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The Impact of Medical Tests on Establishing Lineage - Blood Tests as a Case Study - "A Comparative Study between Islamic Jurisprudence and Algerian Law"

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Abstract:

This study aims to clarify and demonstrate the importance of proving lineage, which is one of the major objectives in Islamic Sharia law as well as in positive laws. It also aims to explain the main methods of proving and disproving lineage, including modern scientific methods. Among the most prominent scientific methods that the judiciary relies on to resolve disputes in lineage cases is medical analysis. One of the most significant of these methods, after genetic fingerprinting, is blood analysis; the subject of this research article. This study examines the relationship between the child's blood and that of the parents through these analyses and the extent of its validity in proving or disproving lineage.

Keywords: Lineage Proof, Medical analyses(tests), Blood Analysis.

Introduction:

In the name of Allah, all praise is due to Allah, and peace and blessings be upon our master, the Messenger of Allah, and upon his family, companions, and those who follow him. To proceed: The family is considered the cornerstone in the construction of nations and societies. Allah has indicated that the foundation of tribes and communities is established through male and female relationships, as He has stated: "O mankind, indeed We have created you from male and female and made you peoples and tribes that you may know one another. Indeed, the most noble of you in the sight of Allah is the most righteous of you. Indeed, Allah is Knowing and Acquainted." (Quran, Al-Hujurat: 13). This is achieved through marriage and legitimate relationships, as stated by Allah: "And Allah has made for you from your selves mates and has made for you from your mates sons and grandchildren and has provided for you from the good things. Then in falsehood do they believe and in the favor of Allah they disbelieve?" (Quran, An-Nahl: 72).

In this relationship, what is known as lineage is established, as ordained by the Almighty when He said: "And it is He who created from water a human being and made him [a relative by] lineage and marriage. And ever is your Lord competent [concerning creation]." (Quran, Al-Furqan: 54). Therefore, one of the most important purposes of the Shariah is to protect this lineage, both in terms of existence by legislating marriage, encouraging it, regulating its conditions and pillars, and in terms of non-existence by prohibiting adultery and indecency, and imposing the harshest punishments on the perpetrators—preserving dignity and protecting lineage, so that corruption does not prevail and afflictions do not spread in society. Among these afflictions is the proliferation of illegitimate children with no known lineage. This concern is not limited to Shariah alone, but also extends to positive laws and those with natural disposition, as they have also addressed the issue of lineage and its protection from mixing. Hence, many positive laws have sought to fortify the aspect of lineage and preserve it by all means and laws available to them.

The Algerian legislator has taken care of the issue of lineage and has established a set of legal texts for it, as in Articles 40 to 46 of the Algerian Family Law, all of which are related to lineage. Studying the topic of lineage, whether in Islamic Shariah or positive laws, one finds that Shariah has prohibited any path that leads to ignorance, denial, forgery, or manipulation of lineage, classifying it among the major sins which may result in worldly punishment, curse, and exclusion from the mercy of Allah in the Hereafter, due to the implications on rights and legal provisions. Despite this, one finds in the texts of Shariah as well as in positive laws, a leniency in the methods of proving lineage. Any credible evidence that

leads to establishing lineage is accepted and considered valid, contrary to the usual strictness in the methods of evidence in other matters.

The leniency in this regard serves the noble purpose of revitalizing the soul, preserving it, and integrating it into society with honor and esteem.

One of the most important means of establishing or disproving lineage in this era is the reliance on scientific methods, including medical analyses, especially in a time where the field of science is advancing rapidly and with precision. Therefore, it has become necessary to resort to these scientific methods when judicial disputes arise in matters of lineage and parentage, as it is more of a scientific issue than a legal one. With the availability of biological analyses and genetic engineering, it has become easier to access the truth and resolve this intricate problem. This is evident in the recent amendment to Algerian family law, which includes the adoption of scientific methods as evidence in proving or disproving lineage in judicial disputes.

First: The Importance of the Subject:

Among the contemporary issues related to the proof of lineage is the analysis of blood and its validity in establishing or disproving lineage. Especially now that it has become easy and feasible to conduct these analyses with very high precision under the supervision of specialized authorities. We have witnessed significant advances in this field, which enhances its validity as evidence. Blood analysis is considered a means of proof in many fields, especially in the judiciary, where it can be used to establish evidence in certain crimes, identify the perpetrator, and more. However, the issue of lineage remains one of the most important fields requiring this type of evidence, due to its great significance, noble purposes, and numerous social and legal implications.

Secondly: Objectives of the Subject: The subject aims to achieve the following:

1- Providing an overview of the concepts related to the research, including "medical analysis," "proof of lineage," and "blood analysis."

2- Highlighting the role of these concepts in establishing or disproving lineage in disputes brought before the competent judicial authorities.

3- Reviewing the interrelated and interconnected relationship between blood analysis and the issue of proving or disproving lineage.

Thirdly: The Problematic Nature of the Subject: The problematic nature of the subject is highlighted in the key problem, which is: To what extent are blood

analyses valid in establishing or disproving lineage? Under this problem, there are sub-questions and issues:

1 - What are the concepts of the terms "medical analyses," "blood analysis," and "proof of lineage"?

2- What is the relationship between the blood of the child and the blood of the parents?

Fourthly: The Adopted Methodology: The methodology adopted in studying this subject includes the following:

1 - Utilization of the inductive approach by reviewing the existing literature on the subject.

2- Employment of the descriptive approach by gathering relevant materials related to the study topic and presenting them in their original form as recognized by experts.

3- Utilization of the analytical and comparative methodology through the analysis of legal and Sharia texts, comparing them, particularly in regards to the validity of scientific methods in the judicial proof system, and the issue of establishing lineage through legal and Sharia methods. Efforts were made to avoid dry repetition and rigid adherence to traditional approaches.

Fifthly: Research Plan:

To study this subject in a proper and methodical manner and to arrive at satisfactory results, the subject has been divided into two sections after this introduction: the first section addresses the concept of medical analyses and their types in establishing lineage, and the second section examines the concept of blood analysis and its validity in establishing or disproving lineage. Finally, a conclusion will summarize the most significant findings.

The First Section: The Concept of Medical Analyses and Their Types in Establishing Lineage:

Medical analyses are considered a modern scientific technique, developed through modern science research and experiments, and have become widely practiced in the field of medicine and biology. These analyses have become a routine process requested by physicians to understand the intricacies of the human body, its conditions, and characteristics. They are also used as a means of determining the relationship between individuals, such as establishing or disproving lineage. Therefore, before delving into the heart of the subject, it is necessary to explain the meanings of these terms and their significance, as well as

to elucidate the importance of establishing lineage and the types of analyses used for its establishment or negation.

The First issue: The Concept of Medical Analyses and Their Validity, and the Concept of Establishing Lineage:

In this section, I will address the study of the concepts of scientific terminology related to this study, specifically the two terms: "Medical Analyses" and the analysis of this compound scientific term, clarifying its meaning. The second term being "Establishing Lineage," which is also a compound term that requires deconstruction and clarification of its intended meaning.

The First Subsection: The Concept of the Term "Medical Analyses" and Its Ruling:

The term "medical analyses" is a modern scientific term in the field of medicine, consisting of two words: "medical" and "analyses". To understand this term, it is essential to deconstruct it and understand the linguistic implications of its components. Then, it can be defined as a contemporary scientific term, followed by an explanation of its ruling in Islamic jurisprudence.

First: Linguistic Definition "Analysis": It is derived from the root "hallala" which contains many branches and issues. The fundamental meaning is the separation of something into its components and the classification of a substance into its elements, according to Ibn Faris[1].

"Medical": It is related to medicine. Ibn Faris said: The root "Ta" and "Ba" indicate two correct origins, signifying knowledge of something and skill in it. It is said: a man of "tib" and "tabib," meaning a knowledgeable and skilled person. Subsequently, it became associated with the science that recognizes the conditions of human bodies in terms of health and illness, and those who possess this knowledge are called physicians[2].

Second: Definition in Technical Terminology:

The term "medical analyses" (les analyses médicales / médical tests) is considered one of the modern scientific terms in the field of medicine, often referred to by several other terms. It may also be called "medical laboratories," "clinical tests," or known as "clinical laboratories," all of which have the same connotation in modern medical science. However, various definitions exist for this term. Some define medical analyses as "laboratory tests that provide primary and essential indicators for monitoring a person's health status, revealing any abnormalities or disruptions in the physiological and organic functions of the body. These tests are interpreted by comparing them to recognized standard norms[3]."

Others define it as "all experimental protocols, whether biological or chemical, carried out by a biomedical doctor or a pharmaceutical biologist with a specialized team in a dedicated laboratory. The purpose is to conduct detailed examination of samples taken from an individual to assist a physician in diagnosing their health condition. This process is carried out through specific stages[4]."

Based on the foregoing, medical analyses can be defined as: a process of studying samples from the body, such as blood, urine, saliva, or other tissues, with the aim of evaluating health status or diagnosing diseases. Medical analyses are also used to detect physiological, chemical, or microbial changes in the body, providing valuable information for physicians to understand the patient's condition and make appropriate medical decisions.

Third: The ruling on medical analyses:

The origin of medical analyses is permissibility, as it is a form of treatment and disease detection. It was part of the guidance of the Prophet Muhammad, peace be upon him, to seek treatment and to advise it for those who are sick. Narrated by Jabir, the Prophet said: "For every disease, there is a cure. If the cure of the disease is found, the patient will be cured with the permission of Allah[5]." Also, narrated by Usama bin Shareek, some Bedouins asked the Prophet: "Should we seek medical treatment?" He replied: "Yes, O servants of Allah, seek medical treatment, for Allah has not created a disease without creating a cure for it, except for one disease." They asked: "O Messenger of Allah, what is that disease?" He replied: "Old age[6]." Scholars have mentioned the permissibility and desirability of seeking treatment, and not only a single scholar but Imam As-San'ani mentioned a consensus on this[7], and the same was mentioned by Imam As-Subki[8] and others.

Ibn Al-Qayyim states: "In the saying 'For every disease, there is a cure,' it reinforces the patient's and the physician's confidence and encourages seeking treatment and exploring it...[9]" Therefore, medical analyses are considered a means of treatment and disease detection and are originally permissible. However, their ruling is subject to the higher objectives, as if they are used for a forbidden or prohibited purpose, whether religiously or legally, they also become forbidden and prohibited. And if they are used for a necessary purpose, such as to save a life, then they become necessary, and so on[10].

The second Subsection: the concept of the term "Proof of Lineage":

The term "Proof of Lineage" is a compound term composed of two words: "Proof" and "Lineage." To elucidate the concept of this term, it is necessary to explain it from two perspectives: as individual terms and as a science and a title.

First: Defining Proof of Lineage as an Individual Term:

1- Definition of "Proof" in language and terminology:

A. **Linguistically"Proof":** means to establish something, and one who establishes is a "prover." The object that is established is "established." "Proving something" means to maintain, affirm, and uphold it. For example, one can "prove" a debt, meaning proving its validity, or "prove" knowledge, meaning to truly know something, and "prove" something religiously means to validate and confirm its correctness according to religious law and to make it firm and established. From it, we say, "He proved the stick in the ground[11]."

B. **Definition of Proof as a Terminology:** In terminology, discussing the meaning of proof is quite extensive, having two aspects: its meaning in Islamic jurisprudence and its meaning in positive law, specifically within the judicial system. To summarize this elaboration, it can be said that proof, as a terminology, in both aspects involves "establishing evidence and argument before the judiciary according to the methods specified by Islamic law or the legal system, demonstrating the existence of a legal or lawful event and its resulting implications[12]." In the general sense, whether in Islamic jurisprudence or the judicial system, it signifies the pursuit and attainment of truth, and the resolution of disputes and conflicts between individuals.

2- Lineage in Language and Terminology:

A. **Definition of Lineage:** In language, (نسب) "Nasab" means one's ancestry, and (النسبة) "al-nusba" and (النسب) "al-nasb" refer to kinship. It is said that "نسبة "specifically refers to the paternal lineage. "النسبة "is the source of affiliation. "النسب "is the noun form. It's mentioned in "Tahdhib" that lineage is through the fathers, and it pertains to regions and professions. Ibn al-Sekkit said: it comes from the father and the mother. It is said that his lineage is in Tameem, meaning he belongs to them. The plural of (نسب) is (أنساب) "Ansab", similar to (سبب) "cause" and (أسباب) "causes", and (نسيبه هو) means he is a relative. It is attributed to what distinguishes one's father, mother, tribe, place, profession, and other attributes. Then (النسب) is used as the source of absolute relationship through kinship, and it is said between them (نسب) meaning kinship[13].

B. **Synonyms of Lineage in Arabic Language:** As is known in the Arabic language, a word may have many synonyms used to indicate the same meaning.

Although each word in the Arabic language has a specific meaning that distinguishes it from others, they may share some common meanings with other words, including the word "نسب" (Nasab). In the Arabic language, there are words that are synonymous with this word and converge with it in some meanings. I mention, by way of illustration and not limitation, the following:

- **Kinship:** This term has been mentioned in several places in the Quran, such as in the verse: "Say, 'I do not ask you for it any payment, only affection for those near to me.'" [Surah Ash-Shura, 42:23]. The scholar Sheikh Taher Ben Achour and others have mentioned that kinship refers to the lineage of the fathers rather than the mothers, and that it is the common factor among people and their lineages. The predominant focus is on seeking the common factor from the father's side rather than the mother's side, although it can also refer to anyone who has a lineage connection with a person, whether from the mother's side or the father's side[14].
- **Ties of Kinship:** The term **"Arham"** is used to refer to close relatives, meaning those who have close kinship ties. It encompasses relations through blood ties and is specifically used to refer to relatives on the maternal side. The term "Arham" is derived from the root that signifies the cause of kinship and is the origin from which offspring grow[15].
- **Lineage:** This term has been mentioned in the Quran, as in the verse: "He will emerge from between the backbone [a) and the ribs]." [Surah At-Tariq, 86:7]. Lineage refers to the spinal column in the back and is also used to refer to the back itself. It signifies the children born from the father's lineage, and is used to denote a person of noble descent. The term "Ibn As-Salb" (son of the lineage) is used until the issue of adoption is addressed, after which they are not called "Ibn As-Salb." Therefore, the meaning of the verse "And offspring from your loins" refers to the children born from your water and lineage[16]".

Other synonyms in Arabic include "Al-Asebah," "Al-Lahmah," and "Ash-Shabakah.

C- **Lineage:** In technical terminology, the definition of "al-nasab" (lineage) does not differ from its definition in language. Its concept in Islamic jurisprudence or in positive law revolves around its linguistic meaning. Therefore, there is no comprehensive definition that prohibits "nasab" as a term used by jurists or in positive laws. Instead, all that has been mentioned by jurists in Sharia or in legal texts in terms of definitions revolves around its linguistic meaning, which is "a relationship between two individuals." This includes what Al-Bukhari mentioned in defining "nasab" as: "Nasab is kinship, meaning the ties of blood. It is a term

that encompasses all forms of kinship, whether close or distant, whether through the father's side or the mother's side[17]."

Some have defined it by saying, "It is the connection of a person with another based on blood relationship[18]." Similarly, Article 32 of the Algerian Civil Code states: "A person's family is composed of close relatives, and close relatives are considered to be those who are united by a common lineage[19]."

However, we find another definition that narrows "al-nasab" to a more specific meaning than simply kinship. It is limited to the relationship of a son with his father. Ibn Arabi said, "Lineage is the mixing of water between male and female in accordance with Sharia. If it occurs through disobedience, it is a creation but it is not true lineage.[20]" Al-Kashaf mentioned something similar and said, "God divided humans into two categories: those with lineage, meaning males who are attributed to, such as 'so-and-so son of so-and-so,' and those with affinity, meaning females who are married into...[21]"

Even in Islamic jurisprudence (fiqh), the term "al-nasab" is used, often with the specific meaning as defined by al-Abi: "Nasab is the affiliation to a specific father[22]." This meaning is also found among legal scholars, with some defining it as follows: "Al-nasab is the affiliation in which a child follows their father in matters of law, religion, and civilization, and upon which inheritance is based. It gives rise to marriage prohibitions, and paternal rights and obligations are derived from it[23]."

Based on the preceding discussion, it can be said that "al-nasab" in its technical meaning does not differ from its linguistic meaning, as it has a general sense of kinship and a specific sense of the relationship between a son and the parents, particularly the father. This is because maternity is undisputed and proven by childbirth alone, while paternity is subject to dispute and investigation, whether in terms of affirmation or negation.

3- Defining paternity establishment as a science and a legal status By understanding the connotations:

of the term "paternity establishment" linguistically and technically, a comprehensive and preventive definition can be inferred. Paternity establishment is essentially a compound concept that embodies an additional legal and scientific qualification. It can be defined as the establishment of legal or judicial evidence before the judiciary to confer children to their fathers[24], along with the legal implications stemming from this affiliation.

*** Explanation of the definition:**

- Establishing legal or juridical proof: Proof in this context refers to evidence and argument to establish paternity through clear and sound evidence, especially in cases where disputes arise, whether from a legal or religious perspective. This is in line with the saying "the burden of proof lies with the claimant, and the oath with the one who denies[26]" as stated by Ibn al-Qayyim. In summary, "proof" is a term that encompasses everything that demonstrates the truth and brings it into clear view, and when it is specified by two witnesses, or four, or one witness, it does not limit its true name. Proof is noted in the Quran, and by it, what is intended are evidence, arguments, and proof, whether individually or collectively[27].

Article 40 of the Algerian Family Law enumerates certain methods of establishing paternity stating: "Paternity is established by valid marriage, acknowledgement, proof, presumption of marriage, or dissolution of a marriage after intercourse[28]." The inclusion of the term "proof" by the Algerian legislator implies the broad acceptance of various methods of establishing paternity, including scientific evidence such as medical tests and other means.

- Before the judiciary: This means that the evidence must be presented before the competent judicial authority to resolve such disputes, in order to preserve rights, prevent injustices, and ensure justice. The means of proving paternity, such as testimony, acknowledgement, or modern scientific methods, are not considered conclusive proof unless the judge accepts them as the decisive judgment. The judge can either accept or reject them.

- Affiliation of children to their fathers: This means that a child follows his father in lineage, whether through valid marriage, or similar arrangements such as an invalid marriage or a suspected marriage; otherwise, the child is affiliated with his mother.

- The consequences of this affiliation: Refers to the resulting rights, duties, and legal and religious judgments in proving this lineage, such as alimony, inheritance rights, and others.

The second issue: The importance of proving paternity and the types of medical tests used for establishing it It is necessary:

first, to explain the importance of proving paternity and the consequences and legal rulings resulting from this proof. Then, to discuss the types of medical tests that can be relied upon to establish or refute paternity.

The first Subsection: The importance of proving paternity:

Allah has blessed mankind with lineage; it is one of the greatest blessings bestowed upon humans. Lineage forms the basis of societies, nations, and peoples,

as Allah states in the Quran: "O mankind, indeed We have created you from male and female and made you peoples and tribes that you may know one another. Indeed, the most noble of you in the sight of Allah is the most righteous of you. Indeed, Allah is Knowing and Acquainted" [Surah Al-Hujurat, 13]. Lineage preserves one's dignity, history, and existence, and reveals the secret of human distinctiveness from other creatures. Therefore, it is in the nature of a human being to refuse to be without recognized lineage; it is an innate predisposition that Allah has endowed upon all human beings. Whereas humans love to trace themselves back to their fathers and grandfathers, and even take pride in it, Al-Dahlawi says in his book "Hujjat Allah Al-Baligha": "Know that lineage is one of the matters that humans are naturally inclined to preserve. You will not find a person in any region fit for human habitation who does not desire to be ascribed to his father and grandfather and abhors any question about his lineage. This is except in the rare case of debasement or to avoid harm or acquire benefit, and it is also essential for one to have offspring to whom they can pass on their lineage and take their place after them[29]." Therefore, no nation or civilization exists without a concern for lineage, and specialists have emerged as a reference for people to know their origins and ancestors[30]. Some even used to write their family trees and proudly display them in their homes. Consequently, being without lineage was considered a station of blame, shame, and disgrace.

The significance of lineage becomes more apparent in the careful attention given to it by the legislator, who made it one of the major objectives that Islam came to preserve and nurture. Many legal rulings have emerged as a secure fence, ensuring the safety of one's lineage from any mingling or confusion. For instance, the prohibition of adoption and its annulment, the prohibition of marrying a woman who is still in her waiting period after divorce, the prohibition of denying paternity of a child, and similarly, the prohibition for women to attribute a child to someone other than its father. Furthermore, children are prohibited from claiming someone other than their biological fathers. All these regulations are stated in strong terms, either with curses and ostracism from the mercy of Allah and His paradise, or with threats of the fire, or with the possibility of being discredited in the community. These concepts are clearly articulated in the Quran and the collections of Hadith, and elaborating on them further would require a lengthy discussion[31].

The importance of establishing lineage is also evident through the numerous legal rulings in Islamic jurisprudence that are contingent upon its confirmation. These include matters such as guardianship, the prohibition of marriage, inheritance, prohibition of bequest, obligation of maintenance, waiver of retaliation, imposition of financial penalty, rules regarding privacy and supervision, rules of

breastfeeding, guardianship of marriage, washing and funeral prayer for the deceased, bearing of financial liability, guardianship of property, seeking legal punishment and retaliation, among other matters mentioned by the scholars in this field. Some of these were outlined by Imam Suyuti, sourced from "Al-Lubab[32]".

The Second Subsection: Types of Medical Tests for Lineage Determination:

Article 40 of the amended and completed Algerian Family Law Order 05/02 stipulates the methods for establishing lineage. It states: "Lineage is established through valid marriage, acknowledgment, evidence, suspicion-nuptials, or any marriage that has been annulled after consummation.

The judge is allowed to resort to scientific methods to establish lineage[33]. The Algerian legislator added in the second paragraph of this article, influenced by the scientific revolution and the significant development in the medical field, especially in the biological aspect, the recourse to modern scientific methods as a means of proving lineage. However, the legislator did not specify these methods, as they are numerous and may be evolving. This is perhaps why the legislator left this entirely open and did not confine them to a specific means in and of itself. One of the most commonly used and relied upon methods for proving or disproving lineage is medical testing, with the most prominent of these:

- tests being genetic (DNA).

- testing and blood type analysis, which is the subject of study in this article.

The Second Section: The Concept of Blood Analysis and its Validity in Establishing Lineage:

In order to understand how blood analysis is used as a method to establish or disprove lineage, it is necessary to first comprehend the nature of blood, its components, functions, blood types, and the extent of its significance in proving or disproving lineage.

The First issue: The Concept of Blood Analysis, its Components, and Functions:

In this point, I will outline the concept of blood analysis as a medical and biological process used in proving or disproving lineage, followed by an explanation of its components and functions in the human body, presented concisely and clearly in a language that can be quickly understood.

The first Subsection: The Concept of Blood Analysis:

The term "blood analysis" is a compound term composed of two words: "analysis" and "blood." Having previously defined the meaning of the word "analysis" both linguistically and in technical terms. it remains to understand the meaning of the word "blood" in both a linguistic and technical context, and then provide a concept for this compound term.

1- Blood (singular): Plural: blood, it is a vital red fluid that circulates in the circulatory system of humans and animals, transporting nutrients throughout the body via the veins and arteries[34].

2- In technical terminology: The definitions of blood vary among specialists, with some being in simple language and others in medical jargon understood only by experts. Therefore, I will focus on the simple definitions that are understood by all, as they do not differ in interpretation from the linguistic context. Blood is a red fluid that flows in the blood vessels and the heart[35].

It can be said that, according to specialists, blood is "a fluid tissue of the connective tissue family, crimson in color, originating in bone marrow, flowing in the blood vessels through arteries, veins, and capillaries, carrying life to every cell in the body and enabling it to perform its function[36]."

3- Definition of blood analysis: Based on the previous explanation, blood analysis can be defined in terms of establishing proportions as a process of studying blood samples from three parties: the father, the mother, and the child, to study the genetic composition of these blood types and the relationships between them.

The Second Subsection: Blood components and functions:

Blood consists of three main elements[37]:

1- **Plasma:** It is a yellowish fluid that makes up about 55% of the blood volume, and its function is to facilitate the movement of blood cells, carry nutrients to all cells, and perform other functions.

2- **Blood cells:** There are two types: red blood cells and white blood cells.

*** Red blood cells (Erythocytes):** They are the most numerous cells, with an average count of 5 million per cubic millimeter. They contain a red pigment and are responsible for transporting oxygen from the lungs to all cells in the body, and in turn, carry carbon dioxide from the cells back to the lungs for disposal.

*** White blood cells (Leucocytes):** They are less numerous than red blood cells, with counts ranging from five to ten thousand per cubic millimeter. Their

function is to form the body's immune system against bacteria by destroying, engulfing, and eliminating them.

3- Platelets (Thrombocytes): They are fragments of a cell present in the bone marrow, with an average count of 300 thousand per cubic millimeter. They assist in wound closure, stopping bleeding, and blood clotting.

The second issue: Blood groups and their relationship to paternity testing To understand how blood types are related to proving or disproving paternity:

it is necessary to have a clear understanding of blood groups and their interrelationships.

The first Subsection: Blood Groups:

also known as blood types or blood categories, were first discovered by the Austrian doctor Karl Landsteiner based on blood agglutination factors. There are four blood groups that can be distributed among humans in the following proportions[38]:

Blood Group O: Approximately 45% of the human population.

Blood Group A: Approximately 42% of the human population.

Blood Group B: Approximately 10% of the human population.

Blood Group AB: Approximately 3% of the human population.

After conducting experiments, Dr. Karl noticed that if two different blood types were mixed together, they would not blend, unlike when they are of the same blood type. Based on this observation, he formulated the principle that red blood cells are surrounded by antibodies that work to agglutinate them when encountering a foreign invader, which is called an antigen. If this antigen is incompatible with the antibodies in the blood, it leads to the agglutination of red blood cells, causing blockages in blood vessels that can lead to death. However, if the antibodies match the antigen, nothing adverse occurs. This led to the division of blood into four groups based on the presence of antibodies and agglutinogens in the red blood cells[39]. The following table details this relationship.

Blood Type	Group O	Group AB	Group B	Group A
Agglutinogen	-	A.B	B	A
Antigen	A.B	-	A	B

Based on the above, the importance of these blood types and this division is evident in several issues, including the matter of blood transfusion, as the donor's blood type must match that of the recipient's. Individuals with blood type A can only receive from the same blood type, and the same applies to individuals with blood type B. However, those with blood type AB can receive from all blood types, unlike those with blood type O, who can only receive from blood type O.

The second Subsection: is the significance of blood analysis in confirming or refuting paternity:

Additionally, the importance of these divisions is apparent in the issue of inheriting these blood types from the parents. Modern science has shown the possibility of inheriting blood types between parents and children in accordance with Mendelian inheritance laws. The following table details the blood types that can be passed to children and those that cannot, based on the parents' blood types[40].

Parents' Blood Type	Possible Blood Types for Children	Impossible Blood Types for Children
O+O	O	A.B.AB
O+A	O.A	B.AB
O+B	O.B	A.AB
A+B	A.B.AB.O	-
AB+AB	A.B.AB	O
A+A	A.O	B.AB
B+B	B.O	A.AB
A+AB	A.B.AB	O
B+AB	A.B.AB	O
O+AB	A.B	O.AB

This table clearly demonstrates a set of important rules, including:

- A child cannot have a blood type that is not present in the blood of either parent or both; for example, if the parents' blood type is O, the child can never be A, B, or AB, and the only possible blood type for the offspring is O, and so on.

- Through this table, it can be determined whether the offspring could possibly be the child of these two parents. However, it cannot be definitively concluded that

the child is theirs, as there is a possibility that others share the same blood type, and many people may indeed share the same blood type.

- If the paternity cannot be conclusively proven through this table, unlike the negation, it is definitively irrefutable. If it is found that the offspring does not have the blood type of the parents or one of them, then it cannot be their child. For example, if the child has blood type O, it is impossible for the parents to have blood type AB, for instance, and therefore it can be definitively stated that this child cannot be theirs.

conclusion:

it can be said that all legislations, similar to Algerian legislation, have addressed the issue of paternity due to its great importance. The Algerian legislator has acknowledged the validity of scientific methods in proving paternity, however, it has not specified them but left them open-ended, including the validity of blood analysis in proving and refuting paternity. Scientific studies have proven that blood analysis is not conclusive evidence in proving paternity, but it is definitive evidence in refuting it. Therefore, if it is found that the child does not have any blood type from either of the parents or both, then they definitely are not their child.

Footnotes:

1- See: Dr. Ahmed Mukhtar Abdel-Hamid Omar, "Dictionary of Contemporary Arabic Language," published by Al-Alam Al-Kutub, Cairo, 1st edition, 2008, (Vol. 1, p. 550).
2- Ibn Faris, "Dictionary of Language Metrics," translated by Abdul Salam Muhammad Haroun, published by Dar Al-Fikr, Damascus, (n.d. 1979), (Vol. 2, p. 20).
3- See: Ibn Faris: same reference, (Vol. 3, p. 407) / Also: Mohammed Ali Al-Tahani, "Encyclopedia of the Exposition of Terms in Arts and Sciences," translated by Ali Dahrouj, published by Library Lebanon Publishers, Beirut, 1st edition, 1996, (Vol. 2, p. 1124).
4- Hanin Wali Hanin and Masri Khalifa, Medical Analysis, Radiology, and Clinical Tests, published by Noobar Press, Cairo, (n.d.) 2012, (p. 5).
5- See: Bousaid Atallah and Akkaka Fatima Zahra, "The Role of Medical Analysis in Avoiding Medical Errors," Journal of Legal and Political Studies, Algeria, Issue 2, 2015, (p. 132).
6- Narrated by Muslim in his Sahih, Book of Salam, Chapter: "For every disease, there is a cure, and seeking treatment is recommended," Hadith number (2204), (Vol. 4 / p. 1729).
7- Narrated by Abu Dawood in his Sunan, Book of Medicine, Chapter: "Regarding a person who seeks treatment," Hadith number (3855). See: Sunan Abi Dawood, edited by Shuaib Al-Arna'out and Mohammed Kamil Qara, published by Dar Al-Risalah Al-Alamiyyah, Beirut, 1st edition, 2009, (Vol. 4 / p. 3).
8- Narrated by Al-Tirmidhi in his Sunan, Book of Medicine, Chapter: "What has been narrated about medicine and the encouragement to seek it," Hadith number (2038), and he said the Hadith is good and authentic, and Al-Albani authenticated it. See: Sunan Al-Tirmidhi, edited

by Ahmad Muhammad Shakir and Fuad Abdul-Baqi, published by Mustafa Al-Babi Al-Halabi Press, Egypt, 2nd edition, 1975, (Vol. 4 / p. 383).
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11- Ibn Qayyim, Abu Abdullah Mohammad Ibn Abi Bakr Al-Jawziyya, "Zad al-Ma'ad fi Hady Khairil 'Ibad," edited by Ajmal Mohamed Al-Islahe, published by Dar Ibn Hazm, Beirut, 3rd edition, 2019, (Vol. 4 / p. 20).
12- See: Fateh Bashir Pasha, "The Sharia Rulings Related to Medical Analysis Laboratories Regarding Purification, Prayer, and Salutation," Annals of the University of Algeria 1, Volume 34, Issue 01, 2020, (p. 482).
13-See: Ahmad Mukhtar Abdul Hameed Omar, "Dictionary of Contemporary Arabic Language," published by Al-Alam Al-Kutub, Beirut, 1st edition, 2008, (Vol. 1 / p. 310).
14- For further details see: "The Impact of Medical and Biological Developments on the System of Proof in Personal Status," a doctoral dissertation in Sharia and Law, Ahmed Ben Bella University, Oran, 2015/2016, (p. 23-24 and 58).
15- See: Ibn Manzur, "Lisan Al-Arab," published by Dar Sader, Beirut, 3rd edition, 1414 AH, (Vol. 1 / p. 755). And Al-Fayumi, "Al-Misbah Al-Muneer fi Gharib Al-Sharh Al-Kabir," published by Al-Maktaba Al-Ilmiyya, Beirut, (n.d.), (Vol. 2 / p. 602).
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18- See: Mohammed bin Saleh Al-Othaimeen, "Interpretation of the Noble Qur'an: Surah Al-Nisa," published by Dar Ibn Al-Jawzi for Publishing and Distribution, Saudi Arabia, 1st edition, 2009, (Vol. 1 / p. 178).
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27- See: The previous reference, (p. 60-61).
28- Baihaqi narrated from Ibn Abbas (may Allah be pleased with him) in the book of Claims and Evidence, in the chapter on the burden of proof on the claimant and the swearing of an oath by the denier, Hadith number (3386). See: Al-Baihaqi, Al-Sunan Al-Sughra, edited by Abdul Ma'ati Amin Qalaiji, published by Jamia al-Dirasat al-Islamiyya, Karachi, Pakistan, 1st edition, 1989, (Vol. 4 / p. 188).
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35- See: Ahmed Mukhtar Abdul Hamid Omar, "Dictionary of Contemporary Arabic Language," previous reference, (Vol. 1 / p. 771).
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