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Genetics Fall 2020 Infographics

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Direct-to-Consumer Genetic Testing & Ancestry

What is Direct-to-Consumer Genetic Testing?

DTCGT is a genetic test that can be completed at home, without the help of a healthcare provider. DNA is collected at home and sent to a lab for analysis.

Steps:

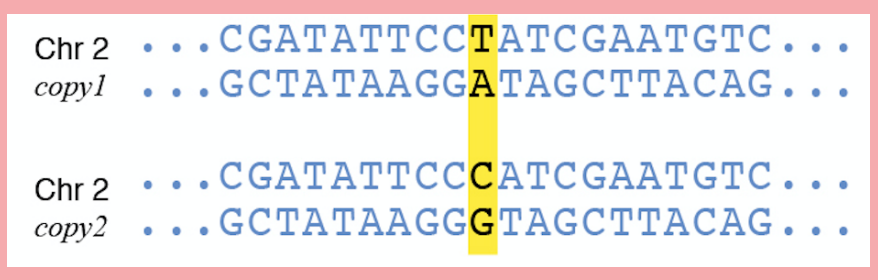
- Purchase a test
- Collect the sample
- Analyze the sample
- Receive the results

How is DTCGT related to ancestry?

The lab receives the DNA sample you sent in, and then sequences only a small part of your DNA sequence to detect variations. These variations are what make you unique as well as predict your ethnicity and ancestry.

How does DTCGT work?

These tests use single-nucleotide polymorphisms (SNPs) in order to find variation in a person's traits, find common ancestors, as well as calculate genetic risks.



The figure above is a visual representation of a DNA sequence made up of the four nucleotide bases: A, T, G, and C.

The figure above is an example of ancestry results from 23AndMe.

What are SNPs?

SNPs (pronounced "snips") are copying errors that occur during DNA replication. Sometimes, when a cell copies its DNA, it makes mistakes. This leads to variations in the DNA sequence at particular locations, similar to mutations. SNPs generate biological variation between people which can influence different traits such as: appearance, susceptibility to disease, or drug response. SNPs are inherited from your parents.

How do SNPs help determine your ancestry?

Some SNPs are known as "ancestry-informative markers" (AIMs). These markers are found within particular DNA sequences and appear in varying frequencies among populations from different parts of the world. In DTCGT, the amount of AIMs an individual has are counted and compared, and an ancestry prediction is given to the consumer.

Can SNPs determine genealogy?

SNPs can be used to determine how closely related you are to someone based on the number of SNPs you share! The more you have in common, the more closely related you are.

How many SNPs are there?

SNPs occur once every 300 nucleotides. There are approximately 3 billion nucleotides in an individual's genome, so an individual has approximately 10 million SNPs.

Over 99% of the human genome is identical between individuals, so SNPs allow researchers to study the differences that are apparent amongst people.