DNA Tests & Comparisons

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Introduction

DNA testing is probably THE "hot topic" in genealogical research at the present time. The author is an 11th generation direct male descendant of William Ives (1607 Rutland, England – 1648 Connecticut). This genealogical connection (including it's "limbs" and "branches") was established well before DNA testing was more than a wink and a nod in the genealogy world.

I have discussed the various types of genealogical tests – their benefits and their limitations – elsewhere (see: "DNA Genealogical Test Types" - which also is downloadable from my Ives genealogy web page at... http://www.ivescentral.com/DNA%20Genealogical%20Test%20Types.pdf); and this document will not re-plow that same ground.

Additionally, another downloadable document from that same web site – an 80-page summary of information on the Ives lineage progenitor, William Ives (see: http://www.ivescentral.com/William%20Ives%20Summary.pdf) – has some Ives DNA information on pages 41-42. This information consists of the y-chromosome test results from 4 separate male direct descendants of William Ives, one of them the author. In effect, this is the y-chromosome genetic 'signature' for William Ives and ALL of his direct male descendants, and direct male ancestors – for at least 100,000 years (yes, that is not a typo).

This document presents information based on a five autosomal DNA tests taken by the author during the period June-July 2023 from AncestryDNA, 23andMe, MyHeritage, Family Tree DNA, and Living DNA. Excellent published comparative information (definitely recommended reading!) on the tests from these organizations can be found at – https://www.yourdnaguide.com/ydgblog/best-dna-tests-ancestry and this detailed and thorough information will not be repeated here.

It must be emphasized that each of these DNA tests is of the autosomal variety (e.g., https://www.xcode.life/genetics/autosomal-dna-testing/) – testing both parents of the test's subject. These tests are reliable/useful for only the last 5 generations (at the most); they are not long-range markers such as the y-chromosome test noted above. Thus, they are useful only within that range of time between you and your great-great-great grandparents – aka, the ancestors of your 4th cousins (in the author's ancestry, the mid-1700s). I would note that if you already have done research the "old-fashioned" way and have been able to track down your great-great-great grandparents and their descendants, then you already have excellent information on your 4th, 3rd, 2nd, and first cousins and an autosomal DNA test may not reveal additional useful information.

I am an excellent candidate against which to match the veracity and accuracy of autosomal DNA tests since I have been able to trace my paternal ancestry (using good old-fashioned research) back many more generations than any autosomal DNA test can claim accuracy or relevance for (i.e., 10+ generations; into the 1500s - 1600s). I have been able to trace my maternal ancestry back (ditto re the old-fashioned research) 4 generations (into the early-mid 1800s), pushing against the 5-generation autosomal DNA boundary. So, in fact, I have known the names, dates, and locations of my ancestors – prior to taking any of the 5 commercial genealogical DNA tests.

It should be noted that my DNA testing experiment is not a new or unique procedure. An experiment similar to it has been performed a number of times by others; an excellent example being: https://www.sciencenews.org/article/family-dna-ancestry-tests-review-comparison

One of the most important determinations to be made from this comparison test, whether you know your ancestry previously or not, is to ascertain which DNA test is the “best” one to spend your money and time on... which is the 'best' in terms of detailed information; which is the 'best' in terms of accurate information; which is the 'best' in terms of ease of use; and which is the 'best' in terms of ease of presenting you with potential cousin connections.

It must be noted also that the inherent “variability” of DNA test results, from and among multiple testing companies, is well known, as are several reasons for such variability –

https://familyhistorydaily.com/genealogy-help-and-how-to/understanding-dna-results/

https://www.sciencenews.org/article/family-dna-ancestry-tests-review-comparison

https://www.webmd.com/a-to-z-guides/features/accurate-dna-ancestry-tests

https://www.vox.com/science-and-health/2019/1/28/18194560/ancestry-dna-23-me-myheritage-science-explainer

https://now.tufts.edu/2018/01/26/pulling-back-curtain-dna-ancestry-tests

https://whoareyoumadeof.com/blog/why-are-dna-results-different-with-different-companies/

In essence, genealogical DNA analysis is all based on statistics, probabilities, algorithms, and 'looks like' calculations -- as in "53% of your DNA looks like the DNA of people from Batsutoland (at least those data that we have in our organization's in-house databases)”. Because of this, those DNA testing organizations that have a larger pool of previous analyses upon which to draw may be more specific/accurate in their determinations for any given sample.

Y-Chromosome Test

For those interested in tracing just a paternal line (e.g., Ives), a y-chromosome test can provide useful additional information, as opposed to just taking an autosomal test. First of all, only males can take the y-chromosome test (blame biology). Secondly, the y-chromosome test is applicable and relevant not just for 5 generations (as with the autosomal DNA test), but for thousands of years. So, males with a certain set of values in a y-chromosome test that match the values of others can say with a considerable certainty that they are 'closely' related to the other matching test-taker(s).

Y-chromosome tests are available in several “varieties” – based on the number of y-chromosome markers that are tested for. The 37-marker test should be sufficient for almost every genealogical need, but there are tests available that will test over 700 markers. There are far fewer choices of vendors for genealogical y-chromosome testing. Currently, Family Tree (FTDNA) is the major player for this test.

And, it may not be “necessary” for you actually to take the y-chromosome test yourself. If a y-chromosome “signature” exists for your lineage progenitor (as it does for William Ives, 1607-1648 – due to 4 of his direct male descendants taking that test and having identical results), then you will have that exact same y-chromosome signature as long as you are a direct male descendant of William Ives.

Tests

What is noted (below) are the results of the tests on the author's DNA samples, expressly as generated by the testing agencies... the written descriptive/assignation/conclusion material that was generated and provided by them in their own words. Their order in the table below reflects ONLY the order in which that test was taken.

Testing Org.	World Region	Other Connectivity Information/Notes	Testers #s
Ancestry	Germanic Europe – 35% Scotland – 29% England & NW Europe – 19% Sweden & Denmark – 7% Ireland – 7% Wales – 3%	Includes useful information on your DNA "Communities"... Early CT and NE NY Settlers Early Eastern & North-Central PA Settlers Scottish Central Lowlands Scottish Lowlands, N England, N Ireland One of the 2 most accurate and useful of all of the DNA tests when compared against my genealogical reality as generated by decades of research. Presents your ethnicity origins breakdown in toto or by parent. A more expensive "with health traits" testing option is available.	20+ million
23andMe	French & German – 80.4% British & Irish – 13.3% Scandinavian – 2.2% Broadly NW European – 3.3% Anatolian – 0.8%	Provides a "Matches Likelihood"... Germany – Likely Match Switzerland – Possible Match England – Likely Match Ireland – Likely Match United Kingdom – Highly Likely Match Maternal Haplogroup – H Paternal Haplogroup – R-L664 A Neanderthal gene component is calculated ("you have more Neanderthal DNA than 'X'% of other customers) A more expensive "with health traits" testing option is available.	12+ million

Testing Org.	World Region	Other Connectivity Information/Notes	Testers #s
Family Tree DNA	England, Wales, Scotland – 43% Central Europe – 39% Scandinavia – 13% Magyar – 3% Sardinia – <2% Malta – <1%	The "Ancient European Origins" information is close to useless. Metal Age Invader – 9% Farmer – 42% Hunter-Gatherer – 50% Non-European – 0% Y-chromosome test and substantial reports are available for separate purchase. Paternal Haplogroup – R-M198 A more expensive "with health traits" testing option is available.	2+ million
MyHeritage	North and West European – 37.3% Scandinavian – 28.9% Balkan – 13.9% Iberian – 13.5% Irish/Scottish/Welsh – 5.4% East European – 1%	The only test company that did NOT notify me when the results were ready! Cannot view data/trees of your DNA matches unless you fork over an annual "membership" fee (this is in addition to the cost of their DNA test) of $89-$199. I'm not pleased with the "pay for your test" – now "pay more to be able to use the results" approach! Note: the cost of the membership is automatically put in your shopping cart – constantly. In my opinion – a Real-World Rip-Off! A more expensive "with health traits" testing option is available.	6 million

Testing Org.	World Region	Other Connectivity Information/Notes	Testers #s
Living DNA	Great Britain & Ireland – 76.9% Central England – 20.7% Southeast England – 13% South Central England – 10.8% East Anglia – 7.7% N Ireland & SW Scotland – 6.2% Northrumbria – 5.4% Aberdeenshire – 4.5% Cumbria – 3.4% Northwest England – 3% Devon – 2.2$ South Germanic – 23.1%	Paternal Haplogroup – R-CTS7083 (aka R-L664 or R-S298; or the Germanic branch of R1a) Maternal Haplogroup – H45b One of the 2 most accurate and useful of all of the DNA tests when compared against my genealogical reality as generated by decades of research. A particularly excellent testing capability for anyone with a British background! The only DNA test that did not generate 'spurious' results of Scandinavia, Anatolia, Magyar, Sardinia, Malta, Balkans, or Iberia. A more expensive “with health traits” testing option is available.	Unknown

Comments On The Test Results

The “World Region”, aka 'ethnicity,' information is just an estimate that is based on sample databases already held by the testing company. They tell you where your ancestors “might” have lived (remember that DNA regions are not the same as modern country, province, or district boundaries!). These regions are percentages that are rather broad and can reach back up to 15-20 generations. The actual assignments are based on statistics, probabilities, and shared DNA information available to the testing company – all of which are run through the testing company's own particular analytical algorithms.

As you can readily see from the above table, a number of results from these 5 DNA tests, as to my own “genetic origin” are just scattered all over the place:

England/Britain area – ca. 58%, 16.6%, 43%, 42.7%, or 76.9%
(analyzed range: 16.6% - 76.9%)

Central Europe – ca. 35%, 80.4%, 42%, 28.4%, or 23.1%
(analyzed range: 23.1% - 80.4%)

Scandinavia – ca. 7%, 2.2%, 13%, or 28.9%
(analyzed range: 2.2% - 28.9%)
Note: DNA estimated as “Scandinavian” also is found in Belgium, England, the Faroe Islands, the Netherlands, Norway, and Switzerland.

“Outliers” – Anatolia(? – 0.8%), Magyar(? – 3%), Sardinia(? – <2%), Malta(? – <1%), Balkan(? – 13.9%), Iberian(? – 13.5%), East European (? – 1%)
Note: each of these outliers is “unique” – that is, its presence has not been 'determined' by more than one of the 5 DNA testing companies.
To the best of my 49 years of genealogical research into my ancestry (and the results that go back 4-19+ generations, depending upon the particular ancestral line), I can categorically state that I have no known Scandinavian background; no Anatolian background; no Magyar background; no Sardinian background; no Maltese background; no Balkan background; no Iberian background; and no 'East European' background within these generational parameters.

These scattered, highly variable, questionable, and just plain strange location data could mean... 1) more than one of these tests is faulty in its scientific bases or, 2) more than one of of these tests is faulty in its actual data analysis and genetic attribution algorithms or, 3) I MIGHT have some of these genetic ethnicities, but somewhere along the ancestral pathways they have “fallen off” my direct descent linkages. The differences among the various “DNA tests” with regard to these “outlier” DNA sources are so incredible that I prefer to think that it is an unknown combination of both factors.

Conclusions

When the information, in the Table above, is examined, certain conclusions and comparisons can be drawn with regard to the 5 autosomal DNA tests taken by the author.

Additionally, an extensive perusal, and follow-ups, of the genealogically-linked information can be made of the "related to" information provided by each of the five testing organizations when compared (by their internal algorithms) to their internal databases of individuals who have taken their same tests – ranging in size from the 20 million test-takers of Ancestry to the 2+ million test-takers of FTDNA.

The Table below lists my ranking of some of the parameters that one would be looking for in a DNA testing/matching company and its capabilities. In order to further parse these results, no more than 3 companies are listed as "acceptable" (✓) in each of the categories. An 'X' indicates that that company was judged 'unacceptable' in that category. The lack of either of these symbols indicates that the organization falls into the large and vague "middle ground" for that particular variable.

This information is based solely on the results of my tests (as they are compared to my research-derived genealogical results); on my own particular Ives (and affined families) research needs; and on my own use of the testing companies' information and web sites.

	Ancestry	**23andMe**	**FTDNA**	**MyHeritage**	**Living DNA**
Specificity & Accuracy of Test's Calculated Results	✓		X	X	✓
Inclusion of Additional Information (e.g., Health Data, Haplogroups)	✓			X	✓
General Ease of Use and Navigation of Web Site	✓		✓		
Ease of Relationship-determination and Connectivity With Possible DNA Matched Individuals	✓			X	

And standing upon the "DNA Test Comparison Award" Podium, we have...
Gold Medal – Ancestry
Silver Medal – Living DNA
Bronze Medal – 23andMe