EXAMINING THE VALIDITY OF GENETIC FINGERPRINTS IN LINEAGE DETERMINATION UNDER ISLAMIC SHARIAH AND MALAYSIAN LAW

Saeed Almazrouei
PhD Candidate, Department of Shariah and Law
Academy of Islamic Studies,
Universiti Malaya, 50603 Kuala Lumpur, Malaysia
almazrouei5963@gmail.com

Siti Aisyah Samudin
Senior Lecturer, Department of Shariah and Law
Academy of Islamic Studies,
Universiti Malaya, 50603 Kuala Lumpur, Malaysia
sitiaisyah.samudin@um.edu.my

Mahamatayuding Samah
Senior Lecturer, Department of Shariah and Law
Academy of Islamic Studies,
Universiti Malaya, 50603 Kuala Lumpur, Malaysia
mahyudin@um.edu.my

ABSTRACT

Genetic fingerprinting is a method that has gained a lot of scientific advancement in determining lineage, though its acceptance varies in legal and religious contexts. Most jurisdictions accept DNA evidence for use in paternity disputes; however, the debate remains whether it has a place under Islamic jurisprudence. Particular scholars admit genetic fingerprinting as corroborative evidence, especially in disputed parentage, unknown ancestry, and marriage validity, but under Shariah and Malaysian law, it will be conditional upon following established legal

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doctrines of ethics. This study examines the relation of genetic fingerprinting to Islamic principles and Malaysian law, highlighting its evidentiary role, limitations, and possible ethical concerns. In contrast, the research thus highlights how evolving DNA evidence functions toward lineage determination, especially from religious, legal, and scientific perspectives, giving implications for both Islamic and contemporary legal systems. Genetic fingerprinting has been adopted scientifically advanced methodology to confirm the pedigree or lineage from various legal and religious facets. It is also acceptable to most jurisdictions in the use of DNA evidence in paternity disputes but remains to be accepted under Islamic jurisprudence. Some scholars approve genetic fingerprinting as a corroborative proof, especially in cases of doubtful parentage, unknown ancestry, or relating to marriage validity. However, its application is still dependent on the conformity to the established doctrine of law and the ethical considerations set forth, both within Sharia and Malaysian legal frameworks. This study will delve into the interfacing of genetic fingerprinting with Islamic legal principles and Malaysian law to examine its potential as evidence, as well as any limitations it may have alongside ethical issues that may arise. Thus, the research highlights the evolutionary functions of DNA evidence towards lineage determination from religious, legal, and scientific perspectives, giving implications on both Islamic and contemporary legal systems.

Keywords: *DNA fingerprint, proof of lineage, denial of lineage, Sharia evidence, legal evidence*

INTRODUCTION

Genetic fingerprinting is a scientific system with vast legal and jurisprudential applications in proving or disproving lineage. While many jurisdictions recognize it as admissible evidence, its acceptance under Sharia law and Malaysian law remains subject to scholarly debate and legal interpretation.

Islamic and legal scholars have incorporated the genetic-fingerprinting technique into cases of legitimate lineage verification mainly in cases of disputed parentage, marriage validity, or unknown ancestry while ensuring that such applications are in compliance with religious and ethical principles.

In Malaysia, every citizen's DNA fingerprints are obtained in order to establish an identification card. The identification card offers information about its holder, such as name, date of birth, address, DNA fingerprint, and photograph. The Criminal Registration Department also retains DNA fingerprint records for offenders. This enables the authorities to identify suspects or unknown victims by matching their DNA fingerprints with the data contained on the identity card (Shahrom, 2001: 23).

The Criminal Registration Centre in Malaysia plays a significant role in certifying the identification of offenders and murder victims, in investigations to identify the accused or suspect, and supports different investigative activities. Only it can produce certifications certifying who the owner of the DNA fingerprint is. This is because the Yang di-Pertuan Agong has allowed this department to issue certifications on DNA fingerprints. However, the National Registration Department (JPN) has staff who are trained in this sector, but they are not permitted for identification confirmation reasons (bin 'Uthmān, n.d.: 7).

GENETIC FINGERPRINT DEFINED

1. Definition from an Islamic Perspective

a) Fingerprint (*Basmah*) in the Language

The region between the tip of the little finger and the tip of the ring finger. (al-Jawharī, d. 393 AH: 1873), and a person's fingerprint is the mark of a seal on the finger. ('Aṭiyyah et al., 2004: 60). According to the Arabic Language Academy, stamping a fingerprint with the tip of one's finger forms a seal mark (The Arabic Language Academy, 1981: 60). Therefore, when the word fingerprint is used in general, it refers to the imprints formed by the fingers when they come into contact with a polished surface. They are reproductions of the forms of the dermal ridges that cover the skin of the fingers, and they are not comparable at all, even in the fingers of the same people (al-Ṭabbākh, 2013: 6).

b) Genetics in Language

Abu al-Husayn said: *"(Warat)* the letters *waw*, *ra*, and *ta*, as one word, which is inheritance. The origin of inheritance is waw, and it signifies that something belongs to a people and then goes to others by lineage or cause" (Abū al-Ḥusayn, d. 395 AH: 105).

2. Definition of Genetic Fingerprint

It is a genetic fingerprint that is not repeated from one person to another with the same identity, and it carries all the characteristics, traits, diseases, aging, and age that this person will have since the meeting of the father's sperm with the mother's egg and the occurrence of pregnancy (ʻAbd al-Hādī, 1997: 1050).

From the preceding, it is obvious that the genetic fingerprint reflects the features that children acquire from their parents, which form their identity and separate them from others. It is, therefore, the genetic structure that determines the individuality of each person (Kuwait Islamic Organization, 1988 AD: 1050).

3. Definitions from A Legal Context

Legally, a fingerprint is any mark or imprint made onto the skin, and this encompasses every surface of the hand palm, the hand fingers, the leg soles, and the toes (bin ʻUthmān, n.d.: 12-13). In that sense, crime records agencies are allowed to contrast the prints made by palm and those formed by the soles. On the other hand, in the absence of this description, the only comparison possible will be of the thumbprint area (bin ʻUthmān, n.d.: 19).

4. Definition from A Scientific Perspective

A fingerprint may be defined, in scientific sufficiency, as the differential in ridge patterns and depressions (bin ʻUthmān, n.d.: 22). The raised lines are rows of intervened, branched, and or truncated sweat pores forming a unique pseudo morph. These lines begin as single and unconnected rows of ʻisland pour' (dots of distributed sweat pore). Subsequently, some of these islands coalesce, creating lines & grooves of the digit. This happens in about four months of pregnancy when the fetus is still in the womb and extends to the sixth month. The skin-bearing fingerprints may protect internal tissues, provide

resistance to slippage, and, more importantly, provide a verifiable declaration (signature) for the entire life.

THE DATE OF THE ADOPTION OF GENETIC FINGERPRINTING

The use and establishment of genetic fingerprinting was known long before the1890s (Herschel, 1916: 12), where, in the year 1903, an inmate by the name of Will West was locked up in the Leavenworth Federal Penitentiary. There was no identification genetic fingerprinting; therefore, portion (photographic measurements) systems where specific body areas such as head, feet, and palm size, among others, were taken. He developed anthropometry, which is also known as *portillonage*, named after Alphonse Portillon's founder (Shahrom, 2001: 17). As Will West was serving his sentence, another prisoner by the name of William West was also brought into the same prison. The two were challenged in that it turned out they had the same body structure and even features 'as' two identical twins. They were, however, not twin in any way but were indeed "identical twins." Hence, the development problems of these measurement systems began to emerge. He was bred, of course, to twins who, while not biological, could have passed for them. So, they had to consider something more substantial, more precise, and more peculiar. The situation reached the point that genetic fingerprinting as a technique to establish a person's identification became popular (bin 'Uthmān, n.d.: 23-25).

SCIENTIFIC FACTS ABOUT THE USE OF GENETIC FINGERPRINTING

Individuality is the safety of every fingerprint. A genetic fingerprint retains its appearance as well as its shape and features but deteriorates after one passes on. The same consideration applies to the toes, palms, and soles of the feet (Kayser et al., 2013). Owing to these features, a genetic fingerprint is a good reliability tool for confirming identical persons since it is different and peculiar to every individual and is stable over a given period (Dash et al., 2018).

Genetic fingerprinting involves laying the fingers on objects to leave the prints with sweat, forming genetic lines that shape the pattern of the ridge pores and ridges. Ridge pores are found on the upper skin of the fingers in linear ridges (Siebers et al., 2021). So, when a piece of paper is blank inked with a finger, the triangle-shaped ink on the paper resembles the interior patterns of the finger palm print in rich detail.

There is material in sweat on the tip of the finger that reacts with Ninhydrin or iodine. This is necessary for visualizing genetic fingerprints that are not readily visible (latent genetic fingerprints). For example, if an individual touched an item, the genetic fingerprint of that doing would not be identified (Dray, 2021). DNA fingerprinting is also widely used in the event that DNA fingerprints are found at a crime scene for the purpose of identifying the suspect who may have committed the crime (Imam et al., 2018).

Therefore, medical personnel need to refrain from handling items such as weapons, glass, furniture, telephones, and even doorknobs within the crime scene, as these could carry their DNA fingerprints, which could be detrimental to the case (Bara et al., 2018). It is permissible for medical people to handle the victim's or the deceased's attire or human form as these areas usually do not possess DNA fingerprints.

UNIQUE ASPECTS OF GENETIC FINGERPRINTS

Diversity in individuals' DNA can be attributed to the kind, or the pattern, of the DNA. Generally, DNA patterns can be put into four major categories: ringed pattern, curly pattern, whorled pattern, and composite pattern (Panigrahi, 2018). The circle that makes up the DNA fingerprint may also open towards the elbow of the arm, or the radius that is the fleshy part of the finger contributes more to the subdivision of fingerprint patterns.

Another consideration that defines the unique pattern of the genetic fingerprint is also the pouty lines that have been forming since the parental age. This is why the ethnic differences in these lines arise from the pattern of distribution of palm veins (Tan & Bhanu, 2002).

The circle that makes up the DNA fingerprint may also open towards the elbow of the arm, or the radius that is the fleshy part of the finger contributes more to the subdivision of fingerprint patterns. The abnormal patterns above enable the possessor of the DNA fingerprint to be as a hundred percent sure as to who the possessor of the DNA fingerprint is.

Another consideration that defines the unique pattern of the genetic fingerprint is also the pouty lines that have been forming since the parental age. This is why the ethnic differences in these lines arise from the pattern of distribution of palm veins. From this, it follows that these lines have a genetic makeup of genetic fingerprints that differ. A genetic fingerprint possesses different line characteristics, including end line, branch line, forked line, island

line, lake line, crossed lines, and small lines, among others (bin ‘Uthmān, n.d.: 18).

Specific font characteristics will come into play during the comparison of fingerprints and DNA as they differ from one person to the other. Lastly, the types of fonts and their configuration in a DNA profile, as well as the position and counting of font elements, are what make a difference in a DNA fingerprint (bin ‘Uthmān, n.d.: 5-6).

IDENTITY VERIFICATION PROCEDURE

While carrying out a DNA fingerprinting-based identity verification, some essential aspects need to be established to prove that there is a DNA sample that matches what has been recorded on the DNA fingerprint. These points’ inclusiveness are: DNA is of the same type, there are similarities in some lineage characteristics, distribution is of the same location, the sequence number is high, There are 12 loci which are matching or in other words, 12 points are matching, and there are no mismatches. Each of them serves as an indispensable element in the whole aspect of the identification process (bin ‘Uthmān, n.d.: 26).

Same Type

This requirement states that the overall structure or “type” of the two DNA fingerprints compared should be the same. For instance, if one enhances a DNA fingerprint with a concave structure, the convex-shaped DNA fingerprint will also be enhanced. Any other shape that is not of the same structural characteristic signifies a wrong correlation. Therefore, it is reasonable to argue that the basic requirements of DNA identification do include the compatibility of DNA types. Deviance from type automatically proves that the claim is completely false (Butler, 2005).

Similar Lineage Characteristics

This point helps the assertion that DNA fingerprints have to share similar defining traits or lineage characteristics. It is known that DNA fingerprints can display certain designs that are considered “font properties” associated with that specific person’s family tree. For example, if the first DNA fingerprint has a specific “fork” feature, the related DNA fingerprint must also have that “fork” feature. If one DNA fingerprint has a certain “lake” feature, that same feature has to be in the other DNA fingerprint. These specific features, which

are distinctive among lineages, provide extra evidence of identity preservation and bloodline connection between the samples (Jeffreys et al., 1985).

Same Location

The term "Same Location" summarizes the arrangement of genetic markers in DNA profiles. This means that when two DNA profiles are compared, an Alignment of DNA profiles is achieved. For example, in the case that a certain division or marker is located at the left region of the first DNA profile, then the same division in the second profile must, as a matter of fact, also be located at the left region for the sake of accord and precision (Gill et al., 1997).

As in forensic science and molecular genetic research, such an approach makes it easier to analyze DNA data because the positioning of the different markers is made similar in all cases. This is done to ensure that all the fingerprints under examination by the respective researchers or analysts have the same focus. Some genetic patterns and profiles may only be determined if all the divisions are in the correct position and ordered accordingly. This can be especially useful considering aspects such as child affiliation tests, crime solutions, and genetic investigations (Budowle et al., 2001).

Same Sequence Number

When comparing DNA fingerprints, all samples use a numbering sequence with the same sequence numbers. This means that if there are three lines dividing the first two in one DNA line, then the corresponding DNA line must have the same three lines dividing its first two. This consistency is also important for any form of comparison or analysis (Kayser & de Knijff, 2011).

Thus, every segment and their respective line counts must be equal in the two fingerprints in question in order to make any meaningful assertions concerning their likeness or unlikeness. In this regard, the careful consideration of these particulars also serves to enhance the overall analysis and, more so, the conclusion regarding the DNA because it will make a quality analysis possible. It highlights the need for systematic presentation of DNA fingerprints since it is a critical part of both forensic and genetic studies (Sijen, 2015).

Number of Matching Points

While the rules for identifying DNA samples are presented to the court, the DNA expert shows about twelve matching points. This is the norm in Malaysia. Sixteen are used in Singapore, seven in India, and so forth in other countries. The twelve-point standard is actually not something that is laid down by the law, by judges or lawyers, or any such persons. It is simply the choice of DNA experts in Malaysia to make twelve points the accepted standard (bin 'Uthmān, n.d.: 32).

In order to establish that any DNA of the provided individual matches with the person's DNA fingerprint stored in the records in any type or even from the crime scene, the least number of close matches for comparison would be at least sixteen. Sir Francis Galton gives an estimated probability of the possibility of having the same DNA fingerprint patterns from different fingers being purely accidental, 'biometric fingerprinting' is one in sixty-four billion (1:64,000,000,000), which is about twelve times the world's population. While Malaysia uses twelve matches, Singapore uses sixteen (Shahrom, 2001: 44).

The Concept of Mismatch

A mismatch is an indication that a fingerprinted DNA has a distinct and detailed characteristic that the other fingerprinted DNA lacks or that the place in the sequence and number is different. In other words, one mismatch is enough to weaken the argument of the DNA Fingerprint (bin 'Uthmān, n.d.: 37).

The concept of mismatch in DNA fingerprinting is considered an important point in the whole process of genetic analysis in which different genetic patterns of an individual's DNA are created. Knowing how to and being able to determine mismatches is not only a means of increasing the precision of DNA typing or DNA testing but also increases the scope and applications of genetic evidence, from criminalistics to simply establishing relations between people.

ESSENTIAL ELEMENTS OF ACCURATE DNA VERIFICATION

The basic elements of accurate DNA verification are scientific facts, systematic evidence, facts on creativity and nature, and theoretical mathematics.

Scientific Aspects - The Construction of a Genetic Fingerprint

The construction of the genetic fingerprint arises from the inner aspect of the finger and not from the outer skin surface of the finger. Therefore, while the genetic fingerprint is often referred to as a dermal ridge irruption when it is wounded and healed, the wound heals into the genetic fingerprint except in cases where the injury has penetrated the epidermis (Champod et al., 2016; Jain et al., 2007). However, this does not diminish the efficacy of the genetic fingerprint. Still, a more serious wound may leave permanent marks (Evett & Williams, 1996). Genetic fingerprinting is done on the woman who is twenty weeks pregnant as the child will have formed 'fingerprints' at sixteen weeks, and by twenty-four weeks, the fingerprints are fully formed (Cummins, 1926; Kucken & Newell, 2005).

It is basically an architecture of cut, twisted, or branched sweat glands over one another. The variations in the patterns of the genetic fingerprint are due to how these are intertwined with other structures like blood vessels and nerves, thus altering the laying of the sweat glands (Maltoni et al., 2009). This is why there is no arrangement of the sweat glands that has the same configuration more than once. Bin 'Uthmān also points out that identical twins raised in similar environments, particularly with respect to age, will not have the same patterns of prints on their fingers. According to bin 'Uthmān, who has documented and analyzed the fingerprints of many identical twins, the twins had dissimilar patterns of fingerprints (bin 'Uthmān, n.d.: 43-44). Based on the findings of Stinson (1985) and Medland et al. (2003), identical twins can have different fingerprints, due to the minor fetal variations in their development that occurs within the womb.

Therefore, to sum up, no two fingers have the same design of lines. Every finger is diverse in its way. Furthermore, the formation and orientation of the lines will remain the same or intact until the person dies and will only be destroyed in the event of decomposition (Ashbaugh, 1999; Wilder & Wentworth, 1918). This, too, is true with respect to the patterns of genetic fingerprints found on the feet, hands, and soles.

Systematic Evidence

It has been documented that no two human beings possess the same pattern of ridges within their fingers, palms, and soles, which are found to be arranged uniquely for each person (Galton, 1892; Cummins & Midlo, 1943). This is why this fact has to be accepted once confirmed. Bin 'Uthmān states that,

after working for 14 years in this field, there are no two identical fingerprints he has met, but only of the same DNA fingerprint, that is, the same person (bin ‘Uthmān, n.d.: 47). Stoney and Thornton (1986) also affirm this argument while showcasing fingerprint patterns as individualistic.

Fact on Creativity and Nature

Creativity in nature is truly remarkable and reveals itself in the intricate variations found in living beings. For example, consider the stripes of a zebra. They may seem the same at first sight, but every zebra has its unique pattern. Every zebra has an arrangement of stripes that is different from that of other zebras. Just as no two tigers have the same stripes. This variation is a pleasing reminder that nature is not meant to be uniform. Instead, it is meant to be diverse. Patterns can also vary slightly due to other extrinsic or intrinsic factors, such as genetics (Carroll, 2005; Schmutz et al., 2003).

Theoretical Mathematics

A DNA profile consists of 7 band patterns, and one in the probability of obtaining one of these 7 bands is 1:7. Thus, with 12 identical points, the contest probability becomes 1:712 = 1:13841287200, which is almost twice the population of the world (Goodwin et al., 2007; Butler, 2005). If a DNA profile is considered as a dice that has seven sides, this is wrong. This calculation is, of course, blind to circles, ordered dots, or placement of lines, for that matter. Thus, the probability of two people being finger identical is even less. To summarize, with 12 points of coincidence, such two fragments of fingerprints cannot exist outside the same phenotype (bin ‘Uthmān, n.d.: 29). The statistical uniqueness of fingerprints was further validated by Pankanti et al. (2002).

SHARIA AND LEGAL PERSPECTIVES ON THE USE OF GENETIC FINGERPRINTS FOR ESTABLISHING LINEAGE

Of all the legal and religious matters that concern humanity, lineage or genealogical relationships rank high, as it is a basic pillar that sustains and safeguards human and societal existence. Family is based on this very bond or blood, and through it, a child is bonded to his father. Almost everybody is aware of how disturbing is the moral decay and character corruption in societies where family lineage is not maintained, and procreation is even done

without consideration of bringing up offspring into the family. Hence, Islamic law acknowledges the impossibility of losing or confusing lineages since it entails the rights of the child, either financially in terms of inheritance or socially in terms of raising the child (Muḥammad al-Shinnāwī, 2010: 6).

It is a well-known fact that there are rules in Sharia that stipulate how proof of lineage is to be established, and this is almost always done in a court of law. Some of these methods relate to various marriage situations that establish relationships like valid marriage, corrupt marriage, invalid marriage, and marriage of doubt. Some are designed to elicit relationships, such as admission and evidence. In addition, these incorporate the proving of it by practical methods that are beyond any reasonable doubt and are based on blood (Khalīfah al-Ka'bī, 2006: 45).

In light of the remarkable progress in science and technology that has transformed societies, genetic fingerprinting, which is used to ascertain one's lineage beyond a reasonable doubt, has been introduced to establish one's identity and ensure that both the child and its father are biologically connected and compatible through DNA testing. However, the latter has provoked numerous questions of law and jurisprudence, especially with regard to its acceptance, tolerance, or restriction. Hence, we chose to further develop the existing issue by asking: In what way do law and the legal system view the compatibility of the genetic fingerprint with the other means of proving lineage? (Sa'd al-Dīn Ḥilālī, 2010: 40).

THE ROLE OF DNA FINGERPRINTING IN ESTABLISHING LINEAGE

Family relation issues are always sensitive, and this is more so when it comes to proving one's family ties using genetic fingerprints. Sharia does not contradict the use of genetic fingerprints as a means of ascertaining an individual's unique characteristics. It is common knowledge, however, that the fingerprints and their integrations in the family tree can be misused by the moat of evil people within the family seeking to divide the family or destroy it. Hence, the contradiction arose regarding the limits of its use for the purposes of establishing lineage in Islam and law, and their genealogies are distinguished as per (Naṣr al-Maymān, 2002: 178):

1. Jurisprudential Opinions on Relying on Genetic Fingerprints to Prove Lineage

There have been efforts toward the integration of jurisprudence in understanding genetic fingerprinting and its feasibility as an evidence-proving lineage. As a result, there were the advocates and the opponents, giving rise to two differing trends discussed in more detail below:

a) The Trend in Favor of Adopting Genetic Fingerprints to Prove Lineage

The proponents of this trend advocate for the employment of genetic fingerprinting as a tool for determining lineage based on its scientific probative value. Their claims are similar to those of physiognomy (Ibrāhīm al-Jundī, 2002: 50).

Assuming the physiognomic argument is accepted to be true in determining relationships, it mainly depends on an assumption or a similarity between a child and a father, especially where other, more concrete evidence does not exist. For instance, in cases where there is a question about a child's paternity and there are no records of any legal or official documentation, there is going to be some consideration given to the above physiognomic characters. While this practice may be allowed in the absence of definitive proof regarding a person's genealogy, such practice cannot be employed where there is contrary evidence of genealogy. On the other hand, it is preferred that genetic assessment be used in the establishing of lineages because it is conclusive in superiority over the assessment of visual likeness for purposes of establishing kinship (Ḥusnī ʻAbd al-Dayyim, 2011: 96).

Another point that the defenders mention in their argument is the notion of legitimate interest, and they claim that it is not in dispute that genetic identity is one of the forms of identification that is protected by law. For this reason, it is even more suitable and sound to use it in the issues defining the relationship between two individuals as it is a complex yet very vital aspect. Hence, it is a valid means to use just like other valid means in Islamic Sharia (Aḥmad al-Rifāʻī, 2013: 140).

The Islamic Organization for Medical Sciences, issued on 21 Rajab 1422/ corresponding to 8 October 2001, reached this decision:

> *(Islam approves the adoption of genetic fingerprints in the event that more than one person disputes the paternity of an unknown parentage. The Secretary-General of the Organization stated in Al-Bayan newspaper on 10/9/2001, Dr. Ahmed Al-Jundi, that*

26 researchers participated in preparing the genetic fingerprint research from a medical and legal perspective, and through it, they reached the validity of genetic fingerprints in proving lineage and the necessity of resorting to them in the event of two people disputing the unknown parentage, or the father's refusal to attribute the unknown parentage, or his denial of his children, and the inheritance of the unknown parentage, and if some brothers acknowledge his siblings and others deny them, and in the event that a woman claims her motherhood of a person without evidence of her giving birth to him. He also stated that every human being has a unique pattern in the genetic makeup within every cell of his body, and no other person shares it with him) (Sāmir bin 'Abd al-Karīm, 1435 AH: 917-962). Based on what has been agreed upon by contemporary scholars, the legitimacy of resorting to genetic fingerprinting is linked to the absence of one of the legitimate and legal methods for proving lineage and within the controls specified by Sharia to ward off corruption (Qarār Majlis al-Majma'a al-Fiqhī, 2002). These controls are in specific cases, including:

a) Disputes over unknown lineage, often tied to illicit relationships.

b) Suspected cases of illegitimate children.

c) Cases of establishing lineage to an unknown child.

d) Cases of inheritance in which the lineage is not established.

b) The Trend Opposing the Adoption of Genetic Fingerprints to Prove Lineage

Some scholars are against the idea of genetic fingerprints being used for authoritative proof of descent. These scholars claim that such reliance on genetic fingerprints in proving descent requires great caution and should be avoided because it brings issues of kinship and marriage to the fore, and most importantly, it is not helpful to determine paternity notwithstanding experiments in forensic science like blood typing. They support their stance because such situations can be manipulated, more so where there are underlying criminal ambitions, as such threats can endanger family life (al-Hādī al-Shalabī, 2018: 19).

Any institution should be free from suspicion or conflict; therefore, the introduction of genetic markers as a tool to determine parentage will put the institution of family in jeopardy and pose a threat to the social order. Moreover,

the jurists argue that the evidential power of fingerprints cannot reach the level of proof required in lineage cases, as they may not be free from doubt. Just as the idea of countenance, which cannot serve as proof due to the potential for confusion and doubt, then genetic fingerprinting can be exploited for various purposes in proving lineage, thus undermining familial stability (Fāṭimah Rābḥī, 2012: 184).

This trend calls for strict regulations and a framework for the use of genetic fingerprints to prevent misuse and ensure its ethical application in proving lineage while preserving the sanctity of family ties.

2. The Legal Position on Adopting Genetic Fingerprints to Prove Lineage

While legal scholars and jurisdictions around the globe embrace or contest the legality of the adoption of genetic fingerprinting as a method of lineage determination, divergent views exist between acceptance and outright prohibition. On the one hand, in some jurisdictions, the use of more scientific, legal approaches, including genetic fingerprinting, is implemented dubiously as an optional method. This is because these methods are often perceived to deliver very high accuracy levels in proving the father-child biological relationship (Ṣālih Būgheirah, 2013: 91).

Genetic fingerprinting, as examined in this context, is like a proven scientific method that is able to fit within the boundaries of the law and is dynamic enough to adapt to the changing scientific and technological traits of the modern world. This is due to its capacity to incorporate concepts, ideas, and technologies that are not there at the moment but which can boost its efficiency further (Muḥammad Abū Zayd, 2000: 298).

However, in order for genetic fingerprinting to be used in courts of law to determine paternity or maternity relationships, there needs to be specific and clear legal texts and policy prescriptions governing its use. This is because genetic fingerprinting is a provable and value-adding tool that provides clear and overwhelming evidence that is not permitted to have an avenue of error. Its use would settle many issues associated with parentage claims, thereby ensuring the completeness and practicality of justice delivery systems.

In Malaysia, and elsewhere, genetic fingerprinting remains a grey area in paternity dispute cases. DNA evidence, despite its scientific strength, is often shackled by the law. Concerning mainly criminal proceedings, DNA evidence is primarily governed by the Deoxyribonucleic Acid (DNA) Identification Act 2009 with no express statutory provisions assuming its compulsory use

in civil cases involving paternity disputes (Mondaq, 2024). So, the courts are guided through their discretion concerning DNA testing, primarily when the betterment of the child is at stake. In MPPL & Anor v CAS, the Court of Appeal reaffirmed the High Court's already existing jurisdiction over seeking a DNA test for the sake of establishing paternity (eLaw.my, 2024).

History tells us that genetic fingerprinting is not always the first choice of legal recourse in paternal disputes. Courts cling instead to legal presumptions of an old-world variety, like that under Section 112 of the Evidence Act 1950, which would negate DNA evidence (Skrine, 2019). This circumspect application of law shows that genetic fingerprinting, even having serious scientific clout, is bound to the will of judicial authority with respect to the law on which it leans.

As such, there is a need to reach out to other jurisdictions like the French system of law, which has embraced genetic fingerprinting and regards it as evidence that is nearly beyond doubt when determining paternity cases. The French scheme illustrates how there would be increased judicial respect for genetic fingerprinting. Thus, there is a plea for its greater use in the courts in order to achieve justice in paternity cases of a high standard and a fair manner (ʻUmar Rūʻīnah, 2015: 34).

JUSTIFICATIONS FOR NOT MANDATING GENETIC FINGERPRINTS IN LINEAGE VERIFICATION

Even if scientific methods have been embraced in a number of spheres, there are quite a few important reasons why genetic fingerprinting should not be made compulsory proof of paternity. The most pressing issues juxtaposition new methodologies with legal and constitutional principles that have existed for ages. These principles are aimed at safeguarding an individual from unwarranted interference or injury and are the building blocks upon which most legal systems are grounded. Here are the essential arguments about genetic fingerprinting being considered not as the sole or compulsory form of evidence to show the lineage. (Anas Nājī, 2010: 47):

1. Breach of Bodily Integrity

It has been acknowledged that the law highly values the human body and that no one should violate or attack it since it is regarded as the most personal aspect of a person. Every legal order in the world supports this notion by explaining that certain actions on the person's body cross the line of personal boundaries, such

as taking samples for genetic testing. Most people view the process of drawing biological materials for genetic fingerprinting as a violation and encroachment into a person's body; thus, it has an ethical dilemma attached to it. For this reason, almost all states require that genetic sampling be done willfully after obtaining and understanding the meaning of informed consent. In particular, the position of French law seems to stress the priority of the bodily integrity of a person, even where it concerns the right of a child to ascertain their filiation (Ḥussām al-Aḥmad, 2010: 43).

On the contrary, certain legal experts assert that, although the demand for bodily integrity is one of the primary considerations, society's interest in finding the truth and mixing the bloodlines differs from that priority. Also, it should be noted that seeking genetic fingerprints does not involve any physical harm to the person in question. Therefore, the positive influence on society by the application of genetic fingerprints to determine the father or the ancestors may be greater than the negative impact of drawing a small amount of biological tissue (Muṣlih al-Najjār, 2005: 65).

2. Breach of Right to Private Life

Another core legal principle, as contained in several Constitutions and laws, is the fundamental right to privacy of the individual. Given its nature, genetic fingerprinting enables access to the intricacies of an individual's composition, which shamefully may lead to the taking of their private life. This has raised fears about the genetic information being abused by ill-natured people. Among the risks of such misuse are cases where one's genetic information may be used to impersonate them through genetic maps (Naṣr Wāsil, 2004: 89).

In this context, it becomes easier to understand why legislators throughout history have tried to prevent the infringement of private life, both materially and morally, which renders privacy one of the most significant legal concerns in resisting the implementation of genetic fingerprinting on a wider scale. Should this type of evidence become compulsory, there is a danger of exposing very sensitive materials about one's private life, which may lead to grave intrusions of individual privacy (Belḥāj al-'Arabī, 2002: 73). In the current society, this is worrying, especially when people with no authority over them easily mishandle both digital and genetic information.

3. Violation of the Right against Self-incrimination

Comprising a bedrock of many legal systems worldwide is the principle that a person cannot be forced to testify against themselves. This extends to civil matters as well as criminal ones, and compulsory genetic fingerprinting would directly violate such a principle. Coercing an individual to undergo genetic testing, particularly where the individual is not willing to undergo the test out of their own free will, could be regarded as oppressive and infringing this basic right enshrined in legal systems (‘Alī Dāghī, 2003: 63).

However, refusal to comply with genetic fingerprinting presents challenges in ascertaining ‘who the father’ is, especially in situations where such evidence could otherwise be enough to prove paternity. Genetic evidence is, by all means, a potent figure of proof. However, the fact that such evidence is non-compulsory makes people, to some extent, inconclusive in its utility in proving facts of paternity. This may leave the courts without the ability to reach clear outcomes in any issues concerning parentage, thus aggravating the problems of fairness in dealing with cases that have conflicts concerning parental or other kinship relations (Muṣlih al-Najjār, 2005: 140).

4. Absence of Expertise in Genetic Fingerprinting for Proving Lineage

The other important reason for not being able to fully embrace genetic fingerprinting as a way of proving lineage is the lack of adequate facilities and human capital in a number of countries. In order to carry out genetic fingerprinting in the study of parentage testing, only special laboratories and experts trained specifically for the task are used. In many parts of the world, these facilities and personnel are in short supply or do not exist at all, making the application of this method feasible in the future only until such time when their establishment will have been achieved Across all civil and criminal sittings cross-examination regarding the paternity tests results obtained from registered laboratories should be avoided. The judicial systems must take steps and construct designated medical facilities where genetic testing can be carried out while also promoting the interaction of the medical and legal systems. Again, failure to implement these things can make the courts determine things by the use of genetic fingerprinting, which is not in any way reasonable since all the results would be long overdue or unavailable (‘Umar al-Sābil, 2002: 85).

Summary

Genetic fingerprinting, without a doubt, is a technological progress that could enable easy and more precise determination of paternity. Still, many factors, both legal and ethical, limit its enforcement as a compulsory requirement. These factors include physical integrity and privacy, the right against self-incrimination, and the lack of human and material resources necessary for its proper and universal implementation. In some jurisdictions, genetic evidence standards are addressed in such legal frameworks elsewhere, and genetic fingerprinting has been permissible in certain jurisdictions, at particular times, without being adopted as a necessity in proving paternity. This is mainly due to the difficulty of the present societies in finding the truth concerning the individual and their family, the truths that the individual is not willing to concede to.

THE LAWS RELATING TO DNA FINGERPRINTING IN MALAYSIA

1. Section 10(1) (c) of the Criminal and Undesirable Persons Registration Act No. 7/1969

Under this section, a certification signed by a registrar (a DNA expert) that a DNA profile that has been compared is similar is admissible as evidence in court. This evidence is sufficient for the matters under investigation unless proven otherwise. This means that a judge cannot refuse certification if the registrar confirms that the DNA profile is similar. If the judge refuses to accept this, the judge must call in DNA experts from outside.

2. Article 45 of the Evidence Act on "Expert Opinion"

"When a court has to give an opinion on a question concerning the law of a foreign country or concerning science, art, or concerning identity, the authenticity of handwriting, or DNA, the opinions on these matters of persons specialized in the law of the foreign country, science, art, or in questions of identity, the authenticity of handwriting, or DNA shall be considered relevant facts," this article states that DNA testimony enhanced by a DNA expert is admissible (Akta Keterangan, Kuala Lumpur, 1950: Act 56).

3. Article 399 of the Code of Criminal Procedure

This section states that a DNA fingerprint certificate report by a criminal registrar is admissible even if he is not present in court as a witness, provided that the prosecution submits a copy of the DNA fingerprint report to the accused (OKT) at least ten days before the commencement of the trial. The above items are legal provisions in Malaysia that enhance the admissibility of DNA fingerprints as evidence in court. DNA fingerprints can be used in any case involving DNA fingerprints, such as murder, rape, robbery, burglary, etc. ((bin ʻUthmān, n.d.: 46).

CONCLUSION

There can be no doubt regarding the relevance of scientific technology and modern medicine in solving various complicated issues that cut across several disciplines. Among these technologies, perhaps the most significant is the invention and utilization of genetic fingerprinting when it comes to establishing lineage. This study, as has already been shown, has an illustrative definition of DNA verification, its reliability, and its legal standing in relation to most family laws, especially Islamic law. Furthermore, the study examined the specific legal and religious parameters governing its use, as well as situations where reliance on this technology is impermissible.

The study results indicate that DNA fingerprinting is highly developed and has an excellent potential for parentage determination. However, its application is subject to legal and ethical considerations. Although it is increasingly accepted into the Malaysian legal system, the extent to which the technique is conciliable with civil and Sharia law is conditional upon the context of its application, the discretion of the court, and dedication to the principles of Islamic law. Therefore, although DNA fingerprinting enhances the verification of parentage, a careful regulatory framework is necessary to avert abuse and assure its compliance with religious and legal standards. Nowadays, genetic fingerprinting has attained a fair level of sophistication, and it can be used to perform a multitude of tasks. Appeals to technology increase the accuracy of outcomes of the legal processes, and this technology provides a scientific way to assist the classical forms of proving relationships. Most importantly, the advent of such technology guarantees the minimization of unfairness and uncertainty in the administration of justice, especially in delicate disputes such as that of parentage.

Finally, as the application of genetic fingerprinting progresses, it can be seen that legal practices, even in Malaysia and to a greater extent elsewhere, are set to change. The legal practitioners, alongside the scientists, must strive to enhance the scope of the law regarding the admissibility and use of such technology in furtherance of justice without compromising civil or religious values. Such a strategy will allow for continued healthy growth in the area of law and science, resulting in a fairer system for all.

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