

## What is DNA?

DNA stands for deoxyribonucleic acid. It is the genetic material found inside a cell.

DNA is very fine and tightly coiled into structures called Chromosomes. Each cell contains 46 chromosomes. 22 of these are pairs which are almost identical. The remaining two are the X and Y chromosomes which determine the sex of an individual. Women have two X chromosomes and men have one X and one Y.

If the DNA was taken from a single cell and unwound, it would stretch to a whole meter in length. It is estimated, that if this was done for all the DNA, in all the cells of one body, there would be enough DNA to stretch all the way to the moon and back - TWICE! Amazing if you consider this molecule is too small to be seen by the naked eye.

DNA is a code. It is divided into functional sections known as genes. Each gene codes for a particular protein. The human body is made up of proteins. The genes therefore dictate how we are made and what our bodies look like.

A person's DNA is unique to them, just like a fingerprint. The only people in the world who share identical DNA are identical twins, because they began life as a single egg that split in their mother's womb. The fact that they share identical DNA is the reason they look identical i.e. their bodies have been built by DNA with exactly the same code.

Small portions of the DNA are called Alleles. When a scientist looks at a piece of DNA, they can analyse the alleles they find. The alleles are identified and given a unique number. These numbers represent a person's DNA profile.

At each location on the DNA molecule, a person has two alleles. Therefore when looking at a person's DNA profile, you will see two numbers for each part of the DNA analysed.

## Why do we look at DNA in relationship tests?

At the point of conception, a child's DNA is formed. Half of the DNA comes from the mother (in the egg) and half comes from the father (in the sperm). Therefore, when we look at a child's DNA profile, one of the numbers at each of the locations, will match one of the numbers at the same location for each biological parent. (i.e. Half the alleles (numbers) will match exactly to the DNA of the biological mother and the other half will match exactly to the biological father.)

When testing other relationships such as potential siblings, test participants are not expected to match at all locations. These tests are based on the fact that biologically related individuals will have more DNA in

common than those that are unrelated. The amount of common DNA depends on how closely the individuals are related.

## How is DNA Collected?

An identical copy of a person's DNA is kept inside all the cells of that person's body. Therefore the DNA inside a blood sample is identical to the DNA inside a cheek cell. By rubbing a mouth swab on the inside of the cheek we can obtain cells without the need for painful blood samples being taken. This is much easier for the clients and especially for any young children involved.

The DNA from these cheek cells is easily isolated and is then ready for testing.

This process is just as accurate as using blood samples.

Forensic samples can be used as a source of DNA but only in certain circumstances.

## What relationships can we test for?

- **Paternity Tests** – To identify the biological father of a child.
- **Maternity Tests** – To identify the biological mother of a child.
- **Sibling Analysis** – To identify half/full biological brothers and sisters.
- **Complex Relationship Tests** – To identify more complex biological relationships e.g. grandparents, cousins & auntie & uncles etc.
- **Y Chromosome Analysis** – To establish whether males are from the same paternal line.
- **DNA profiling** service for individuals working abroad i.e. used for identification purposes.

## The Test Report Package

This contains:

- **A Covering Letter**
- **DNA Test Report**
- **Additional Test Information**

All test participants over the age of 16 years will be entitled to a copy of the report.

**If you require further assistance or have any questions please call:**

**UK Customer Services: 0800 988 7107  
International /mobile: 0044 (0)161 359 4187**

**or email [info@dnaclinics.co.uk](mailto:info@dnaclinics.co.uk)  
[www.dnatestingclinics.co.uk](http://www.dnatestingclinics.co.uk)**