



# ANCESTRY REPORT

**CLIENT ID:** GSA3955  
**NAME:** GLEN ARNOLD SNYMAN

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## HERE'S A FUN FACT!



If you unravelled all DNA in your body and put it end to end, it would go from the earth to the sun and back hundreds of times!

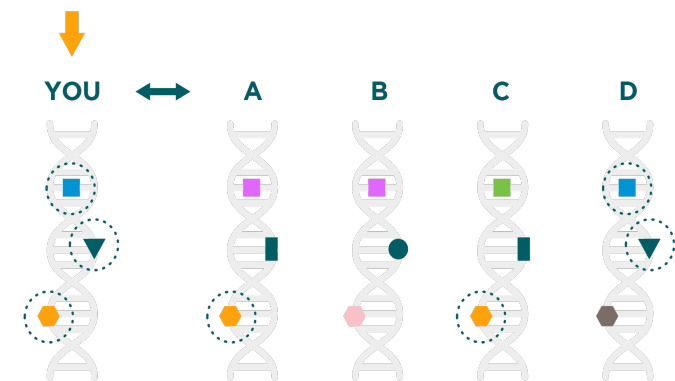
# UNDERSTANDING YOUR RESULTS

## INTRODUCTION

The Mediclinic Precise ancestry test investigates and analyses hundreds of thousands of sites in your DNA and compares it to the DNA of other populations around the world. Our computer software has the ability to determine **how similar you are compared to these populations when looking across all 23 pairs of your chromosomes**. Based on these scientific calculations, we can estimate your ancestral contributions based on chromosomes 1 - 22 and your maternal and paternal lineages via mitochondrial DNA (mtDNA) and the Y chromosome, respectively.

## READING YOUR RESULTS

Your results are separated into **three different sections**. The first section (a table and a pie chart) depicts your **overall ancestral contributions per region**, which is provided as a percentage of your total ancestry. The second section goes into depth for each region, providing some **fascinating facts regarding the countries in this region**. The last section depicts your **maternal and paternal (only in the case of males) lineages**, which is based off your mitochondrial DNA and Y chromosome, respectively. Each region is given a specific colour, which is consistent with the colour for the specific ancestral contribution they represent across your report.



A basic illustrative key to compare the matched traits of YOUR 23 pairs chromosomes to those of other populations in a database

e.g. HAIR COLOUR  
BODY SHAPE  
SKIN COLOUR



# FREQUENTLY ASKED QUESTIONS

## Why do my results look different from other company's ancestry tests that I have done before?



Every company's ancestry test differs in either how your genetic data is analysed using computational algorithms, or the population data that your genetic data is directly compared to. One company might use population 'A' to represent East Africa, but another uses population 'B', which might vary enough to affect your results.

## Why don't we provide country level results, but rather regional level results?



Overall, most companies offer regional results as providing country level results will only be accurate when including genetic data from every population within that specific region. Therefore, an individual's report suggesting that they have 10% Kenyan ancestry, upon further investigation, may show that it was the only East African population used for the analysis and the ancestral contribution actually originates from a population in Tanzania.

## Why do my results look different to my genealogy test results?



Ancestry and genealogy tests are very different in the overall results they produce. An ancestry test looks at patterns in your DNA to tell us about the origins of your genetic data. A genealogy test uses historical records, in some cases oral history, to draft a family tree showing how individuals are connected and where they lived/were born.

## Why are my results different to those of my family members?



Parents contribute 50% of their DNA to their children and the combination of the 50% may vary for each child resulting in different results. If you have an ancestral contribution that is absent in your parents, it may be indicative of two things. Firstly, your parents may have the ancestral contribution, however, it is less than 1% and we therefore don't report on it. Secondly, the ancestry has been "absorbed" by another ancestral contribution, e.g. your mother's North European contribution may be assigned as Western European in you as these two populations are similar and may share ancestry informative markers.



# FREQUENTLY ASKED QUESTIONS | Cont'd

## How accurate are my Mediclinic Precise Ancestry Test results?



As with most statistical calculations, these are estimated values associated with some degree of error, however, we have minimised this as much as possible to provide the most accurate results (overall accuracy of 92%).

## Will my Mediclinic Precise Ancestry Test results change and why?



As specific populations in the database increase in size, we may have an updated reference dataset that your DNA sample is compared to. Your results may change slightly, however, the overall continental ancestry ratio should remain largely the same, e.g. if you are 80% African, you will not present as 80% European with a reanalysis. We may also add new regions to the report, which could change your results if a contribution from the new ancestral region is present.

## Why do females not receive paternal lineage results?



Most humans have 23 pairs of chromosomes in every cell of their body. One pair of these chromosomes are called the “sex” chromosomes determining whether you are biologically a male or female. Females have two X chromosomes i.e. XX, while males have one X and one Y chromosome i.e. XY. Currently, the paternal lineage can only be determined using the Y chromosome.

## Why do my maternal and/or paternal lineages not correlate with my overall ancestral contributions?

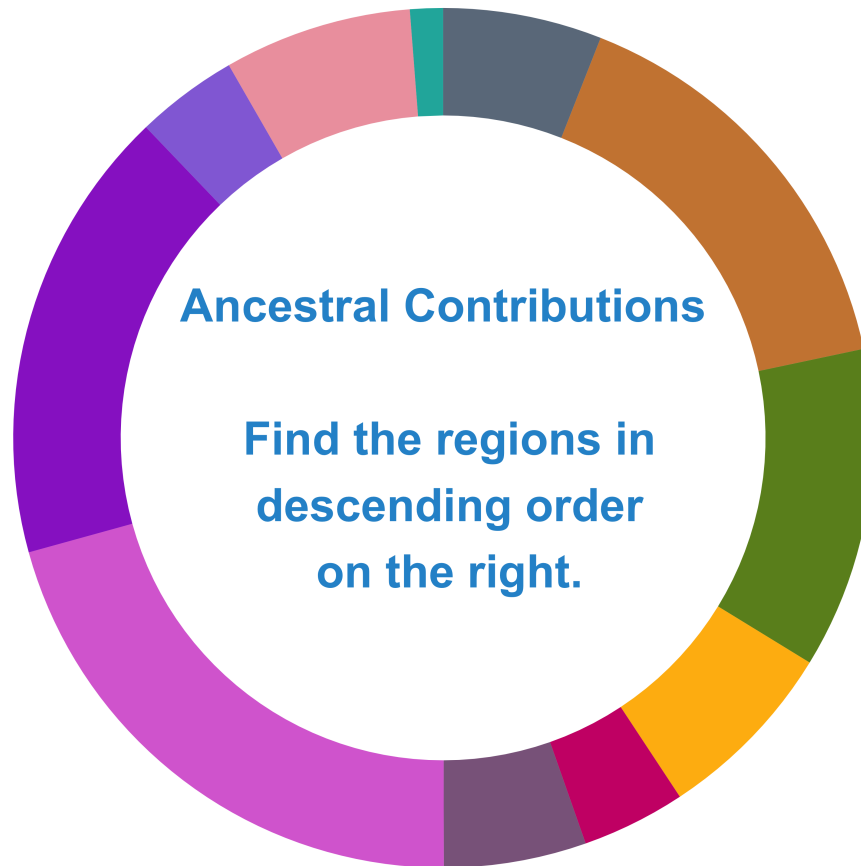


The Mediclinic Precise ancestry test looks at different parts of your genome, which carries specific information about your genetic history. The maternal lineage looks at mitochondrial DNA, which is passed down from mother to child, whilst the paternal lineage looks at the Y chromosome passed down from father to son. The overall ancestral contributions represent genetic information contained in chromosomes 1-22. Both the maternal and paternal lineages are able to trace your origins back 1000's of years (in most cases), whereas the ancestral contributions provide you with both older and more recent origins.



# YOUR RESULTS | Ancestral Contributions

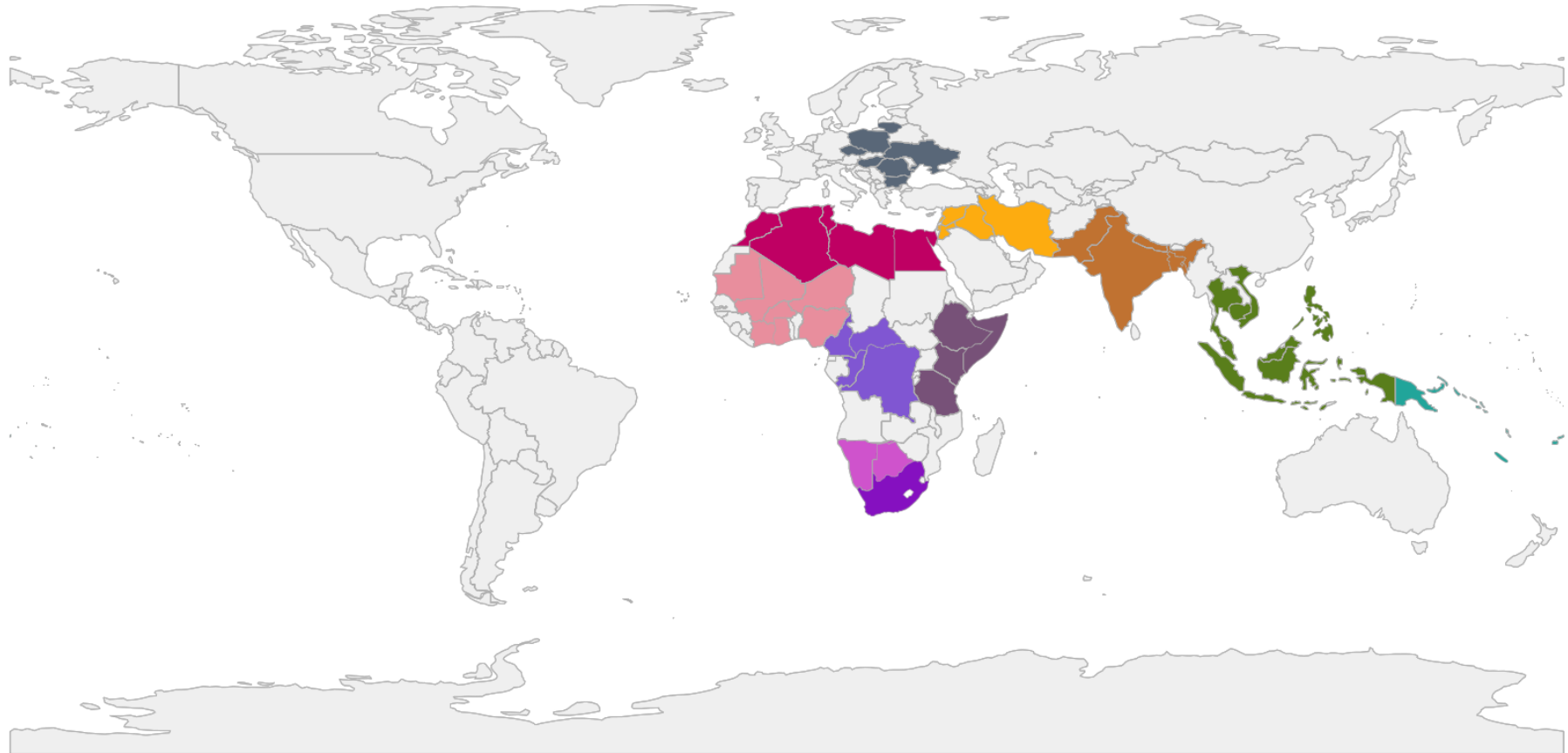
We traced your genetic history back to:



Region	Colour	Percentage
Southern Africa - KhoeSan	Purple	20.45
Southern Africa - Bantu-Speaking	Dark Purple	16.91
Southern Asia	Brown	15.49
South Eastern Asia	Green	11.91
Western Africa	Pink	6.97
Middle East	Yellow	6.87
Eastern Europe	Grey	5.89
Eastern Africa	Dark Purple	5.28
Northern Africa	Magenta	3.85
Central Africa	Light Purple	3.79
Oceania	Teal	1.22
Northern Europe	Light Blue	0.00
Southern Europe	Blue	0.00
Western and Central Europe	Dark Blue	0.00
Northern Eurasia	Dark Green	0.00
Eastern Asia	Bright Green	0.00
Central Asia	Light Green	0.00
Western Asia	Orange	0.00
Ashkenazi Jew	Red	0.00
Arabian Peninsula	Tan	0.00
Southern America	Dark Red	0.00
Latin America	Light Red	0.00
Ancient	Grey	0.00

## YOUR RESULTS | Map

Find your ancestral contributions on the map!









*"The ancestry of human beings is rich and varied. If we look far enough into the past it connects us all."*



# YOUR RESULTS | Regions

Lets take a closer look at the specific regions:







REGION	MAP	DESCRIPTION
 <p><b>SOUTHERN AFRICA - KHOESAN</b> South Africa, Botswana, Namibia</p>		<p>The KhoeSan population is the oldest population worldwide and have ties in southern Africa for centuries. The KhoeSan population are made up of Khoekhoe populations who are agropastoralists and the San who were historically hunter-gatherers. These populations were the ones to first meet the Europeans as they arrived at the southern tip of South Africa in the 15th and 17th century. Today, this population can be found in the Northern Cape of South Africa, Namibia and Botswana.</p>
 <p><b>SOUTHERN AFRICA BANTU-SPEAKING</b> South Africa</p>		<p>The Bantu-speaking populations in southern Africa have their origins in Kwazulu-Natal and the Eastern Cape. Their ancestral origins lie in populations from West, East and Central Africa and are thought to be the result of the Bantu-expansion that arrived in the area 1500 years ago. They have historical and genetic links to the KhoeSan. Bantu-speakers themselves are very diverse and group themselves in ethnic groups that include the Xhosa, Zulu, Sotho, Pedi, Tswana, amongst others. Each of these ethnic groups have a distinct culture and language dialect.</p>
 <p><b>SOUTHERN ASIA</b> India, Sri Lanka, Bangladesh, Pakistan</p>		<p>This area has acted as a crossroad for people and goods over a number of centuries. One of the most well-known routes used is the Silk Road which connects Asia with southern Europe and East Africa. These trade networks lead to the development and growth of multiple civilisations along the route and allowed for people from various cultures to meet and interact. Today, this region which holds India and Pakistan (amongst others) is well known for their sport teams (especially cricket). Sri Lanka is one of the worlds largest tea producers and exporters.</p>

*"The ancestry of human beings is rich and varied. If we look far enough into the past it connects us all."*















# YOUR RESULTS | Regions cont'd

REGION	MAP	DESCRIPTION
 <p><b>SOUTH EASTERN ASIA</b> Thailand, Cambodia, Indonesia, Malaysia, Vietnam, Myanmar, Nepal, Laos, Phillipines</p>		<p>This region encompasses Malaysia and Indonesia and falls in the trade route utilised by Europeans from the 17th century onwards. At that time, Indonesia (then known as the Dutch East Indies (DEI)) was colonised by the Netherlands. Many areas served as ports of call for the Europeans as well as sources for slaves during their journeys. During the 18th century, many slaves from this region were taken to the DEI's new colony, The Cape of Good Hope (now Cape Town). Indonesia has over 15 000 islands, where Java houses 600 million people (a fifth of the total population of South Eastern Asia). In Malaysia, you will find the plant with the world's largest leaves that can measure 3x2 metres long.</p>
 <p><b>WESTERN AFRICA</b> Nigeria, Niger, Mali, Mauritania, Burkina Faso, Côte d'Ivoire</p>		<p>The history of western Africa can largely be divided into two periods, the first characterised by the earliest modern humans in the area who developed their strategy of agriculture and interacted with other African populations further north. The second period can be characterised by Iron Age empires, major intercontinental trade routes, colonisation and finally independence and growth. The Kingdom of Ghana was one of the most powerful empires in Africa. Liberia is Africa's first independent country.</p>
 <p><b>MIDDLE EAST</b> Syria, Lebanon, Palestine, Iraq, Jordan, Iran</p>		<p>The Middle East was the home of some of the earliest civilizations including Mesopotamia and ancient Egypt. The area is well known for its reserves of oil and natural gas. Most of the Middle East is mainly desert but the Nile and the Tigris rivers run through Egypt and Iraq respectively. In addition, there is a volcanic field in the northwest that extends into Syria and Jordan.</p>

# YOUR RESULTS | Regions cont'd

REGION	MAP	DESCRIPTION
 <p><b>EASTERN EUROPE</b> Czech Republic, Croatia, Hungary, Bulgaria, Ukraine, Poland, Slovakia, Romania, Lithuania, Belarus, Mordovia</p>		<p>The eastern region of Europe borders on to western Asia and is considered the most diverse region in Europe; multiple cultures and religions are present in this area. A large part of Eastern Europe was affected by World War I and II as well as the breakup of the Soviet Union. This caused population movement within the area. In Bulgaria, shaking your head means that you are expressing your approval and/or consent and just remember that clinking glasses is a big faux pas. Bulgaria was home to the well known gladiator, Spartacus. Romania was the first country to get street lights in Europe and was part of a number of Eastern European countries to invent the CD-ROM.</p>
 <p><b>EASTERN AFRICA</b> Somalia, Kenya, Tanzania, Ethiopia</p>		<p>The eastern region of Africa has been suggested to be the geographical origin of modern humans. More recently, it housed hunter-gatherers, pastoralists and a multitude of populations with diverse backgrounds, some with ancient links to Eurasia. It is thought that East Africans migrated south approximately 2000 years ago. Mount Kilimanjaro, the tallest mountain in Africa is located in Tanzania. Eastern Africa is home to a number of large lakes, Lake Victoria, Tanganyika and Lake Malawi.</p>
 <p><b>NORTHERN AFRICA</b> Egypt, Libya, Tunisia, Algeria, Morocco</p>		<p>The northern region of Africa has a rich history extending back to the migration of modern humans coming from southern Africa into Eurasia dating at approximately 2 million years ago. More recently, the area has housed the Egyptians and the rise of the Egyptian Empire leading to one of the great marvels of the world, the Egyptian Pyramids. There are two geographical wonders in this region namely, the expansive Sahara Desert and the longest river in the world, the Nile.</p>

# YOUR RESULTS | Regions cont'd

REGION	MAP	DESCRIPTION
 <p><b>CENTRAL AFRICAN</b> Democratic Republic of Congo, Cameroon, Central African Republic</p>		<p>This area is thought to be the birth-place of the Niger-Congo language as well as the origin of the Bantu expansion, which shaped the cultures, subsistence strategies, religions and languages of many other African countries. The Bantu expansion reached South Africa approximately 1500 years ago. This area is also very geographically diverse with rain forests in some areas, sandy beaches and desert dunes in others. Over time, this has shaped the people in the region. The rain forest pygmies are a unique example of this process. Today, the area contains over 80 ethnic groups each having its own language dialect, although French and Sango are the two official languages.</p>
 <p><b>OCEANIA</b> Papua New Guinea, Fiji, Solomon Islands, Samoa, Tonga</p>		<p>Oceania consists of many islands, scattered across thousands of kilometres of the Pacific ocean. Papua New Guinea is the largest island in the Pacific Ocean. Fiji has 28 airports but only 4 paved runways. There is a tiny island within Soloman Island that is named Kennedy Island after John F. Kennedy had encountered it during his WWII career. Within the entire country of Samoa, there is only 1 city, named Apia.</p>



## YOUR RESULTS | Maternal Lineage

We traced your maternal lineage back thousands of years based on your mitochondrial DNA (mtDNA). Your mtDNA haplogroup is:

### WHAT'S A MATERNAL LINEAGE?

*Your direct maternal lineage is the line that follows your mother's maternal ancestry. With the exception of yourself, if you are male, this line consists entirely of women. It traces your mother, her mother, her mother's mother, and so forth back to our shared common maternal ancestor.*

L0d2c2

### WHAT IS A HAPLOGROUP?

*A haplogroup is a genetic population group of people who share a common ancestor on the patriline or the matriline. Haplogroups are assigned letters of the alphabet, and refinements consist of additional number and letter combinations.*

### WHAT IS MTDNA?

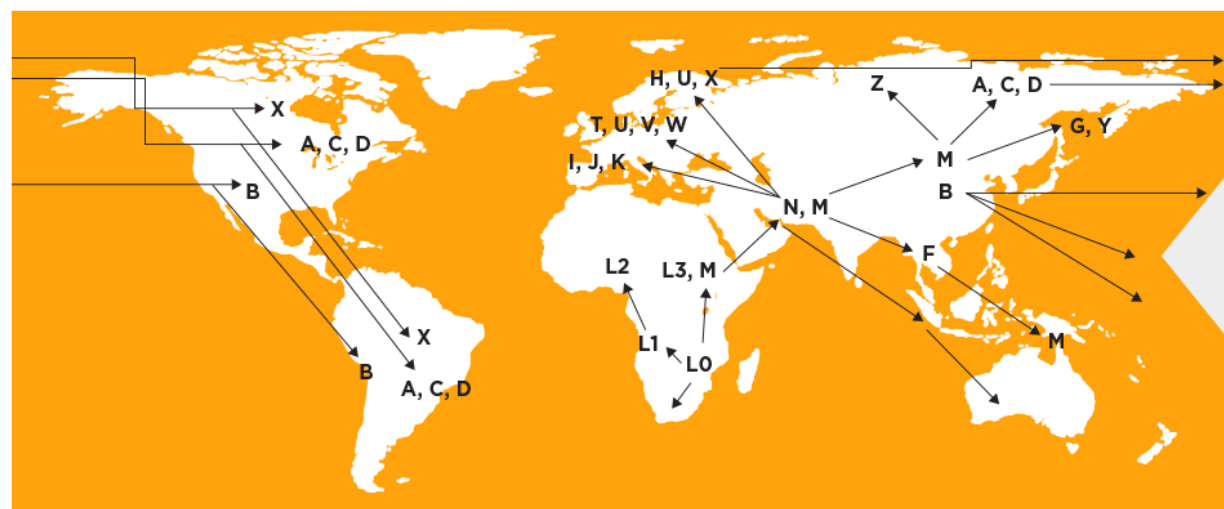
*Your maternal lineage consists entirely of women, although both men and women have their mother's mitochondrial DNA (mtDNA). This means that fathers do not pass on their mtDNA to their children.*



# YOUR RESULTS | Maternal Lineage cont'd

## L0d2c2

The time of origin of the L0d haplogroup is around 110 000 years ago. L0d is the most divergent and oldest haplogroup of all worldwide mtDNA haplogroups, and is found at its highest frequency in the Khoesan of Southern Africa. Nelson Rolihlahla Mandela, former President of South Africa, and Archbishop Emeritus Desmond Tutu share the L0d haplogroup with you.



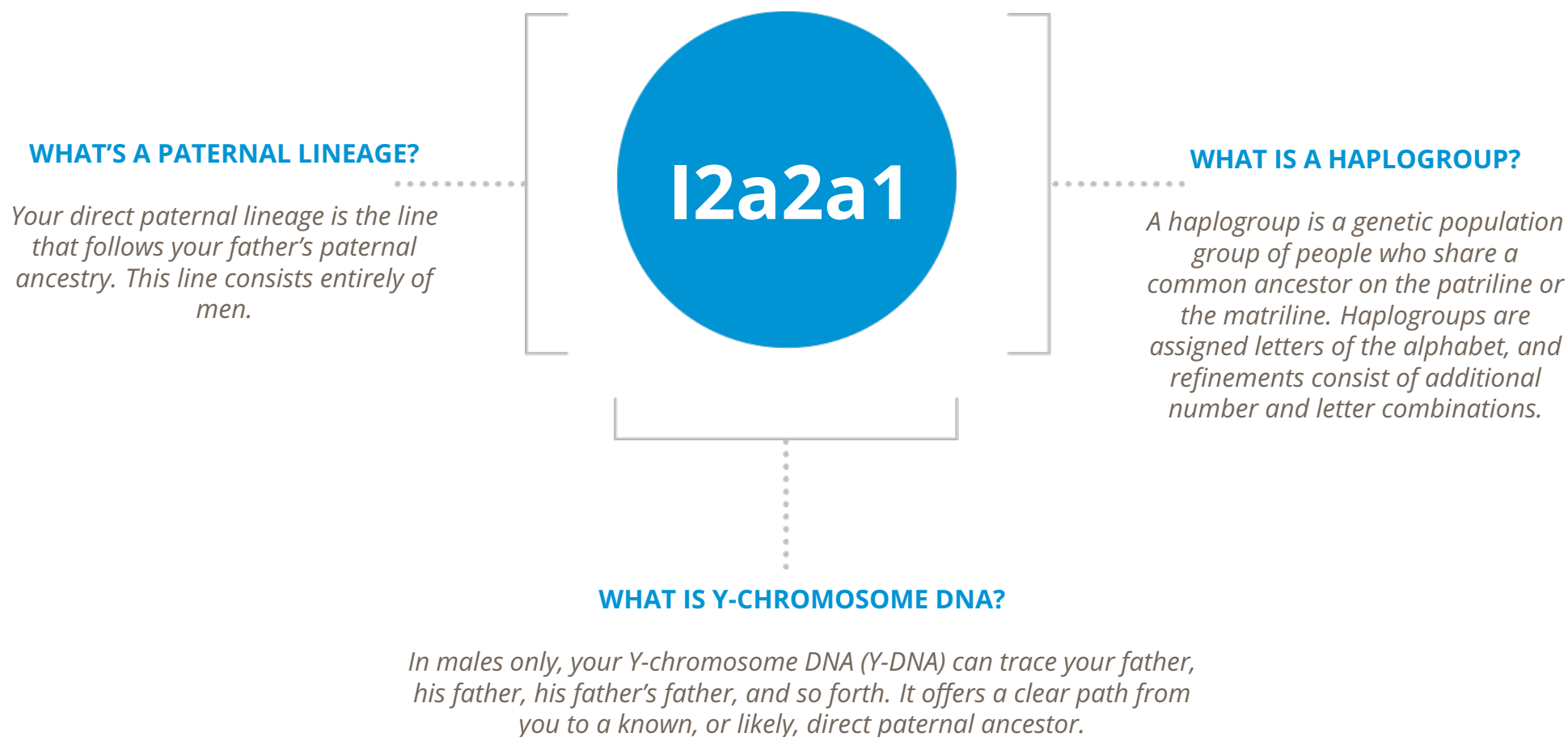
This map shows the connection between every mtDNA haplogroup.

**?** Can you find your major mtDNA haplogroup?



## YOUR RESULTS | Paternal Lineage

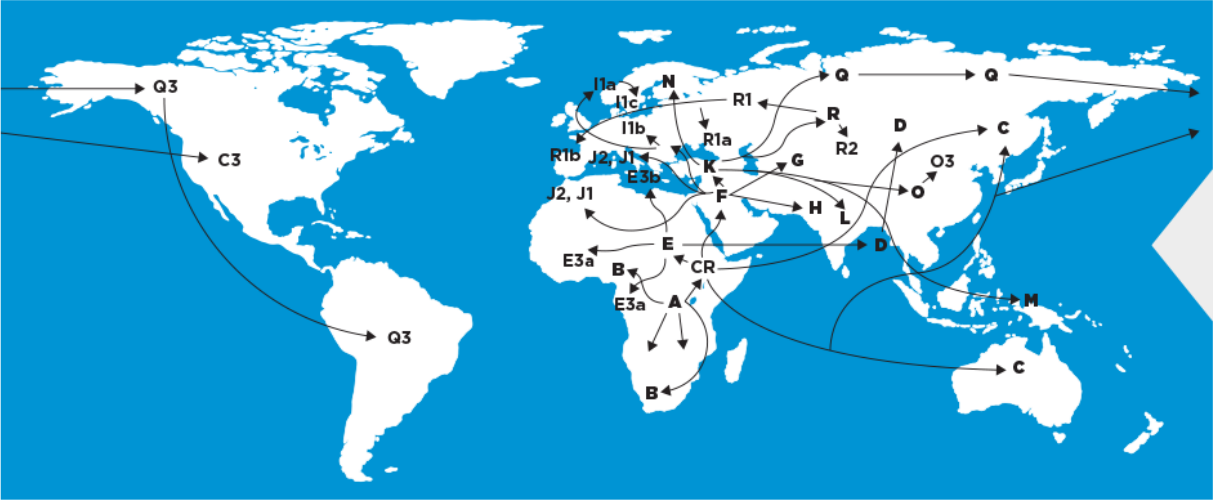
We traced your paternal lineage back thousands of years based on your Y-chromosome. Your Y-chromosome haplogroup is:



# YOUR RESULTS | Paternal Lineage cont'd

## I2a2a1

The time of origin of the I2a2a1 haplogroup is around 10 000 years ago. Although occurring mostly in Britain and Ireland, it has been found in Portugal, France, Germany and Norway. Novak Djokovic, one of the greatest tennis players of all times, shares the I2 haplogroup with you.



This map shows the connection between every Y-chromosome haplogroup.

**?** Can you find your major Y-chromosome haplogroup?



# RAW DATA USAGE

Did you know that you can request your raw genetic data?

With this data, you can use other online services to:



Learn more information about your unique dietary



Find long lost relatives and build a family tree



Gain more insight into specific health factors



Contact us to request your data: [ancestry.Info@mediclinic.co.za](mailto:ancestry.Info@mediclinic.co.za)





## GENOMICS GLOSSARY

**Array:** A technology used to study many genes and DNA variants at once. Also known as a chip.

**Autosome:** One of the numbered, or non-sex, chromosomes (1 through 22).

**Base:** A single unit of a DNA strand. Also known as a nucleotide. Bases come in 4 versions: adenine, cytosine, guanine, thymine.

**Chromosome:** An organized package of DNA found in the nucleus of the cell. Humans have 23 pairs of chromosomes: 22 pairs of numbered chromosomes (autosomes) and 1 pair of sex chromosomes, X and Y.

**Deoxyribonucleic acid (DNA):** Carries genetic instructions in all living things. DNA consists of 2 strands that wind around one another to form a shape known as a double helix. Each strand has a backbone made of alternating sugar (deoxyribose) and phosphate groups, in addition to 1 of the 4 bases (see above). The 2 strands are held together by strong hydrogen bonds.

**DNA variant:** A site in the DNA sequence where there is a change in the order of the bases. Also known as a polymorphism when it occurs frequently in specific populations.

**Gene:** The unit of heredity which is transferred from a parent to their children. It forms a sequence/-collection of bases that eventually codes for the production of a protein that performs a specific function in the body.

**Genome:** The entire set of genetic instructions, encoded in DNA, found in a cell. Genomics is the study of the functions and interactions of many genes in the genome.

**Genotype:** The set of 2 bases inherited for a particular DNA variant. "To genotype" means to determine the type of bases present at a specific site.

**Mitochondrial DNA:** A small DNA sequence that is found in mitochondria of most cells. This DNA is different to other nuclear DNA as it is passed only from a mother to their child.

**Sex chromosome:** These 2 chromosomes (X or Y) determine an individual's biological gender; XX for females XY for males.



# DISCLAIMER



**THANK YOU FOR CHOOSING MEDICLINIC  
PRECISE TO TAKE THIS JOURNEY WITH YOU.**

Your ancestry test results are as scientifically accurate as possible, however, it cannot be interpreted as being 100% factual. For this reason, your ancestry test results cannot be used in any legal proceedings.

**FOR MORE INFORMATION:**



0861 444 558



ancestry.info@mediclinic.co.za



www.mediclinic.co.za/precise

