

How to Use DNA

by Kate Montessor

Currently, there are 3 main DNA testing sites geared toward genealogy: [Ancestry](#), [FamilyTreeDNA](#), and [23andMe](#). [The Genographic Project by National Geographic provides a deep ancestry overview (as opposed to matching immediate family), and its information is accepted by the other DNA sites. The Genographic Project is a way to get started, but the other DNA sites provide more detailed analysis which enable you to find DNA matches.]

1. All human DNA is 99% identical. The remaining 1% is used to determine our differences. 23 chromosomes are tested.
2. The DNA testing sites all provide the same service - analyzing the 23 chromosomes and providing raw data. Your information is added to their database, which enables you to connect with other members to the site. The site with the most members gives you the widest range of matches, but the actual number of participants is very small. Each DNA database is only as good as the number of people who contribute. If no Native Americans are in the database, you will not find Native American (or African or other group) roots. Each site also offers health and medical feedback based on your DNA, but the information is generic and not particularly useful. [If you want an accurate medical DNA test, see a doctor.]
3. DNA alone can't find relatives - you also need corresponding family trees. When you find a DNA match, check their family tree. If you find a common ancestor, chances are that you are actually descended from that person.
4. Male DNA is tracked using the Y chromosome--females do not have this chromosome. If you are a woman and you want to track the male side of your family, you must have a brother, father, or other male relative be tested. The Y chromosome passes almost unchanged from father to son. Male ancestors carried their Y-DNA line along their migrations, allowing you to trace your paternal ancestry. Special sections on the Y chromosome determine a male's Y haplogroup, revealing the origins of his ancestors as evidenced by common DNA markers.
5. Female DNA is tracked using Mitochondrial DNA (mtDNA) is passed down almost unchanged from a mother to her children, allowing you to trace your maternal ancestry. Both men and women have this DNA.
6. Each DNA testing site has different levels of testing. For example, the basic test checks some of the most common markers, and the full sequence test checks more markers. Get the test with the most markers that you can afford.

How to find DNA matches

1. You don't need to sign up for every DNA test site to find matches. [Gedmatch.com](https://www.gedmatch.com) can help you match with others no matter where they tested.
 - Gedmatch only matches people who have signed up (it's free) and have submitted their DNA and genealogy. The more people that join, the more information is provided. So tell all your friends.
2. Create a database or spreadsheet (a database provides more search and sort options) to store your matches. [I use FileMaker Pro]. You want to capture the following:
 - **Name** or ID of the matching person
 - **Contact** information, such as email address.
 - The matching **Chromosome** number (1 through 23). Some people might match you with more than one chromosome. This could be because you have multiple common ancestors.
 - The **Starting point** of the matching marker. This is usually a big number, such as 157,872,363.
 - The **Ending point** of the matching marker. This is also a big number, and will be higher than the starting number. For example, 168,622,807.
 - The **Length** of the marker (measured in Centimorgans or cM). This is the distance from the starting point to the ending point. The higher the number, the stronger the match.
 - The number of **SNPs**. Single Nucleotide Polymorphisms (SNPs) measures genetic variation and indicates the parts of DNA that are unique to each individual. Although you receive DNA from your parents, your DNA is not exactly the same as theirs, as it has mutated slightly. Each generation mutates from the previous. The higher the SNPs number, the further back the relation is between you and the match. This is not a direct correlation, but it gives you a general idea.
 - The name of the **Common Ancestor**.
 - **Notes** - a text field to collect miscellaneous information.
3. Most Europeans have multiple common ancestors, which can make the match appear to be more closely related to you than they really are. (Other geographic groups might also share this phenomena, but I have not studied those. For example, anyone with any European ancestry is related to Norman the Conqueror and Charlemagne. For example, although my parents came from different backgrounds, I have found 10 common ancestors between them, so far.)

In the following example (courtesy of gedmatch.com), a match was found in Chromosome 7 of a specific person. The Start point is at 13,162,593, and the End point is at 33,879,929. The length of the match is 29.1 cM.

Chr	Start Location	End Location	Centimorgans (cM)	SNPs
7	13,162,593	33,879,929	29.1	6,538

Chr 7



When looking at raw DNA data, find as many people as you can that have either a start location or end location to a particular chromosome, then compare their family trees to yours.

For example, say you find 3 people that have a start location close to yours, and 2 people with an end location close to yours. When you examine the ancestry of all 5 people, look for a common surname, or a common ancestor. If you match multiple people, you have a confirmed DNA match to the common ancestor.

Gedmatch.com makes this a little easier, because it finds the matches for you.

Track each person you match in your database or spreadsheet, because your finds will quickly grow.