Ask AGRA – Family History Live
DNA Podcast
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Thanks to Dr Geoff Swinfield -

A) Mitochondrial DNA (mt-DNA) is inherited by both men and women only through their maternal ancestral line. The samples are compared with the revised Cambridge Reference Sequence (rCRS) or the Reconstructed Sapiens Reference Sequence (RSRS) and the report shows the differences from the standard. The inherited variation is used to assign a person to a haplogroup and its sub-classes. The result can be checked against others who have been tested to support or disprove genealogical relationships. It also indicates geographical origins and population migration routes.

B) Y-chromosome (Y-DNA) for males only. Any females would have to test via brothers, fathers, male cousins of the same line. Research is usually conducted on those who share the same surname. This can be used to determine the accuracy and/or purity of a male genealogy.

1) The genetic code can change at one specific point through mutation but this is rare. These are SNPs (Single Nucleotide Polymorphisms) possibly showing ethnic origins. HAPLOGROUPS based on SNPs show how mankind moved around the world, out from Africa.

2) STRs (Short Tandem Repeats) are where there are changes in the number of repeats of very short sections of the code at certain places or marker sites along the length of the Y-chromosome. This happens more frequently than SNPs and is therefore more useful to the genealogist. 12 to 111 markers can be tested to produce a man's HAPLOTYPE. That can then be compared against other males, especially those with the same surname.

Family Tree DNA (FTDNA) is the only company which offers the full range of tests and has the largest database for comparison. However, the majority of those tested are American.

C) Autosomal DNA tests (at-DNA) are available through FTDNA, 23andMe, AncestryDNA, My Heritage, Living DNA and other testing companies. These can be employed to gain some insight into ethnicity. They can also help a genealogist to seek or confirm relationships within the most recent four or five generations of a shared genealogy. It does not require a direct male or female line lineage.

The test compares common lengths or segments of all the chromosomes which have been inherited by relatives from a common ancestor. The “score”, expressed in centiMorgans (cMs), suggests the degree of relationship between two testees. It can also be used to “fish” for potential close relatives whose identity is unknown. The raw data can be downloaded in most cases from one company to another (the exceptions being Ancestry and 23andMe which does not accept data from any other testing companies). In addition, raw data should be uploaded to third-party websites to use comparison tools. These websites enable results to be compared and visualised and matches sought with those who have tested with other testing companies.

Online Sources and Recommended Websites

Family Tree DNA (FTDNA) **www.familytreedna.com**

Y-chromosome STR testing: testing at Y-37 or Y-111 STR markers & predicted haplogroups
Also offers advanced Big-Y700 test for rare SNPs
mtDNA testing: haplogroups
Family Finder: autosomal & ethnicity testing with chromosome browser and family trees.
Hosts many hundreds of surname and haplogroup projects.
Can download data to other testing companies. Accepts uploads from all other companies.

Guild of One-Name Studies

https://one-name.org/dna-kits-available-from-the-guild/

sells FTDNA's autosomal & 37 marker Y-chromosome kits at discounted prices to members

Ancestry.com **www.ancestry.co.uk/dna**

AncestryDNA: autosomal & ethnicity testing (no chromosome browser).
at-DNA tests can be linked to its public & private family trees and searched using ThruLines.
Does not allow uploading of DNA data from other companies.
Can download data to other testing companies other than 23and Me.

23andMe **www.23andme.com/en-gb/**

Relative Finder: autosomal & ethnicity testing with chromosome browser.
Predicts mt-DNA and Y-DNA (in males only) haplogroups.
Also tests SNPs associated with health issues if required for extra fee.
Does not allow uploads of DNA data from other companies.
Can download data to other testing companies other than Ancestry.

My Heritage **www.myheritage.com/dna**

autosomal & ethnicity testing with chromosome browser.
at-DNA tests can be linked to public family trees and searched using Theory of Family Relativity and AutoClusters.
Can download data to other testing companies. Accepts uploads from all other companies.

Living DNA **www.livingdna.com/uk/**

combined Y-DNA (for males), mt-DNA & autosomal testing (very limited cousin matching).
Includes comparison with the People of the British Isles (POBI) database.
Can download data to other testing companies. Accepts uploads from all other companies.

GEDmatch **www.gedmatch.com**

Third-party website which accepts DNA raw data from all other testing companies.
Provides advanced tools for comparison and analysis of matches including a chromosome browser.

Other websites

Eupedia - European Population Genetics & Anthropology
www.eupedia.com/genetics
(maps of Y-DNA and mtDNA haplogroup distributions)

International Society of Genetic Genealogy (ISOGG) **www.isogg.org**

and wiki **www.isogg.org/wiki**

Bibliography

Holton, Graham. S. *Tracing Your Ancestors Using DNA: A Guide for Family Historians*. (2019) Pen & Sword

Blaine T. Bettinger*. The Family Tree Guide to DNA Testing and Genetic Genealogy*. (2016) Family Tree Books

Blogs:

Debbie Kennett's Blog www.cruwys.blogspot.com

Lost Cousins newsletter & masterclass on DNA www.lostcousins.com