



DNA for your ONS: Where to start?

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Type of DNA Tests

The 3 major DNA tests for genealogy are the following:

- mtDNA
- Y-DNA
- Autosomal

mtDNA

A mtDNA test tells you about the direct female line, which is your mother, her mother, her mother, and back in time. Both men and women inherit mtDNA, though only women pass it on. mtDNA are organelles contained in each of our cells.

A mtDNA test will provide information about your direct female line. The test result also provides information about the distant origin of your direct female line. mtDNA results were originally reported as compared to a standard called the Cambridge Reference Sequence (CRS). This reference standard is the first mtDNA sequenced. This was later revised to the rCRS. Now your test result page will also present your result as compared to a new standard, known as Reconstructed Sapiens Reference Sequence (RSRS). Under this reporting, results are compared with the root of the tree rather than the first result sequenced.

Your result is reported as differences. These are substitutions, deletions and/or insertions, which are the mutations as compared to the reference standard.

The test result from a mtDNA test is more anthropological than the results from a Y-DNA test, because mtDNA mutates at a slower rate.

Though there are limited genealogical applications, especially since females typically change their surname upon marriage, there are specific instances where this test will help genealogy.

For those curious about their direct female line, the anthropological information is very interesting. For example, besides matches, the test result provides your haplogroup and information about your haplogroup. Here is an example. H5a is the haplogroup.

H5a is found at its highest frequency in Central Europe and is 13-17,000 thousand years old. It is found at low frequency in Europe, where it likely originated, and is found at a very low frequency in the Caucasus and Near East.

One genealogical application is if a man had multiple wives, and you are trying to determine which wife was the mother of a female child. You would follow the mtDNA down to today to select candidates to test representing a descendent of one wife and the child where the wife isn't known. The participant can be male or female, since males inherit their mother's mtDNA, but the path back from the participant to the female child must be all females.

mtDNA can also be useful in adoption situations, as well as when the Y-DNA doesn't match, such as for 2 brothers, and you want to determine if they had the same mother, to determine why they don't match on Y-DNA, such as due to infidelity or adoption.

For matches in a genealogical time frame, take the mtDNA Full Sequence test. These matches, due to the slow rate of mutation, can also be anthropological.

In Fig.1, the inheritance of mtDNA is shown by black circles for females and squares for males.

Y-DNA

Y-DNA is a perfect companion to a one-name study. DNA data is another source of information about a surname, and provides information not available in the paper records. The information can be invaluable in solving genealogical questions, and will tell you which family trees are related.

The Y-chromosome is found only in men, and is passed from father to son, typically unchanged, which is the same path as the surname in most cultures. By testing locations

on the Y chromosome, called markers, you can determine if two men share a common ancestor, and the approximate time frame of the common ancestor.

This test provides information about your direct male line, which is the male who tests, his father, his father's father, and back in time. You must be a male to take this test, since only males have a Y-chromosome.

Males inherit a Y-chromosome from their father, and an X chromosome from their mother. These are known as the sex chromosomes. Females inherit an X chromosome from their father, and an X chromosome from their mother.

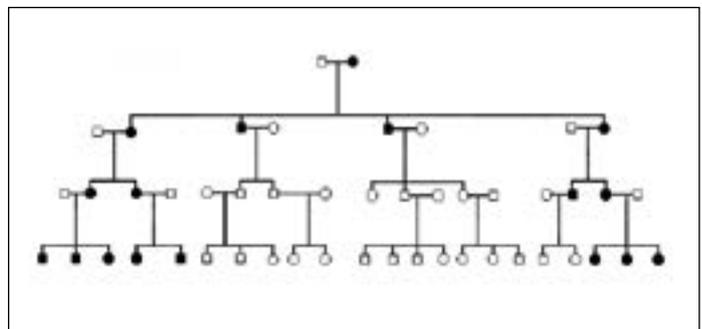


Fig.1

The result for a Y-DNA test, combined with the surname, provides matches in a genealogical time frame. The result will also supply anthropological information, which is your major population group, known as a haplogroup.

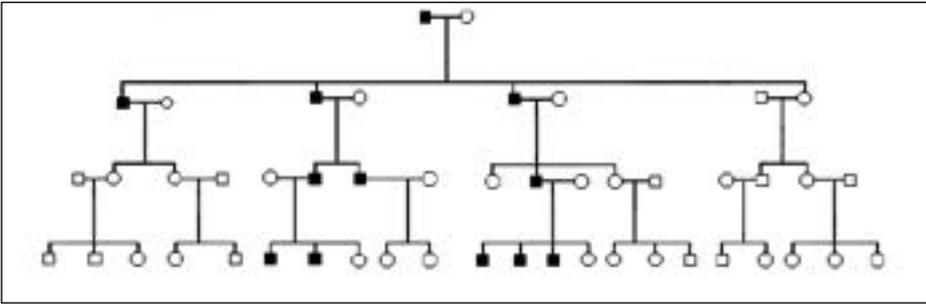


Fig.2

In the chart above (Fig.2), the inheritance of Y-DNA is shown by the black squares representing males.

For those that have been conducting their one-name studies for decades, and have exhausted documentary sources, DNA testing will provide additional information, as well as an opportunity to validate the family trees constructed. From a genealogical perspective, DNA testing has many applications, too numerous to list here. These include confirming migrations, and sorting out multiple families in the same location. From the perspective of a one-name study, DNA testing provides the opportunity to:

- Determine which family trees are related.
- Provide clues for further research.
- Confirm surname variants or find previously unknown variants.
- Discover information to define the major branches of each tree going back to the origin of the surname.
- Discover information about the evolution of the surname.
- Discover clues regarding the origin of the surname.
- Combine DNA results with research in early records and surname distribution maps to determine the number of points of origin for the surname.

DNA testing is a very valuable tool for a one-name study. DNA testing is just one component of family history research, though an important component because it provides information not available from the paper records, and can provide information about the origin and evolution of the surname. The question then becomes, do you include DNA testing as a source in your one-name study?

If you are concerned that DNA might be complicated or time consuming, I have found that it isn't any more complicated than some of the records we deal with. In addition, you can manage the time component easily, by pacing your recruiting efforts.

Y-DNA is the perfect companion to a one-name study, and will result in discoveries you couldn't make from the paper records alone. One-on-one help and consultation is available each step of the way, from the Guild's DNA Advisor. Simply email dna@one-name.org.

Autosomal DNA

This DNA test looks at your autosomes, or the 22 pairs of non-sex chromosomes. Some vendors also provide information on the X and Y chromosomes. Vendors typically state that this test has value about 5 generations back. To get the most benefit from this test, your tree should be well researched.

Each of us inherits 23 pairs of chromosomes. 22 of these are the autosomes, and the 23rd pair is the sex chromosomes.

The value of this test is finding matches from any branch of your tree, as a result of segments of DNA passed down to you from your ancestors. Often these matches will help you overcome a brick wall.

You will probably, over time, want to test others in your family, such as siblings, to pick up segments of your parents that you didn't inherit. If your parents or their siblings are living, you would want to test them also. With each generation, segments of an ancestor's DNA may be lost. You only get half your father and half your mother. Siblings would have segments in common with you, but they would also have other segments that you didn't get.

For those researching all branches of their family tree, this DNA test is a mandatory companion to your research. Whether right away, or over time, you

will get matches where you can establish a common ancestor, or clues to work out the common ancestor.

You can also manage your time with this test, by determining which level of matches to pursue. As you get more experience with this test, you can start assigning segments of your autosomes to ancestors.

Where to Buy

mtDNA Full Sequence: The only vendor offering this test is Family Tree DNA

Y-DNA: Family Tree DNA offers the largest database, the most markers, the most tools, and a full project management system. 37 markers are recommended for genealogical matches. The Guild provides Y-DNA 37 marker tests from Family Tree DNA at a significant saving. Either you or the participant pays. See this link for more information:

<http://one-name.org/dna-kits-available-from-the-guild/>.

Autosomal: Family Tree DNA offers an autosomal test called Family Finder. The Guild provides this test at a significant saving, where either you or the participant pays. See the link above. Ancestry.com also offers an autosomal test. See this chart for a comparison between the two tests:

<http://one-name.org/autosomal-dna-testing/>.

Recommendations

If you order a Family Finder autosomal test, you can put it in your Y-DNA Project for convenience. If you plan on other autosomal tests, perhaps of siblings to pick up more segments of your parents, you might consider a separate autosomal project to keep these kits organized. The DNA Advisor sets up these projects, but they are made invisible. The purpose is to provide you with project management tools and enable you to organize your autosomal participants for easy management and analysis. ■

Are you ready for DNA?

Simply write to Susan at dna@one-name.org. You will receive a complete setup project, that you can modify, along with an easy to follow 20-step Getting Started email and a sample recruiting email and letter.