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EDITOR'S CORNER: AN EXPLOSION OF Y-STR MARKERS

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Editor's Corner

An Explosion of Y-STR Markers!

Among genetic genealogists, it has long been an article of faith that once we could have 100 Y-STR markers available commercially, we would then have the resolution we needed to really figure out relationships in our surname projects. Well folks, it looks like we just arrived!

With the new 22-marker panel offered in March by Family Tree DNA (bringing just their own offerings up to 59 markers), as I count them, we now have available 102 markers! To get close to that many, however, you have to go to at least three different companies.

DNA Fingerprint (DNAFP) led the way into the development of new markers during 2005, and they still have the most markers of any company, plus the most not offered by any other company. Ethnoancestry followed in early 2006 with a new 18-marker panel that at the time represented markers not offered elsewhere. Not to be outdone, the venerable Family Tree DNA, in March 2006 brought out their new 22-marker panel. So far on the sidelines as far as new offerings are concerned, DNA Heritage and Relative Genetics, still offer their 43-marker set.

The question for anyone wanting to add to the number of markers they have tested is, "How should I go about testing new markers?" Unfortunately, the answer is not so simple, unless you simply must have all 102 markers. Then, the answer is simple, though rather expensive—just buy everything that each company offers.

The problem lies in the fact that the offerings of all the commercial labs are not mutually exclusive—there is quite a lot of overlap. Figuring out how to get the most markers for your money is a challenge. Let's start with the 37 markers available from FTDNA (sorry, DNAH, RG, EA, and DNAFP—we have to give the largest company its due). Once you have results on those 37, what next? For some time DNAH has offered a 23-marker "pick your own markers" test. If you ordered that option and

included the 11 markers not tested by FTDNA, that would allow you to raise your total to 48, which was about the most you could get a year ago. Now, there are more options, including getting 10 of those extra 11 markers from DNAFP. However, at DNAFP, there is a one-time DNA extraction charge, so going with DNAFP makes the most sense if you plan to buy many more markers than 10.

Beyond the basic set of 48 markers, each of DNAFP, EA, and FTDNA offer a new set of markers. At EA and FTDNA you must buy the whole set, while the markers can be ordered individually at DNAFP (though you get a small price break if you order whole panels of about 12 markers). However, as pointed out earlier, there is some overlap among the offerings from these three companies.

In the new 22-marker panel from FTDNA, 13 markers are available nowhere else. In the new 18-marker panel from EA, 11 are available nowhere else. DNAFP has 22 markers available nowhere else. If you're serious about getting to 100 markers, you can't leave out any of these three sets of new markers. You'll have to buy all of them in spite of their overlap.

How much overlap is there? In the cases of the 22-marker set from FTDNA and the 18-marker set from EA, seven of the markers appear in both sets. None of the EA set and only two of the new FTDNA set overlap with the offerings from DNA Fingerprint.

One fairly efficient way to get a large number of markers would be to test the FTDNA 59, and then add on the 30 markers from DNAFP that are not offered at FTDNA. That would bring your total to 89 and would only involve two companies. If you've already started with the 43 from DNAH or RG, you could order from DNAFP the 27 markers they offer that DNAH doesn't (bringing your total up to 70) and then add the 18-marker panel from EA, whose markers do not overlap at all the offerings of DNAH or DNAFP, for a grand total of 88.

Table 1 (next page) shows the commercially available markers beyond the basic FTDNA-37. Not shown is DYS425, offered by Oxford Ancestors, but this marker is available from DNAFP as a part of DYF371. With all of the new offerings, surely Oxford Ancestors will soon be offering more than their original 10-marker test.

With 100 markers, what is the probability that a mutation will occur in each transmission of the whole set from one generation to the next? Unfortunately, we do not know the mutation rates for many of these markers. If we just assume that the average mutation rate for all 100 markers is

about 0.002, then the probability of a mutation in one of the 100 markers is about 20% per transmission in the whole set. That's probably in the right ballpark.

But, if 100 markers gets us to 20% probability per transmission, look what 250 would do for us—that's a mutation every other transmission! And, for that matter, why not 500??? Here we go again—probably we will never stop until we've spent the last of our retirement fund on DNA tests!

Whit Athey
Editor

Table 1 Y-STR Markers Available Commercially in Addition to the FTDNA-37

DNA Fingerprint (Markers in panels or individually)	Ethnoancestry 18-Marker Panel	FTDNA 22-Marker Panel	DNA Heritage, Relative Genetics
<i>Markers Available at More Than One Company:</i>			
DYS441			DYS441
DYS444		DYS444	DYS444
DYS445			DYS445
DYS446		DYS446	DYS446
DYS452			DYS452
DYS461			DYS461
DYS462			DYS462
DYS463			DYS463
DYS635 (C4)			DYS635 (C4)
GATA-A10			GATA-A10
	DYS481	DYS481	
	DYS490	DYS490	
	DYS531	DYS531	
	DYS578	DYS578	
	DYS594	DYS594	
	DYS641	DYS641	
	DYF406S1	DYF406S1	
<i>Markers Available at Only One Company:</i>			
22 Markers Unique to DNAFP	11 Markers Unique to Ethnoancestry	13 Markers Unique to FTDNA	1 Marker Unique to DNAH, RG
DYS413a	DYS487	DYS436	GGAAT-1B07
DYS413b	DYS494	DYS472	
DYS434	DYS505	DYS492	
DYS485	DYS522	DYS511	
DYS495	DYS533	DYS520	
DYS643	DYS549	DYS534	
DYS725a	DYS556	DYS541	
DYS725b	DYS575	DYS557	
DYS725c	DYS589	DYS565	
DYS725d	DYS636	DYS572	
DYS726	DYS638	DYS590	
DYF371a		DYF395S1	
DYF371b		DYF395S2	
DYF371c			
DYF371d			
DYF385S1a			
DYF385S1b			
DYF399S1a			
DYF399S1b			
DYF399S1c			
DYF401S1a			
DYF401S1b			