

Difference Between DNA and Paternity Testing

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Key Difference – DNA vs Paternity Testing

Genetic testing is an upcoming molecular testing method, where the [genes](#) or the Deoxyribose Nucleic Acid ([DNA](#)) patterns of an individual are analyzed in order to find mutations in genes, to develop forensic revelations and to determine relationships among blood relations. Genetic testing is a customized procedure which is performed at the request of a particular individual or a legal authority in order to prove identity. Genetic testing is also referred to as DNA testing. **DNA testing analyses a person's DNA via molecular techniques such as [electrophoresis](#) to determine the identity of a person or to diagnose any mutated gene. Paternity testing is a type of DNA testing method which is used to determine the true relationship between the father and offspring and to confirm the true father of the offspring.** This is the key difference between DNA testing and paternity testing.

What is DNA Testing?

DNA testing is performed using techniques such as agarose [gel electrophoresis](#), [Restriction Fragment Length Polymorphism \(RFLP\)](#) or [polymerase chain reaction \(PCR\)](#) methods and analyzes the DNA banding patterns of an individual. There are different types of DNA testing methods based on the requirement.

In the case of medical diagnostics, DNA testing is performed to identify any mutated genes in chromosomal aberrations such as [Down's syndrome](#) or [Turner's syndrome](#) or to identify the presence of any potent disease causing genes such as tumor cell producing genes or genes responsible for [insulin resistance](#). Medical DNA testing can be performed on diseased individuals as well as on fetal blood. Agarose gel electrophoresis and RFLP techniques are mostly used in medical DNA testing.



Figure 01: DNA testing

In Forensic studies, DNA testing is performed to confirm the criminal of a crime scene. During forensic DNA testing, samples such as strands of hair, dried up blood droplets, saliva samples, and semen or vaginal secretions may contain very minute quantities of degraded DNA. This DNA is always copied to produce multiple copies of the DNA using PCR techniques. Upon completion of PCR, electrophoresis is performed to determine the DNA with that of the suspect's DNA.

DNA testing is also used for archeological purposes and pedigree analysis. In archaeology, the samples used are fossils, bone residues or hair; they are PCR amplified before analysis. DNA testing is used in developing familial relationships in pedigree analysis or in paternity testing as well.

What is Paternity Testing?

Paternity testing is performed in order to determine the paternity of an individual and to ascertain the actual nature of the relationship. Paternity testing is performed by analyzing the DNA of the potential individuals who claim to be the father of the child with the DNA of the mother and the child. If DNA patterns of the child and the alleged father do not match on two or more DNA probes, the alleged father can be

completely ruled out. If the DNA patterns between child, mother and the alleged father match on every DNA probe, the likelihood of paternity is 99.9 percent.

Restriction Fragment Length Polymorphism (RFLP) or a procedure called a Buccal scrap is used in paternity testing. DNA sample is obtained by a swab that is rubbed vigorously against the inside of the subject's cheek.

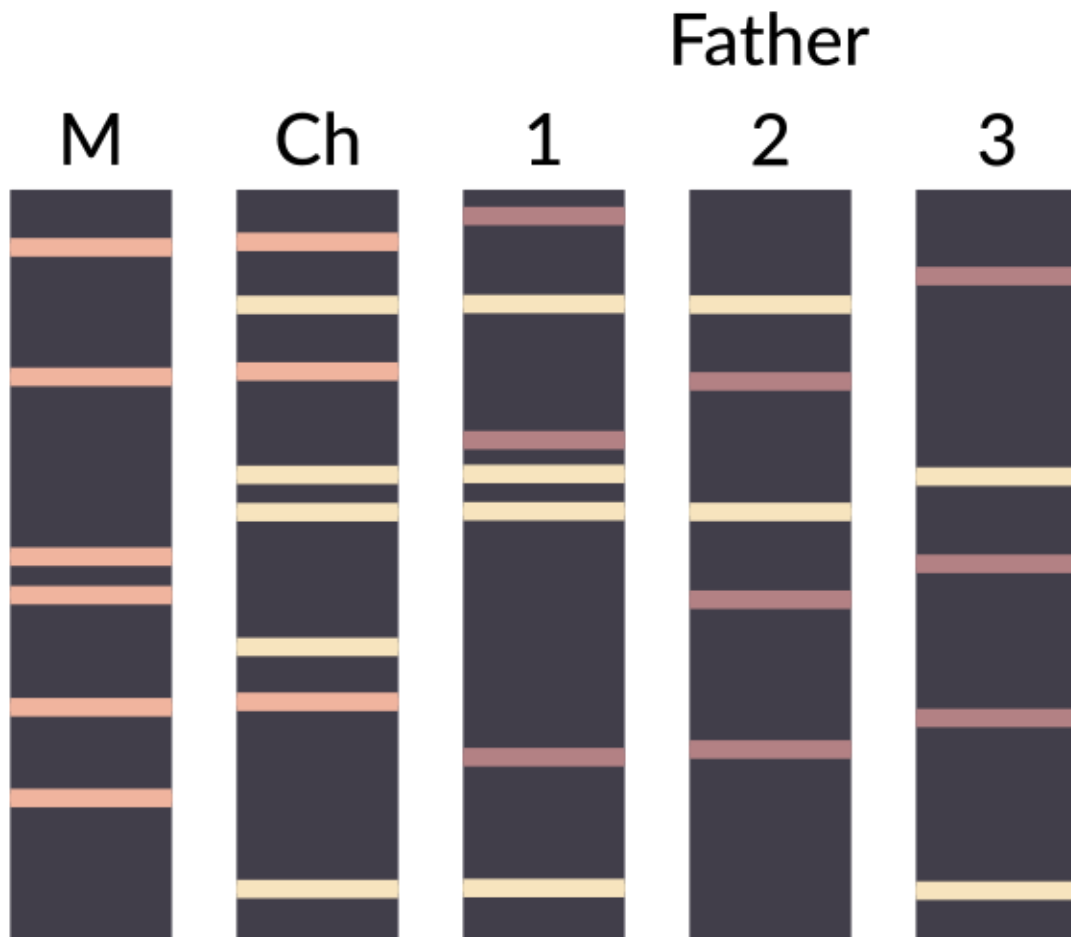


Figure 02: Paternity Testing

The main advantage of paternity testing is that it could be performed on the fetus by extracting a sample from the umbilical cord. Paternity testing is done under legal supervision in most cases and is the most accurate method to determine the true father. At present, automated techniques such as [Micro-satellite](#) markers are used to perform paternity testing

What are the similarities between DNA and Paternity Testing?

- In both tests, DNA is analyzed by techniques such as Agarose Gel electrophoresis, RFLP, and PCR.
- They have a high accuracy rate.
- Both can be performed with even a minute sample size.
- Both are rapid techniques.
- Both tests can be automated.
- Both are customized techniques to suit the request of the individual.
- Both can be performed on fetal blood samples.

What is the difference between DNA and Paternity Testing?

DNA vs Paternity Testing	
DNA testing is performed to analyze the DNA banding patterns of an individual to determine identity or mutations of a particular gene.	Paternity testing is a type of DNA testing performed in order to determine the paternity and to ascertain the actual nature of the relationship.
Uses	
This is used for medical purposes, forensics, archeological purposes and pedigree analysis.	This is used to determine the father of the child.

Summary – DNA vs Paternity Testing

DNA testing is widely accepted due to its high accuracy rate and the reliable nature of the tests. Genetic testing or DNA testing is an accurate predictive methodology which is customized for a particular requirement which could be medical, forensics or for the determination of relationships among blood relations. Paternity testing, which is a type of DNA testing, follows the same protocol as DNA testing and utilizes techniques such as electrophoresis, RFLP, and PCR to determine the banding patterns, similarities between different DNA samples analyzed and to provide confirmed results. The main difference between DNA and paternity testing is their goal.

References:

1. Adams, Jill. "Paternity Testing: Blood Types and DNA." Nature News, Nature Publishing Group, [Available here](#). Accessed 29 Aug. 2017.
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3. "Paternity Tests: Blood Tests and DNA." Findlaw, [Available here](#). Accessed 29 Aug. 2017.

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APA: Difference Between DNA and Paternity Testing. (2017, September 01). Retrieved (date), from <http://differencebetween.com/difference-between-dna-and-vs-paternity-testing/>

MLA: "Difference Between DNA and Paternity Testing" *Difference Between.Com*. 01 September 2017. Web.

Chicago: "Difference Between DNA and Paternity Testing." *Difference Between.Com*. <http://differencebetween.com/difference-between-dna-and-vs-paternity-testing/> accessed (accessed [date]).



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