

## Genealogical DNA Testing: Types and Significance

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### DESCRIPTION

Genealogical Deoxyribonucleic acid (DNA) testing has revolutionized the way we understand our family history. With the help of modern technology, we can now use our DNA to discover the ancestral roots, connect with long-lost relatives, and uncover new insights into the family history. Types of Genealogical DNA testing in addition to autosomal DNA testing, there are other types of genealogical DNA testing available:

#### Y-DNA testing

Y-DNA testing is a type of genetic testing that examines the Y chromosome, which is passed down from fathers to their male children. Y-DNA testing is often used in genealogy and ancestry research to trace male lineages and identify genetic matches between individuals who share a common paternal ancestor. Y-DNA testing can reveal information about an individual's paternal ancestry, such as their paternal haplogroup, which is a group of people who share a common ancestor on the direct paternal line. It can also be used to identify relatives who share the same Y chromosome. Y-DNA testing is usually done through a DNA testing company, which will provide a DNA testing kit that involves collecting a small sample of saliva or cheek cells from the individual being tested. The DNA is then analyzed in a laboratory to determine the Y-DNA markers and haplogroup.

#### Mitochondrial DNA (mtDNA) testing

Mitochondrial DNA (mtDNA) testing is a type of genetic test that analyzes the DNA that is present in the mitochondria, which are organelles found within cells that generate energy. Unlike nuclear DNA, which is inherited from both parents, mtDNA is inherited solely from the mother. Because mtDNA is passed down maternally, it can be used to trace maternal ancestry and to identify genetic relationships on the maternal side of a family. mtDNA testing is particularly useful in cases where traditional paternity testing is not possible, such as when the father is deceased or unavailable for testing. Additionally,

mtDNA testing can be used to identify mutations or variants in the mtDNA that may be associated with various health conditions. However, it's important to note that mtDNA testing has limitations and may not provide conclusive answers in all cases. Additionally, because mtDNA is only passed down through the maternal line, it cannot be used to determine relationships on the paternal side of a family.

#### X-DNA testing

X-DNA testing is a type of DNA testing that analyzes the X chromosome. The X chromosome is one of the two sex chromosomes, and while males have only one X chromosome, females have two. X-DNA testing is therefore more useful for analyzing relationships between females or between a male and his maternal relatives, as the X chromosome is passed down differently than the other chromosomes. X-DNA testing can be used to determine if two people share a common maternal ancestor, such as a grandmother, great-grandmother, or aunt. It can also be used to confirm or rule out a relationship, such as whether two people are half-sisters or first cousins. One important thing to note about X-DNA testing is that it is less precise than other forms of DNA testing. This is because the X chromosome is much smaller than the other chromosomes, and therefore has fewer markers for analysis.

### CONCLUSION

Genealogical DNA testing is the use of DNA testing to establish genealogical relationships between individuals. It involves analyzing specific regions of DNA that are passed down from generation to generation and can help identify shared ancestry between individuals. The testing is done by comparing a person's DNA sample to samples from a database of other individuals and their known family relationships. There are different types of genealogical DNA testing available, but the most common type is autosomal DNA testing. Autosomal DNA is inherited from both parents and contains a mix of genetic information from all of our ancestors.

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**Received:** 20-Mar-2023, Manuscript No. MAGE-23-23867; **Editor assigned:** 24-Mar-2023, Pre QC No. MAGE-23-23867 (PQ); **Reviewed:** 07-Apr-2023, QC No. MAGE-23-23867; **Revised:** 14-Apr-2023, Manuscript No. MAGE-23-23867 (R); **Published:** 21-Apr-2023, DOI: 10.35248/2169-0111.23.12.223.

**Citation:** Larry S (2023) Genealogical DNA Testing: Types and Significance. Advac Genet Eng. 12:223.

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