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| RESEARCH ARTICLE

## Three-Parent Baby in Family Law: Legal Challenges on New Reproductive Technologies

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| ABSTRACT

One of the most controversial developments in this field is mitochondrial transfer technology, which has made it possible to create so-called “three-parent babies.” In this process, the child’s genetic material includes DNA from the biological parents and mitochondrial DNA from a third donor, with the aim of preventing the transmission of severe mitochondrial diseases, where the donor’s genetic contribution is relatively small in percentage. Although the genetic contribution of the donor is relatively limited, the use of this technology has opened important debates in legal and bioethical terms. The use of this method has raised a series of important legal and ethical issues, particularly in relation to the determination of paternity, the status of the donor of genetic material, the right of the child to know his biological origin, and the impact that these technologies have on the traditional concept of the family, thus adding to the complexity of the legal relationships between individuals involved in the reproduction process. The study analyzes the impact of these developments on the traditional concept of the family and on the fundamental principles of family law, highlighting the complexity of legal relationships that arise from the involvement of more than two subjects in this process. Through a doctrinal and comparative approach, it examines the ways in which different legal systems regulate or limit the use of this technology, highlighting the lack of a unified approach at the international level. The study relies on secondary data collection methods. It is based on a comprehensive review of existing legal sources, including legislation, academic literature, and international legal instruments. Finally, the study emphasizes the need for the development of a clear legal framework that guarantees a balance between scientific innovation and the protection of the best interests of the child.

| KEYWORDS

Three-parent baby, mitochondrial replacement therapy, reproductive technology and law, legal parenthood, family law and bioethics

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### 1. Introduction

The rapid development of assisted reproductive technologies has brought about a transformation not only in the field of medicine but also in the legal field, challenging traditional concepts of family law. One of the innovations that is debatable is the creation of the so-called “three-parent baby” method, which is achieved through the mitochondrial transfer technique. This procedure involves the genetic material of three individuals: the biological mother and father and a mitochondrial donor who contributes mitochondrial DNA.

Essentially, family law is built on the parentage model where the legal parent-child relationship was based on the biological connection or on the legal one recognized through the institution of *asoptima*. However, new biotechnological interventions create situations where the genetic contribution does not necessarily coincide

with the legal status of the parent, such as MRT (Baylis, 2020, pp. 92-3) From a legal perspective, one of the most complicated issues is related to the determination of parentage, where in most legislations, the law recognizes only two legal parents, regardless of the possible genetic contribution of a third person. In the United Kingdom, through changes in the legislation on assisted fertilization, specifically within the framework of the HFEA (Human Fertilisation and Embriology Authority) and the relevant regulations, the use of MRT has been allowed, but it has been sanctioned that the mitochondrial donor does not acquire the status of legal parent (Society, 2015). Another essential dimension is that of children's rights, in particular the right to know one's biological origin. The Convention on the Rights of the Child (1989), in articles 7 and 8, establishes that the child has the right to preserve his or her identity, including family ties and origin (UNICEF, 1989).

1. The child is registered immediately after birth and from then on has the right to a name, the right to acquire a nationality and, as far as possible, the right to know and be cared for by his or her parents.
2. States Parties shall ensure the implementation of these rights, in accordance with their national law and with the obligations arising from the relevant international instruments in this field, in particular in cases where, in their absence, the child would be stateless.
3. States Parties undertake to respect the right of the child to preserve his or her identity, including nationality, name and family relations, as recognized by law, without unlawful interference.

Furthermore, the concept of the "three-parent baby" challenges the traditional notion of the family itself, which in many legal systems is built on the principle that a child has two parents. This has consequences in various areas of law, such as inheritance, custody rights, etc. In some legal systems, alternative forms of parenthood (same-sex couples) have begun to be recognized; the involvement of a third person at the genetic level further complicates this structure, requiring new solutions. The most problematic aspect is the international aspect of these practices, where differences between national legislations have encouraged what is called reproductive tourism, where individuals travel to countries that allow certain reproductive techniques that are prohibited in their country of origin (Shenfiled, 2010). In the context of the Republic of Albania, these issues take on particular importance due to the lack of a specific legal regulation for artificial reproduction methods, such as mitochondrial transfer. The Family Code of the Republic of Albania remains built on the traditional concept of the family, where the parent-child relationship is based primarily on biological law and the principle *mater sempre cetera est* and on the presumption of paternity within marriage. This code does not address situations where a child may have more than two genetic contributors, nor does it address the separation between genetic and legal parentage as occurs in the case of artificial reproductive methods. (Drejtësisë, 2003). Furthermore, the Law on Reproductive Health contains some general provisions on reproductive health and family planning, but does not provide detailed regulation on assisted reproductive technologies, thus creating legal uncertainty (Publik, 2002).

In conclusion, the "three-parent baby" method represents a multifaceted challenge for family law, challenging traditional concepts of family, identity, and requiring a deeper review of the existing legal framework in order to balance the best interests of the child and legal certainty.

## **2. Literature Review**

The academic debate on mitochondrial replacement techniques (MRT) reflects two well establishment and contrasting bioethical positions, grounded in reproductive autonomy on the one hand and concerns about human dignity and genetic intervention on the other.

On the supportive side, John A. Robertson argues that MRT should be permitted as an extension of reproductive liberty, particularly where it serves to prevent serious mitochondrial diseases. His work emphasizes that access to such technologies is consistent with the broader framework of procreative autonomy in liberal legal systems (Robertson, 1996, pp. 913-5). Similarly, the Nuffield Council on Bioethics, in its authoritative 2012 report,

concludes that MRT can be ethically acceptable, provided that it is subject to strict regulatory oversight, long-term monitoring, and clearly defined clinical purposes.

This position reflects a regulatory-ethical balance between innovation and precaution (Bioethics, 2012, pp. 52-6). In contrast, critical perspectives are strongly articulated by Jurgen Habermas, who cautions against germline modification on the grounds that it may undermine human dignity and alter the moral foundations of human agency. Habermas argues that genetic interventions affecting future generations risk instrumentalizing human life and transforming the parent-child relationship into one of design rather than acceptance (Habermas, 2005, pp. 233-5). From a regulatory perspective, the United Kingdom provides a leading example of a permissive yet controlled legal framework.

Through the Human Fertilisation and Embryology Act and subsequent regulation adopted in 2015, the UK has legalized MRT under strict licensing conditions, positioning itself at the forefront of legal innovation in reproductive technologies (legislation.gov.uk). A comparative assessment of these positions reveals a persistent tension between two competing priorities: the protection of reproductive autonomy and the safeguarding of ethical boundaries in genetic intervention. While supportive approaches prioritize medical benefits and individual rights, they are often criticized for insufficiently addressing long-term uncertainties, including intergenerational risks and legal ambiguities. Conversely, restrictive approaches, while ethically cautious, may disproportionately limit access to potentially life-saving technologies and hinder scientific advancement.

Despite the expanding body of literature, significant gaps remain. In particular, the implications of MRT within family law are underexplored, especially regarding the legal determination of parenthood and the status of the third genetic contributor.

Moreover, there is a lack of focused analysis on jurisdictions without specific regulatory frameworks, including Albania, where the absence of clear legal provisions creates uncertainty in both medical practice and legal recognition.

### **3. Materials and Methods**

This study is based mainly on the analysis of legal literature that deals with artificial reproductive technologies and their impact on family law, where the materials used include various scientific legal sources:

- *International scientific literature*, including academic articles in the fields of family law, and bioethics;
- *National and international legislation* regulating the use of artificial reproduction methods and the determination of the parent-child relationship;

This paper also uses a methodological approach that includes several methods:

- *The method of legal analysis*, used to examine the concept of parenthood and the way in which family law reacts to new developments in artificial reproduction technologies;
- *The comparative method*, through which the different approaches of the legislations of the states regarding the use of new techniques such as MRT are analyzed as well as the way in which these legal systems treat the status of the child and the parent;
- *The doctrinal method*, which consists in the examination and interpretation of the scientific literature on the concept of parenthood, genetic identity.

#### **4. Findings**

The findings of this study reveal that mitochondrial replacement techniques challenge the traditional legal framework of parenthood, which is primarily based on genetic and biological connections. The introduction of a third genetic contributor creates legal ambiguity, particularly regarding the determination of parental status and rights. The comparative analysis demonstrates such as the United Kingdom have adopted a clear regulatory approach, explicitly excluding the mitochondrial donor from legal parenthood. In contrast, countries lacking specific regulation face significant legal uncertainty, which may lead to inconsistent juridical interpretations.

Furthermore, the study identifies a fundamental tension between advances in reproductive technology and the existing legal concepts of family law. Current legal systems are not fully equipped to address the complexities introduced by MRT, particularly in relation to identity, filiation, and the best interest of the child.

##### ***4.1 Ethical and legal dilemmas of the "three-parent baby" technology***

Mitochondrial replacement techniques became more widespread in February 2015, when the United Kingdom became the first country to pass laws to allow the creation of babies from three people, where MRT aims to create what are called three-parent embryos. The aim of this technology is to help women with severe mitochondrial diseases have children without inheriting the disease. (Lee, 2016, pp. 619-20). Mitochondrial manipulation is not a new technology, as in 2000, about 58 children were born through a technique that injected mitochondria from a younger woman's eggs into the eggs of older women, thus creating babies born with genetic material from three people, and the purpose of these injections was to increase the success of IVF. While MRT gives women the opportunity to have genetically related children who do not inherit mitochondrial diseases, there are several arguments against these practices, with one of the most compelling arguments being based on the medical risks associated with the procedure, risks that exist for the intended mother, the donor or the surrogate mother. (Katarina, 2016, p. 624). These types of techniques raise concerns about informed consent, including the ability of each participant to understand and consent to the procedures, where in the context of three-parent embryos, concerns arise about emotional attachments due to the nature of the procedure. While embryos cannot consent to their own creation, the question of whether prospective parents are capable of consenting to the creation of embryos using dangerous methods is an ethical debate. However, what I think is that MRT represents a balance, both ethical and legal, of the right of parents to have healthy children and the obligation to protect the best interests of the child, where on the one hand the technology is justified as a means to prevent serious diseases, while legally it is based on the right to create a family.

One of the main points of debate for the legalization of assisted reproduction techniques so far has been the three-parent child, since children in these methods have a genetic relationship with three people, namely the mother, the father and the mitochondrial DNA donor, where the contribution of the latter is very small. Concepts of family have been very fluid, since it is assumed that for most donors, ancestry will not be required, so to recognize the status of the third person. (Carr, 2015, pp. 124-5).

##### ***4.2 Legal determination of parents in the case of the "three-parent baby" method***

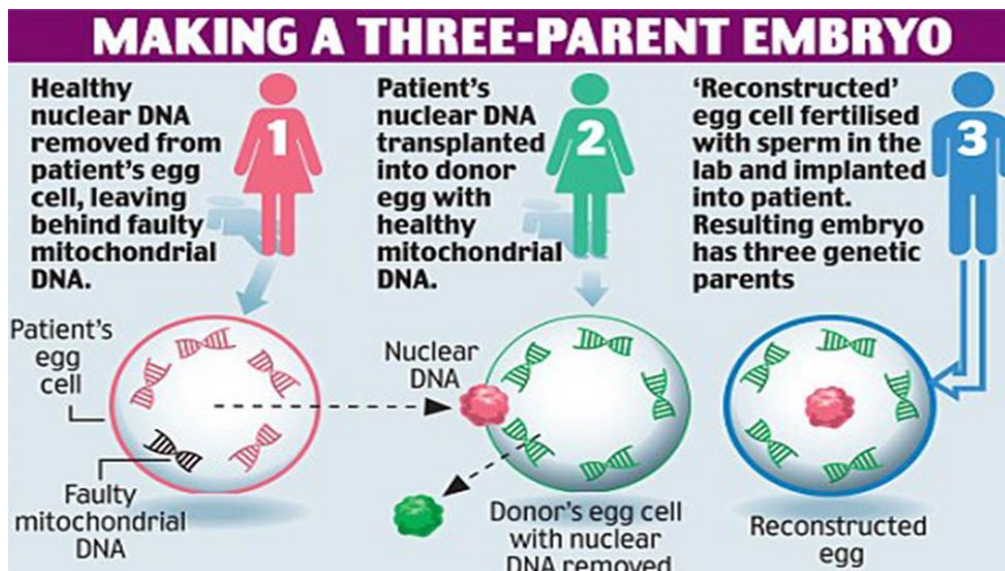
The family is the core of civilization and the fundamental unit of society, defining the way we live, interact, and identify, but what defines a family is often a complex concept and is changing with technological advances (Ullrich, 2019, p. 912). As assisted reproductive techniques among same-sex couples have become more common, these couples have chosen to form three-parent families with one person of the opposite sex. Currently, only 12 states in the United States recognize that a child can have more than two parents, although each state has its own laws, each operating in the best interest of the child. Some courts have recognized third parties as psychological parents or de facto parents, who are not legal parents but have assumed the role of a parent by fulfilling the child's rights, needs for physical and psychological care and have undertaken this for a considerable period of time. (Ullrich, pp. 914-919) Parenting with three parents may offer the child greater emotional benefits, compared to two, as there is a broader emotional support and the exclusion of a third parent may have negative emotional consequences for the child, as according to the parent-child relationship it matters because it communicates society's view of the status

of a relationship between the adults and a child involved. The main objective of the three-parent child technology is to enable women suffering from mitochondrial disorders to create genetically healthy children.

In the Republic of Albania, there is no specific legal regulation that allows the use of assisted techniques such as mitochondrial replacement, which leads to the creation of an embryo with genetic material from three people. The legal regulation is No. 8876/2002 on Healthy Reproduction and the provisions of the Family Code related to parentage and filiation, but these acts do not provide for MRT or the creation of embryos with genetic material from three people and the legal recognition of more than two parents.

Doctor John Zhang was the first to bring this technique in 2016, where the embryo was created by combining genetic material from three people, the procedure was performed in Mexico due to the lack of legal framework in the US and the purpose of this technique was to avoid a hereditary mitochondrial disease (Chan, 2017, pp. 7-8).

According to Islamic law, a child must be born of a legitimate marriage, but since the technique is done for the well-being and future of the child, confusion in the parentage will raise doubts in the parents about the status of the child, leading to neglect of the involvement and future of the involved child. Islamic bioethics based on Maqasid al-Sharia'h is a concept that adopts an approach to evaluating certain issues and technologies, an approach that balances the physical and spiritual needs of the human being. The evaluation of bioethical issues is carried out by looking at and examining them from the perspective of the purpose and reason, method or technique used. (Ibrahim, 2017, pp. 131-3). Islam rejects any use of ART that does not have a medically legal justification, including its implementation as in the case of a three-parent child, however the use of ART for the treatment and cure of infertility problems in married couples is encouraged in Islam in an effort to preserve the continuity of the offspring. (Ibrahim, pp. 139-0).



**Figure 1:** Mitochondrial transfer/ 3-Parent IVF

The figure shows the creation of an embryo with three parents, the mother, the father and the mitochondrial donor, illustrating the process of mitochondrial transfer (Mrunal, 2021). From a legal perspective, this technology brings a series of challenges:

1. *Determination of paternity*

Traditionally, the laws recognize the biological mother and father as legal parents. However, the inclusion of a mitochondrial donor creates a new situation: the law often does not provide for a person who contributes only mitochondrial genetic material. This raises questions about the donor's rights and legal responsibilities in relation to

the child, with some jurisdictions such as the United Kingdom having determined that a mitochondrial donor is not considered a legal parent.

The UK government has changed the law to allow the use of mitochondrial donation techniques in the HFEA and its regulations include this procedure, but the law emphasizes that mitochondrial donors are not legal parents solely because of their genetic contribution, stipulating that legal parenthood remains limited to parents who hold a social role. (Castro, 2016, p. 730).

### *2. The child's right to know his or her origins*

MRT raises the need to protect the right of the child to know his or her biological origin, including the mitochondrial donor, as also emphasized in the Convention on the Rights of the Child (1989), which promotes the recognition of the biological identity of the individual as a fundamental right. This may include access to donor registers and genetic information, striking a balance between the rights of the child and the confidentiality of data. The Council of Europe report on access of persons born through donors to know their origin examines the legal challenges of knowing the origin of children conceived through donors, including access to information on genetic origin and the identity of donors (Binet, 2022, p. 9).

### *3. Impact on the traditional concept of family*

From a legal perspective, children born through MRT challenge the traditional model on which the family is built. The involvement of a third donor with genetic contribution creates ambiguity in the determination of parentage, where current legislation tends to exclude the donor from the status of parent, while preserving the classical family structure and as a result there is a need to review the concepts of family in accordance with the developments in bioethics. The term parent is used to describe a person with a parental role in someone's life, for example in the United Kingdom neither gamete donors nor mitochondrial donors are legal parents nor are they legally obliged to take on a parental role in the life of a person resulting from their donation (Appleby, 2018).

However, the question arises as to whether, according to family law, the recognition of the mitochondrial donor as the legal parent of a child born through MRT should be justified? I think that from a legal point of view, the recognition of the mitochondrial donor above the legal age should not be justified since his role is limited to only a minimal genetic contribution, about 1%, and does not include either social or parental ties. The purpose of the legislation should remain in the clarification and stability of family relationships, limiting parenthood to individuals who actually exercise it, however, this does not exclude the right of the child to have access to information on his origin.

## **5. Discussion**

The analysis of legal literature shows that the development of new artificial reproduction technologies has created new challenges for family law, especially in relation to the traditional concept of parenthood where the use of MRT has made it possible to give birth to a child containing genetic material from three different people, the biological mother and father and the mitochondrial donor. This reality creates a new legal situation that is not clearly foreseen by national legislation. The results of the study show that in most legal systems the concept of parenthood continues to be based on the traditional model of the two parents, which creates difficulties in determining the legal status of the third genetic contributor. In many cases the mitochondrial donor is not considered a legal parent, but a biological contributor without rights and obligations towards the child. Also, the analysis of legislation and legal practice shows that some countries have specific regulations for the use of this technology, such as the United Kingdom, which allows the use of mitochondrial replacement techniques under certain conditions and clearly defines the legal status of the persons involved in the reproduction process.

One of the issues that comes to mind is the distinction between biological and legal parentage. Although a child may have genetic material from three people, most legal systems recognize only two legal parents. This shows that the law often follows a functional and social approach to parenthood, prioritizing the legal relationship and parental responsibility over the purely biological connection.

## **6. Conclusions**

The possibility of having a child with genetic material from three people through MRT represents one example of the interaction between biotechnology and law. The study highlights that the legal regulation of this technique varies significantly from one country to another. Some countries have taken steps to create a legal framework that allows the use of mitochondrial replacement techniques under certain conditions, while others maintain a more restrictive approach due to ethical and legal concerns related to interference with human genetic material. One of the most important issues that emerges from the analysis is the need to balance scientific progress with the protection of the best interests of the child, where in this regard international standards emphasize the importance of guaranteeing the rights of the child, including the right to identity and recognition of biological origin. I believe that the law must evolve in order to adapt to the new challenges arising from these technologies, ensuring a fair balance between scientific innovation, protection of the family and respect for the rights of the child.

### **6.1 Study Limitations and Suggestions for Future Research**

This study is subject to several limitations which should be acknowledged in order to clarify the scope and boundaries of the research.

First, the study is based on secondary data, including legal sources, academic literature and policy reports. The absence of primary data collection, such as empirical research, interviews or surveys, limits the ability to reflect real life professional experiences and practical implementation of mitochondrial replacement techniques. As a result, the analysis remains largely theoretical in nature.

Second, the research is constrained by the limited availability of case law and judicial practice, as mitochondrial replacement techniques are still a relatively recent scientific and legal development. This means that legal interpretations and court decisions are scarce, which restricts the ability to evaluate how legal principles are applied in practice.

Third, the comparative dimension of the study focuses mainly on selected jurisdictions, particularly the United Kingdom, which has established regulatory framework. While this provides valuable insight, it also limits the generalizability of the findings, as different legal systems may adopt varying approaches that are not fully captured in this analysis.

Finally, the lack of specific regulation in certain jurisdictions, such as Albania, creates additional interpretative limitations. In such contexts, the absence of clear provisions makes it difficult to assess how mitochondrial replacement techniques would be regulated in practice, leading to a more speculative legal analysis.

Future research in the field of mitochondrial replacement techniques should further develop both the legal and ethical dimensions of the emerging technology.

First, future studies should incorporate empirical research methods, such as interviews with medical practitioners, bioethicists and legal professionals, in order to better understand how MRT is applied in practice and how regulatory frameworks operate in clinical settings. This would help bridge the gap between theoretical legal analysis and practical implementation.

Second, there is a need for more detailed comparative legal research involving a wider range of jurisdictions beyond the United Kingdom. In particular, studies should examine how different legal systems, including both developed and development countries, address issues of parenthood, genetic contribution, and regulatory oversight in the context of MRT.

Third, future research should focus on the unresolved legal question of parenthood determination in cases involving three genetic contributors. This includes clarifying the legal status of the mitochondrial donor and

assessing whether existing family law concepts are sufficient or require reform to accommodate new reproductive technologies.

Finally, further academic work should explore the development of specific regulatory frameworks in jurisdictions where MRT is not yet legally regulated, such as Albania. Such research could contribute to policy making by proposing model laws or harmonized legal standards that ensure both ethical safeguards and access to medical innovation.

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