are not necessarily changes to human nature, but a restoration of this nature which was "created" in the most

¹ Al-Qura Daghi, op. cit., page 325.

² Muhammad Jabr Al-Alfi, *Al-Wirātha wal-Handasa Al-Wirāthiya wal-Jinūm Al-Basharī Al-Jīnī min Manḍhūr Islāmī* ("Heredity, genetic engineering, and human genome from an Islamic perspective"), The Islamic Conference Organization, Jeddah, 2012, page 24.

³ Hassan Shamsi Bacha, op. cit., page 72.

⁴ Al-Qura Daghi, op. cit., page 326.

⁵ Ibid.

perfect form possible: "We have certainly created man in the best of stature" (Qur'an, 95:4).

As for genetic intervention for the purpose of altering human nature, most scholars prohibit it because it amounts to "attempts to have children with superior features, which constitutes tampering with human genetics for no medical reason, a preventive measure, or a valid cause."¹ Another reason for the prohibition is that "this type of intervention can have grave consequences, including the possibility of persistence through the generations due to changes in the reproductive cells."² In other words, it does not affect the individual who undergoes such procedures, but this individual's offspring and descendants.³ The real danger, of course, is a large scale genetic change that can alter human nature forever. We, as a species, are responsible for preserving our nature from any sort of alteration, whether intentional or otherwise. In fact, every human being has the right to be born with his/her unique genetic make-up without intervention. This is one of the most contentious issues in the debates between philosophers and religious scholars over the question of interference in human nature. It begs the following questions: Who has the right to modify the genetic structure of unborn children? Who has the right to approve such a change?

Since all genetic modifications affect human nature, other issues have emerged, especially the controversy over altering God's Creation. The main issue here is that it is difficult to decide which features are inherently linked to human nature and which are not. If a change targets a feature that is not original and inherent to human nature, there should be no prohibition. However, we do not have clear criteria regarding the "original features."⁴

There is also the possibility of using eugenics to enhance human abilities beyond the normal range of variation. The result would be individuals with superior cognitive or physical abilities, which inevitably creates a new social class system where the powerful and the wealthy can afford such superior skills.

It might be necessary to draw a line between genetic intervention for medical purposes, which would be permissible, and genetic intervention for non-medical purposes, which would be prohibited. However, such a distinction is not easy to establish because it would have to change as science and technology further develop. What we see as unnecessary today might become medically necessary in the future. Besides, such a distinction is inherently culture-specific.⁵

One might ask: What is wrong with us if we want our children to be healthier and more talented? This is typically a rhetorical question, and some religious scholars allow genetic modification because "seeking desirable features is both valid and permissible, and there is no religious ruling against them". In fact, "a strong faithful person is more desirable in the eyes of God, Who is

¹ Muhammad Jabr Al-Alfi, *op. cit.*, page 24.

² Hassan Shami Bacha, *op. cit.*, page 73.

³ Bahaa Darwish, *op. cit.*, page 249-250.

⁴ Daniel J. Kevles and Leroy Hood, *op. cit.*, page 42.

⁵ Muhammad Jabr Al-Alfi, *op. cit.*, page 25.

beautiful and loves beauty.”¹ In other words, God is the source of strength and beauty. These kinds of questions remind us of the value of philosophical investigation, which can help us glean some of the problematic concepts related to human nature. Moreover, philosophy can help us resolve the conflict between the claims that human nature has not changed throughout history, as demonstrated by anthropology (see the works of Claude Levi-Strauss for example), and the Islamic view that it has changed indeed, at least physically.

With regard to human cloning, Islamic teachings deem it forbidden because it is clearly “a change in God’s Creation with grave consequences of diluting human identity.”² Moreover, the cloning process might generate deformed clones or clones with genetic deformities that might come to life several generations later. It is also possible to clone violent or criminal individuals who can pose a threat to morality and humanity. In addition, cloning might change the reproduction process, obliterate paternal lines, and destroy human values, such as the sacred relationships established between parents and children.³ There are, in fact, many other complex issues with cloning, such as the commercialization of fetuses, the development of sperm banks, the possibility of cloning mutants, and genetic warfare, all of which have the potential of destroying the human diversity that God has created.

In summary, we notice that genomics agrees with the Islamic perspective on human nature as long as genetic modification aims to enhance and change this nature yet without transforming its essence. Islamic ethics are quite flexible and open-minded toward scientific issues and the ethical problems they generate and their flexibility is governed by a balance between the potential harms and the benefits of technology.

It is important for genomics to be informed about the regulations, principles, and objectives of Islamic jurisprudence. The methodologies of Islamic jurisprudence establish rulings based on facts⁴, while bearing in mind certain objectives, results, and consequences.⁵ It also balances interests and necessities to determine potential harms and benefits⁶ and how they can affect human dignity, religious values, and social peace. The objective of Islamic jurisprudence is to preserve morality.⁷ Can Islamic ethics answer all the questions posed by genomics, and thus introduce a new horizon for what it means to be human?

Nowadays, human nature lies at the center of new ethical controversies that were not discussed within the framework of Islamic ethics before. These controversies include the issue regarding the natural and inalienable rights of

¹ Bahaa Darwish, op. cit., page 257.

² Al-Qura Daghi, op. cit., pages 381, 390.

³ Abdul Mu’izz Khattab, *Al-istinsākh al-basharī hal huwa ḍud al-mashī’a al-ilāhiya?* (“Is human cloning contrary to divine will?”), Al-Dar Al-Dhahabiya, undated, page 73.

⁴ Muhammad Jabr Al-Alfi, op. cit., page 25.

⁵ Nur Al-Din Al-Khadimi, op. cit., page 290.

⁶ Al-Qura Daghi, op. cit., page 323.

⁷ Ujayl Jassim Al-Nashmi, *Al-Waṣf Al-Sha’ī lil-Jīnūm Al-Basharī wal-’Ilāj Al-Jīnī*, research paper as part of the Islamic scholarly seminar on human genome and genetic engineering held at Imam Muhammad Bin Saud Islamic University, Riyadh, 2013, op. cit., page 174.

individuals whose genetics are engineered. Will such individuals have free will? What about the orphaned children who are conceived artificially using the preserved sperm of a deceased father? Does this scenario change the ways inheritance is divided? What about changing human nature through sex change surgeries and reversing the roles respectively attached to men and women?

Cloning, extended life expectancy, euthanasia, and other new concepts raise even more ethical questions. What was once considered abnormal now has the potential of normalization. In short, we have to rethink many concepts that have been stable for millennia, including life, death, family and, above all, human nature. Islamic ethics offers ideal solutions to many of the ethical issues raised by genomic developments. This is because Islamic ethics provides a framework for protecting the human physical form in ways that preserve human dignity. There are still come ethical issues that go beyond jurisprudence and require connecting genomics with modern interpretations of Islamic heritage, particularly Islamic history, philosophy, and literature, and opening up to other disciplines.

The human genome is part of the shared human heritage. Restricting genomic research and technologies requires concluding a fair agreement among all members of the human family. This agreement needs to safeguard human dignity and diversity. It would also require from experts in various fields, including bioethicists, philosophers, religious scholars, psychologists, sociologists, and especially Islamic ethics, to collaborate with each other. Producing collaborative efforts would be more fruitful than tracing individual perspectives.

In conclusion, the human genome represents a multifaceted epistemological fact carrying material, spiritual, ethical, and humanitarian aspects. The genome constitutes a challenge, as well as a demand that our Arab and Islamic societies can seek to invest in it and benefit from it. But this investment has to be carried out within the framework of Islamic teachings and ethics, in a context whereby the human entity should be on par with cutting-edge technologies.

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