from: http://dna-explained.com/2014/09/04/what-does-and-doesnt-a-y-dna-match-mean/

What Does and Doesn't a Y DNA Match Mean?

Posted on September 4, 2014

It's easy to forget how foreign this landscape looks to a newbie, but the newbies are our next generation genealogists and genetic genealogists.

This week, someone e-mailed me who had tested at Family Tree DNA and asked how to contact their Y DNA match they had found in a project that I manage. I thought that was a very strange request, since your matches are on your personal page along with their e-mail addresses, so I asked for the name on their kit and their kit number so I could take a look.

As it turns out, they had no Y DNA matches on their personal page, so they were hunting for matches elsewhere. They had joined the haplogroup E1b1a-M2 project and it's there that they found their "matches" that they were asking about. I commend their tenacity in hunting for matches and finding them in a project, even though they weren't exactly what they thought.

The kit number here is 343629, Lewis. You can see in the screen shot from the haplogroup E-M2 project page that they don't match anyone exactly at 12 markers, and their closest match is to Harris above their entry, and they have 3 mismatches at 12 markers.

M8087	ALOBAISI	Mohammed	E-M2	15	21	16	10	17-18	11	12	12	14	11	31
314978	E		E-M2	15	21	16	10	17-18	11	12	13	14	11	31
258485	Smith		E-M2	15	21	16	10	17-19	11	12	13	13	11	30
217814	Harris	Arthur B. Harris, b. 1909	E-M2	15	21	16	11	17-18	11	12	11	13	11	31
343629	Lewis	David Eric Nevers	E-M2	15	21	16	11	17-18	11	12	12	14	11	32
U3710	Stewart	Sangye Stewart	E-M2	15	21	17	10	16-17	11	12	11	13	11	31
N74700	Horne	Peter Horn 1842	E-M2	15	21	17	10	16-17	11	12	12	13	11	30
296931	Affick	William Afflick b. 1781 St Kitts Island, St Kitts	E-M2	15	21	17	10	16-17	11	12	12	13	12	30
55036	Conston	Richard Constance	E-M2	15	21	17	10	16-18	11	12	11	14	11	32

As it turns out, Lewis and Harris didn't qualify as matches, which is why they weren't displayed on their personal match page. This explains why kit 343629 was asking me how to contact their "matches."

Family Tree DNA has set up match thresholds. For someone to be listed as your match, they need to have no more than the following total number of mutations difference from your results.

Markers in Panel Tested	Maximum Number of Mutations Allowed
12	0 unless in a common project, then 1
25	2
37	4
67	7
111	10

The reason for these thresholds is that DNA mutates at an "average" rate and for someone to have more than this number of mutations in that marker range means, generally, that the match is too far back in time to be genealogically relevant. For people who do have matches, you can utilize Family Tree DNA's TIP calculator to obtain an estimate of how distant the most recent common ancestor (MRCA) might be from you and your match. I wrote about the TIP calculator and the MRCA both, so refer to those articles for more into on those tools.

The next question this person asked is, “How do you tell which markers indicate someone as a close cousin?”

The answer really involves several aspects or DNA testing, and I’m going to answer their question here, in pieces, so that everyone can benefit.

1. In general, finding family via the Y markers is not about “which markers” as much as it is about the number of matching markers. If you share a common ancestor, the DNA of that man’s descendants will accrue mutations over time. If the common ancestor is before the advent of surnames in the culture in which they resided, then the surnames may not match, but the common ancestor still existed.
2. In general, 12 markers is not sufficient to determine a common ancestor, although you can rule out common ancestors in a genealogical timeframe, generally accepted to be 500-800 years, by high numbers of mismatches caused by mutations. I would suggest this person test at higher markers because sometimes people do pick up matches at higher levels where more mutations are allowed, especially if the mutations happened, for some reason, in the lower panels but few happened in the higher panels. I do see this when writing the Personalized DNA Reports for people, not often, but it does occur, especially at 111 markers.
3. You cannot necessarily identify a “close cousin” or any specific relationship utilizing Y DNA testing alone, especially at low marker levels, such as 12 and 25. Although if someone matches you on all 111 markers, there is a very good chance that you share a common ancestors in just a few generations. What the traditional Y test (meaning not the Big Y test) does confirm is whether or not you share a common paternal ancestor and then it’s up to genealogy and autosomal testing to determine how close that relationship might be. The number of matching Y markers can provide hints and generalities through the TIP tool, but nothing more.
4. For this individual, in addition to upgrading beyond 12 markers, I would recommend that they take the Family Finder autosomal test because that will provide them with a list of cousins on all of their lines, not just their Y line. Based on their earlier commentary, they are looking for all family, not just their paternal line. If you have Y matches and autosomal matches, through the Advanced Matching tool on your Personal Page you can see who, if anyone, is a match to you on both.
5. However, all of this said, the combined pattern of Y markers, not individual markers, determine the match or non-match, and it is your personal DNA signature. Think of it as a song and the markers as notes in your own personal DNA song. Given that mutations arise in each person’s line, sometimes the various DNA mutations are rare, and those rare markers together can be utilized to determine how closely one might match someone else, especially if the surnames don’t match. I see this often in African American descendants of slaves because surnames weren’t adopted until after the Civil War ended in 1865. Often the 1870 census is our first opportunity to find these families with a surname, and sometimes they subsequently changed their surname.

One of the things I do for my customers as part of a Personalized DNA Report is to complete a profile for them of the relative rarity of their DNA by marker. Please note that I don’t do DNA reports for people who haven’t tested at least 37 markers because I don’t have enough information to work with.

In the case of this individual, I compared their 12 markers in my database of haplogroup marker frequency with the following results.

Allele Location	Your Value	% in E1b1a (M2)
393	15	**15**
390	21	92
19	16	**23**
391	11	**19**
385a	17	**20**
385b	18	29
426	11	100
388	12	92
439	12	62
389-1	14	**17**
392	11	97
389-2	32	**16**

Values under 25% are bolded, as they are rarer values and the combination of these rarer values are likely to be your own personal family line rare marker DNA signature. Said differently, you are more likely to be more closely related to those who carry this rare marker signature than those who don't.

This person has 6 out of 12 markers that are relatively rare. Normally, one would expect no more than 3, so this is likely why they have no matches. This is a good news, bad news thing. The bad news – no matches today. The good news is that these rare markers value, combined, are a wonderful personal filter that eliminates matches by convergence. So, someday, when they do have a solid match, it will be relevant and not just because they have all common markers.

And now for the next question. How can you obtain your own list of marker frequencies? Obviously, you can order the DNA Report for $349, or if all you want is the marker frequencies, you can order a Quick Consult for $50 and can obtain all 111 of the Y marker frequencies for any one kit.

Guarantees

Most people just want an answer. I fully understand that. Me too, but often, that's not how DNA testing and genetic genealogy as a whole works. So the question, "What test can I take to give me the answer?" really doesn't have a solid, works every time, answer. There is no absolute, no guarantee. Sometimes, depending on the question at hand, a regular Y DNA test will do exactly what you want. Other times, like in this case, not so much. But you won't know until you test and there is no way to predict an outcome. Testing may provide the answer in spades, immediately, and it does sometimes. Other times, you get a puzzle piece with a fortune cookie note that says "you will undergo more DNA testing." The answers are tied to DNA testing, yours and other peoples, traditional genealogy research and sometimes, luck. But it has been my experience that those who work the hardest, test most thoroughly and dig the deepest are most often the ones who experience more occurrences of "luck." Keep digging.

As Louis Pasteur said, "Fortune favors the prepared mind." Not nearly as eloquent as Dr. Pasteur, my old Hoosier farmer Dad would have said, "apply a little more elbow grease."

I hope this has helped to clarify what a Y DNA match actually does and doesn't mean, and how to take the next step in finding your family.

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This entry was posted in Autosomal, Family Finder, Personalized DNA Report, Quick Consult, Y DNA by robertajestes. Bookmark the permalink.

22 thoughts on "What Does and Doesn't a Y DNA Match Mean?"

1. Sydni Thurmond-Hamill on September 4, 2014 at 5:16 pm said:

   Roberta, are these frequencies something you have calculated? Do you have a frequency database for STRs in other haplogroups as well? What a great analysis tool!

   -  robertajestes on September 4, 2014 at 5:23 pm said:

     Yes, I have maintained these frequency tables for years for each haplogroup.

2. LuAnn on September 4, 2014 at 5:58 pm said:

   Roberta,
   In point 3 above you say "Although if someone matches you on all 111 markers, there is a very good chance that you share a common ancestors in just a few generations." In one of the DNA projects that I'm an administrator for I have two men who match exactly at 111 markers yet each has taken Family Finder and have no matches in common there. Isn't that kind of strange?

   -  robertajestes on September 4, 2014 at 6:44 pm said:

     Yes, that is very unusual. Do they share a surname too?

     - LuAnn on September 5, 2014 at 1:26 am said:

       No. But, it was through DNA testing that we discovered that one of the men was genetically not the same as his surname. There is either a Non-Paternal Event or an adoption somewhere.

3. Todd Pierce on September 4, 2014 at 7:14 pm said:

   Hi Roberta-Speaking of yDNA implications, I would think that if I match someone at 67 of 67 I might reasonably expect that we both would have some autosomal sharing too, but right now that seems not to be the case. We have both tested autosomes at FTDNA and 23andMe, but at the default level of both services we have no matches on either service. (I have not been able to upload to GEDmatch yet.) I know that my settings on 23andMe are open enough that my daughter showed up matching me appropriately. My son, however, does not show up as an autosomal match to me on 23and Me. I'm

pretty certain that he has simply not granted the correct permissions, though he claims he has. I'm wondering whether my 67-67 (FTDNA) y-match has missed a permission gate also, or whether 67-of 67 on the Y is not a strong enough indicator to make some autosomal sharing a virtual certainty? Hoping you will be speaking in our area again soon.

-  robertajestes on September 4, 2014 at 7:17 pm said:

  I have seen a number of 67-67 matches that don't share autosomal. Remember that autosomal only reaches back at the threshold levels used by the companies 5 or 6 generations and it is certainly possible to have a 67-67 further back than that. I have had better luck finding smaller matches at GedMatch for those people. It does tell you though that your common ancestor is quite a ways back in time. Regarding your son and your files. Download them both to GedMatch.

4. Jan Foster on September 4, 2014 at 7:39 pm said:

   Roberta,
   Thank you for this explanation regarding 12 Marker Y-DNA testing.

   My Dad tested at this level a few years ago but I have only recently begun trying to make sense of the results. It appears the 12 Marker tests are inadequate for discerning genealogical information. A Family Finder DNA test was run and those results have just recently been received. At this time, he is identified as haplogroup I -M253. Previously it had been I-M170.

   There is one match (12/12) for Dad at the 12 marker level. Other than attempting to contact the match, I'm not sure what else to do with the information we have. I will re-read and study your explanation here as it exactly addresses my situation, and appreciate your time in writing it up.

5. Tom L on September 4, 2014 at 8:40 pm said:

   Roberta,
   Another very informative article. Question for those who may be considering it… If someone has already done the Family Finder Autosomal test at FTDNA and then wishes to do the Y-NDA 111 test, do they have to go through the whole cheek-scraping thing all over again? Or does FTDNA just pull their autosomal test sample off the shelf and test that for Y-DNA?
   Thanks, Tom

   -  robertajestes on September 4, 2014 at 8:45 pm said:

     They store your DNA there until it's used up so that you can upgrade. So no, you don't have to scrape again unless there is a problem.

     - Tom L on September 5, 2014 at 3:04 am said:

       Good to know… Thanks!

6. Amy on September 4, 2014 at 8:54 pm said:

Another great blog entry. Thanks, Roberta! I have had my brother's DNA tested to 67 markers, we've done autosomal testing, full mT testing, and the D9S919 (per your blog's suggestion for possible Native American ancestry. It gave us the result of 15-17, so no luck.) Our main goal is to find out why our family was listed in census records as "mulatto." It is a mystery because their last name is Conner. Civil War and WWI records indicate they all had black hair, light skin, and blue eyes (my great grandfather served aboard three Union supply ships during the Civil War and is listed as mulatto in those records, though it also says he had blue eyes.) They've owned land at least since the early 1800s in an area that used to be predominately Tuscarora Indian. They changed their name from Conner to Carney after moving out of their native Jones County, North Carolina and into Duplin and Pender counties.
My first thought was a white/black/Native American mix, but autosomal testing indicated 97% European (Western Europe, Central Europe, Scandinavia, and Southern Europe), 3% Central South Asian (Afghanistan area), and 1% Eastern Middle East. From that, I can kind of see a possible migration pattern from the Fertile Cresent up along the edge of the N. Mediteranean, to Europe.
I feel that my question is a simple one to ask, and yet I don't know what else to do to find the answer. My brother, father, and many of my father's cousins look Hispanic or Native American, but with gray or blue eyes. (My brother once grew a mustache and several Hispanics started speaking Spanish to him on the street!) I look totally Irish, as does my sister.
Any suggestions that might also help others in the same boat?

-  robertajestes on September 4, 2014 at 9:23 pm said:

  You're in the same boat as so many of us. First, create a DNA Pedigree chart for your family. You never know what you'll find. Second, I wrote an entire series about how to find if you really do have minority ancestry. I'd utilize those tools. One thing is for sure, if there wasn't some admixture you wouldn't be fining those records. It was probably several generations back in time. http://dna-explained.com/2013/06/02/the-autosomal-me-summary-and-pdf-file/ and http://dna-explained.com/2012/08/22/the-dna-pedigree-chart-mining-for-ancestors/

7.  Ron.V on September 5, 2014 at 12:00 pm said:

Roberta, this one's a keeper for the project I administer. Thanks. We are I1 (Big-Y pending). Ken Nordtvedt's I1 YDNA Haplogroup Project says that "DYS455=8 is a very good predictor" to tell if you're an I1. Is it possible that an I1 SNP can be found within the STR marker DYS455? Or, do SNPs have to fall outside STR markers? The spreadsheet for Ken's I1 Modalities research displays a row/column relationship between SNPs and STR markers. This is not a beginner's question, I realize, but sooner or later, they all want to know more about SNPs and STRs.

-  robertajestes on September 8, 2014 at 8:15 pm said:

  Hi Ron. I wrote about that in this article: http://dna-explained.com/2014/02/10/strs-vs-snps-multiple-dna-personalities/

  -  Ron.V on September 9, 2014 at 4:07 am said:

Roberta, I know you're very busy! Thanks for the reply. I re-read your 2014-02-10 STRs vs SNPs article including all the comments. I get your comment that "First of all, you can't compare SNPs and STRs. They are two different things." (Re: May 25th comment to Richard McMurtry). I also get it that Dr. David Mittelman declares "There is no such thing as a SNP/STR." I agree with you both. I am NOT trying to compare SNPs and STRs. I am not trying to declare that there IS such a thing as a SNP/STR. What I am asking is whether a SNP can exist INSIDE an STR? Yes or No?

If the answer is yes, that tells me a SNP could alter the usual number of STR repeats. If the answer is no, that tells me a relationship that may appear to exist between a SNP and an STR is either pure coincidence or there's something else present that affects them both.

-  robertajestes on September 9, 2014 at 2:46 pm said:

  I'm forwarding this to Dr. Mittelman for clarification.

-  robertajestes on September 11, 2014 at 5:56 pm said:

  I asked Dr. Mittelman how this would be handled if a repeat sequence had a SNP in the middle of it. Dr. Mittelman's reply is below:

  A SNP can certainly exist in a repeat tract. You could have something like this:

  CAGCAGCAGCAG (4 CAGs)

  CAGCAGCACCAG (4 CAGs, but the third triplet has G mutated to C)

  I would still describe both repeats at CAG(4). It is true that the first one is a perfect repeat, and the second is not 100% pure repetitions. I believe at the nucleotide level this happens for at least some STRs, they are not always perfect repetitions.

8. Elaine Gaudet on September 5, 2014 at 7:35 pm said:

   Roberta,

   Thanks for the great post again. We have tested two paternal donors with FTDNA at the 37 marker level. We felt we were certain that we had a common ancestor back 6 generations. BTW we could never authentic that , so we resorted to DNA. Of course the results came back and we are not a match. Now I understand that they are haplogroup R M269 and if you go to ysearch.org they will give you a SNP for RM 269, R1b1a2. I searched on ysearch for R1b1a2 and it showed still no matches. I am not sure if I am doing it right. My question is basically, where can I go from here ? The BRICK wall is there, but I need more assurance I have exhausted all possibilities.

   Thank you in advance

   Elaine Gaudet 9 Marjorie Cres Stratford, PE. Canada C1B1X3 Sent from my iPad

9. Mark Deutsch on September 6, 2014 at 12:10 am said:

I remember what a thrill it was, back in 2006, to receive my first 12 STR results from the Genographic Project. I thought I matched one of the Highland clans! That was indeed ancient DNA testing, in more ways than one. Four of my 26 matches at 12 (which includes up to a genetic distance of one) have R-L21 as their SNPs, which probably split off from R-P312 about four thousand years ago. My branch of Haplogroup R is way down on a little twig from R-P312. And as I have no matches below FTDNA's cutoffs at 37 nor 67, I've given up on Y-STRs being in any way helpful genealogically. Maybe one day, sigh. The best bang for the buck genealogically, IMHO, is Family Finder and other autosomal tests. It's enabled me, as an adoptee, to match up with cousins I never knew I had. Thanks for another superb post.

10. WOLong@aol.com on September 6, 2014 at 12:46 am said:

    Does the term "mutation," as used below in describing FTDNA's matching criteria, refer to the number of differing markers without regard to the number of steps for which a marker differs? (In other words, if two men differ on only one marker, but by two steps on that marker, is this one "mutation" or two?)

    -  robertajestes on September 8, 2014 at 8:59 pm said:

      In most cases, two differences are two mutations. In cases like multiple value markers, like 464, I believe that multiple steps there are counted as 1 and null values are also counted as 1. Here is some basic info. https://www.familytreedna.com/learn/dna-basics/ydna/ Here is some more advanced info. https://www.familytreedna.com/learn/y-dna-testing/