

Family History & DNA 101 – Syllabus

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3 Main Goals of DNA in Family History

1. Find connections to living people
 - Help to prove your family tree where documents don't exist
2. Discover your ancient "ethnic" origins
3. Remove people from your tree

Family History DNA Overview

Not all DNA is created equal

- Your body contains various types of DNA – which you received from both parents, who each received DNA from both of their parents
- Some of that DNA from your parents combines to create DNA that is specific to you
 - These types of DNA identify you as an individual
- Some DNA is passed to you from one or both of your parents without combining or changing -- meaning you have almost identical DNA to your mother or father
 - These types of DNA identify you as part of a family grouping, as many individuals likely share this same DNA

Two types of DNA tests are most helpful in family history research

- **Y-DNA Test** – which looks at DNA in the Y-chromosome that men inherit from their fathers
- **mtDNA Test** – which looks at the mitochondrial DNA that children (male and female) inherit from their mothers

Y-DNA

The Y-DNA test looks at the Y-chromosome, which is passed virtually unchanged from father to son

- Mutations can occur between generations – so a father's Y-DNA can be slightly different from his son's.

A man who takes a Y-DNA test represents the DNA of his father, his grandfather, some uncles and male cousins, and others

- Many males in an extended family – regardless of when or where they lived – share the same Y-DNA. This opens remarkable possibilities to discover family connections you never knew you had

Y-DNA (Cont)

Once you have the results of a Y-DNA test, you compare your results with the test results of other individuals

- The Y-chromosome contains repeating DNA sequences at specific locations (known as markers). These repetitions hold clues about a man's genetic ancestry
- Y-DNA test results tell the number of times a DNA sequence repeats at a particular marker
- Once you know your markers, you can compare them with markers of other individuals

Strategies for using Y-DNA in your tree

- Women can have a father, brother, uncle, male cousin take the test "for them"
- You can test multiple lines of your family tree by finding and testing direct male ancestors for the specific line
- Join a DNA group to network your DNA and help sort out a surname

mtDNA

All children – male and female – inherit mitochondrial DNA (mtDNA) from their mothers

- Women pass on mtDNA to their children – both their male and their female children
 - Men DO not pass on mtDNA to their children
- The mtDNA test reveals information about direct maternal ancestry – your mother's, mother's, mother's, mother's, mother's mother and so on

The DNA results are used to predict the individual's maternal-line haplogroup

- There are several maternal haplogroups
- Each designated by a letter

mtDNA is most genealogically useful in determining that someone is NOT related to you

- mtDNA mutates VERY slowly – two people with exactly the same mtDNA test results could share the same female ancestor in the last 10,000 years
- However, two individuals whose mtDNA results are very different are likely not related on their maternal line
 - In other words, mtDNA is used to weed people out of your family tree