Cerba Lancet Kenya

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NEWSLETTER

KINSHIP & FAMILIAL DNA TESTING

Understanding biological relationships beyond paternity testing

Kinship or familial DNA testing helps determine biological relationships when direct parent–child testing is not possible. It is commonly used in legal, medical, and family-related situations where clarity is essential but standard paternity testing cannot provide answers.

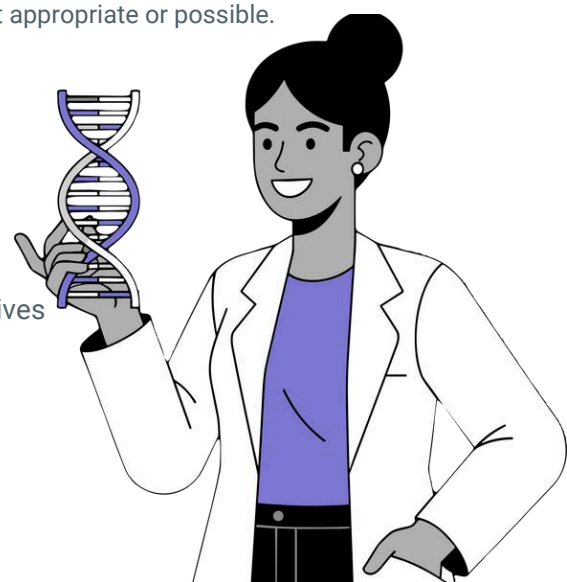
What is Kinship / Familial Testing?

Kinship analysis is a type of DNA testing used to assess whether individuals are biologically related by analysing shared genetic patterns. Rather than looking for an exact parent–child match, it compares DNA between relatives such as siblings, grandparents, aunts, uncles, or cousins.

When is Kinship Testing Used?

Kinship testing is particularly helpful in:

1. **Estate and inheritance claims**
   To establish a biological link to a deceased person in legal disputes over property or assets.
2. **Missing or deceased parent cases**
   When an alleged parent is unavailable, close relatives may be tested to assess a biological connection.
3. **Identification and legal investigations**
   Assisting in the identification of deceased or missing persons and supporting sensitive medico-legal cases.
4. **Sibling and extended family testing**
   To determine whether individuals are full siblings, half-siblings, or biologically unrelated.
5. **Cases of incest**
   Used as a standalone medicolegal application to provide objective DNA evidence in sensitive family investigations, particularly where direct parentage testing is not appropriate or possible.



How Does Kinship Testing Work?

Every individual carries genetic markers called alleles. Biological relatives share a predictable proportion of these markers.

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Kinship Testing vs Paternity Testing

The laboratory evaluates:

- **How many markers are shared between individuals**
- **How common or rare those markers are within the relevant population group**

Because kinship testing is often indirect, results are interpreted using statistical analysis rather than a simple inclusion or exclusion.

Understanding the Likelihood Ratio (LHR)

The Likelihood Ratio (LHR) is a numerical measure that compares how likely it is that individuals are **biologically related** versus unrelated individuals who coincidentally **share similar genetic markers.**

To aid interpretation, laboratories provide a verbal equivalent alongside the score, using terms such as **Extremely Strong Evidence, Weak Evidence, or Inconclusive** to describe the strength of the findings.

While the exact wording may differ between laboratories based on internal standards, the purpose is to show **how strongly the DNA evidence supports one scenario over the other.** Because this analysis is probability-based, a low likelihood score cannot fully exclude a biological relationship.

Why Results May Be Inconclusive

Kinship testing does not always produce a definitive "yes" or "no" answer. This may occur because:

- **Natural genetic variation** – relatives do not share all of their DNA
- **Common DNA markers** – widely shared markers reduce the strength of evidence

A low likelihood score does not rule out a biological relationship; it may indicate that the available DNA evidence is insufficient. Testing additional known family members can often strengthen the outcome.

Paternity Testing

- Direct parent–child comparison
- Looks for exact DNA matches
- Can clearly exclude a parent

Kinship Testing

- Indirect comparison between relatives
- Looks for shared genetic patterns
- Assesses probability rather than certainty

Frequently Asked Questions

1 Is kinship testing legally admissible?

Yes. *When conducted under proper procedures and chain of custody, kinship testing results are admissible for legal proceedings.*

2 Does an inconclusive result mean we are not related?

No. *An inconclusive result means there is not enough DNA evidence to confirm the relationship with confidence.*

3 Can additional testing help?

Yes. *Including more known family members often strengthens the statistical power of the analysis.*

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Reference

1. Forensic Biology Unit Technical Manual: Defines Kinship Index (Likelihood Ratio) as the comparative probability that observed genotypes arise from a claimed relationship vs unrelated individuals, and outlines associated verbal scales for reporting evidence strength.
2. SimplyForensic.com Guide to Forensic Kinship and Paternity Testing: Describes the LR calculation framework used in family relationship testing and its role in objective DNA evidence interpretation.
3. A Logical Framework for Forensic DNA Interpretation (MDPI): Explains why verbal equivalents are used alongside quantitative LR values to communicate the strength of genetic evidence.
4. PubMed literature on likelihood ratios in kinship analysis: The LR is central to weighing alternative hypotheses in family relationship testing.

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