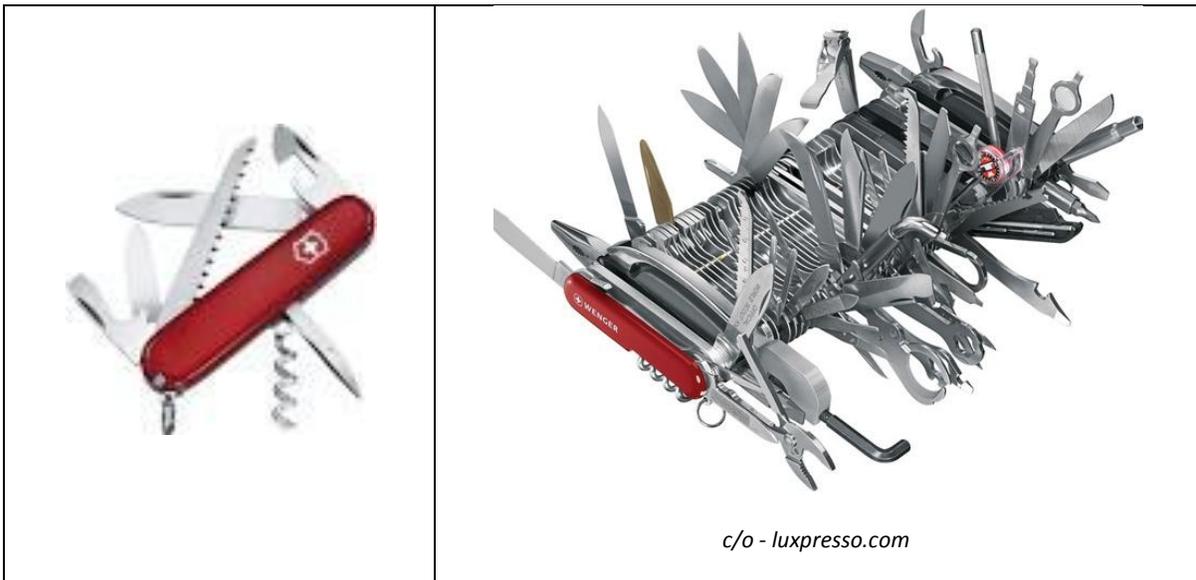

Advanced Y Tools

Lesson 3. Advanced Tools for Y-DNA

Objective: This class will show you what to do with your Y-DNA results

Tools: This lesson will introduce you to the tools used to process or analyze Y-DNA results.

- Words and phrases in **bold** indicate important terminology. Please consult the glossary included with the course material.
- Click any entry in the Table of Contents to jump to that part of the lesson.
- Class notes are at the end of the lesson.



Y-DNA Tools

Autosomal DNA Tools

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1 Tools

This section introduces tools that you can use to analyze your results.

1.1 FT-DNA TiP

You can use Family Tree DNA's **T**ime **P**redictor (FTDNATiP) to determine how closely you are related to a match. It provides calculations of time to common ancestor estimates by incorporating mutation rates specific to each STR marker. From your results page at FT-DNA (see Lesson #2, page 4), click the **TiP** icon next to the person you wish to analyze. You will see a new window with the TiP report for you and that person:

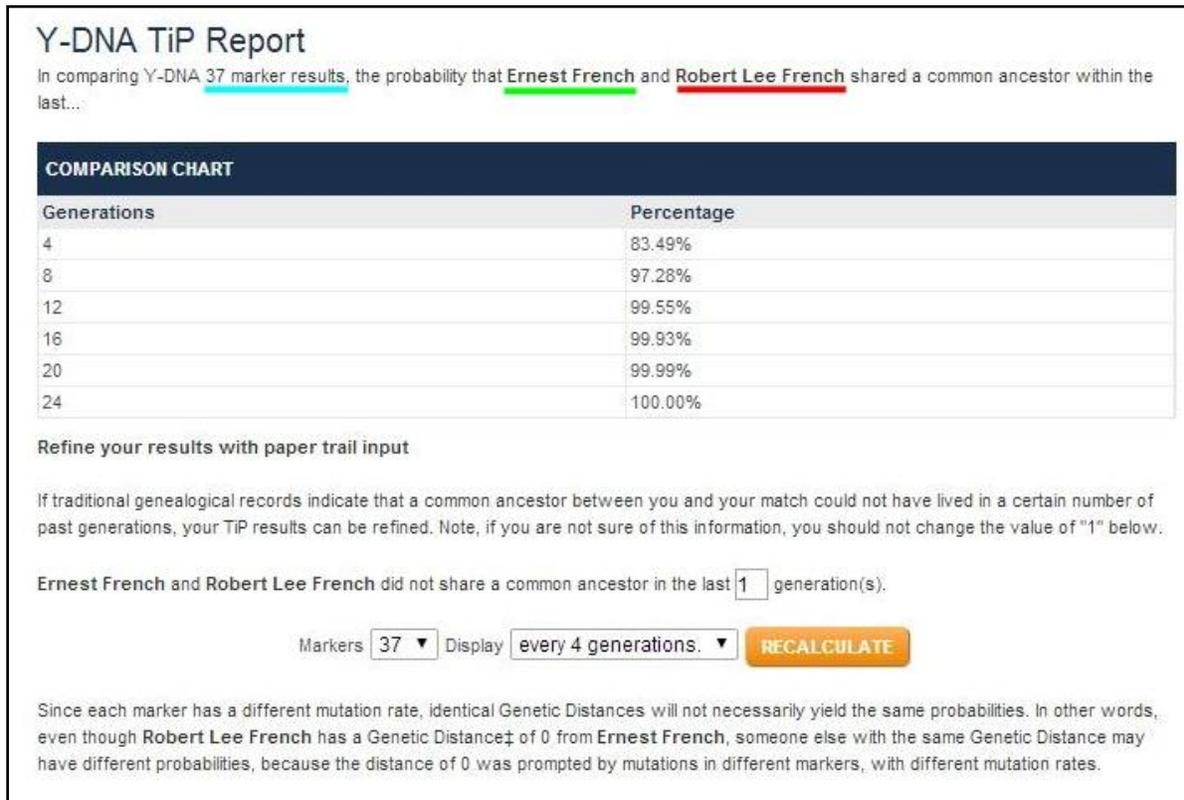


Figure 1 - TiP Report

This report shows that Ernest and Robert¹ have an 83.5% probability of a **MRCA** in 4 generations. They are in fact paternal 1st cousins. So their MRCA is actually only 2 generations. You can modify the report by changing the pull-downs for number of markers and the number of generations interval (every, every 2, ...) and clicking the 'Recalculate' button. Their percentage for 2 generations is 59.4% (not shown).



TiP Calculator

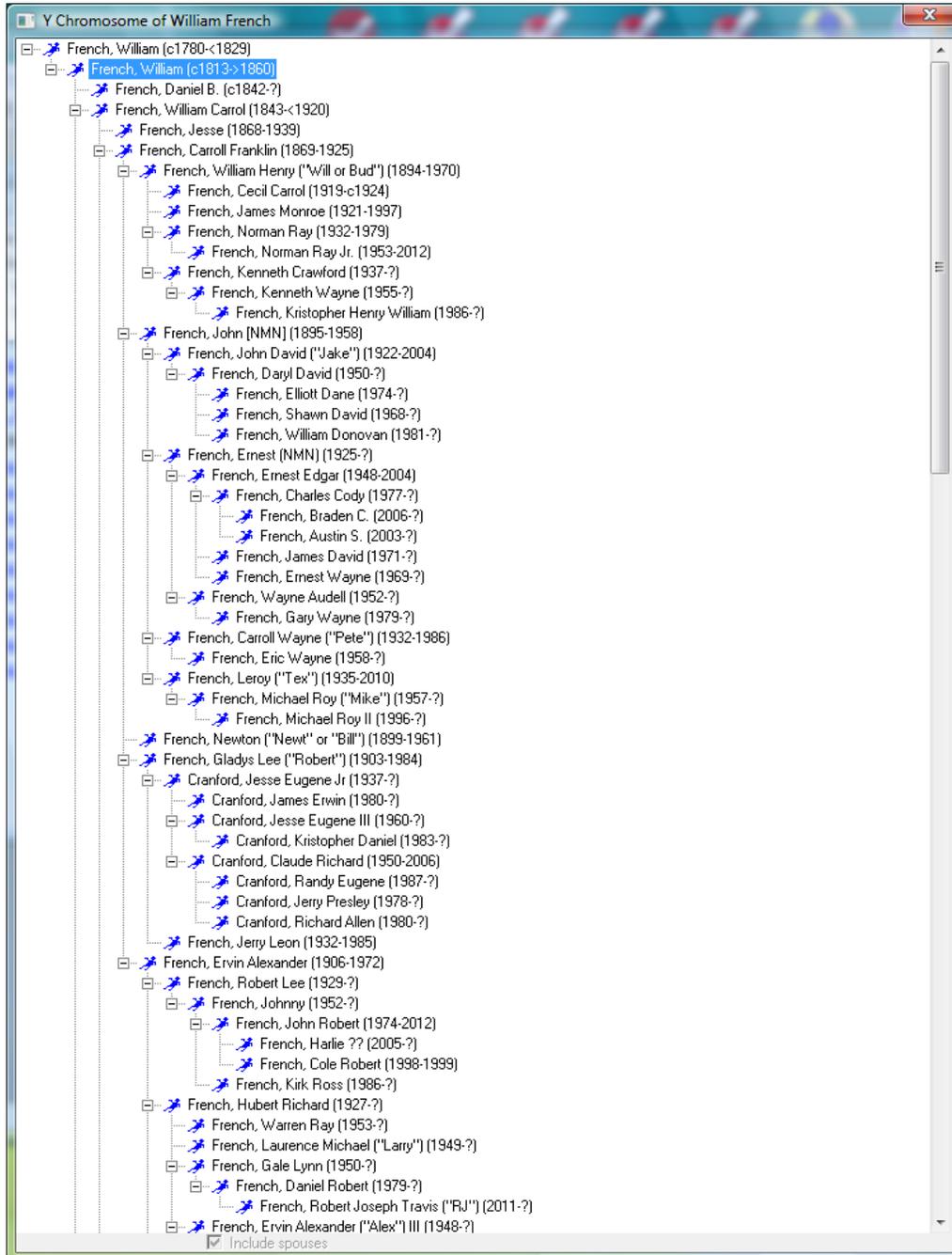
As you can see, the TiP percentage can appear to be lower than your actual "paper" genealogy shows, so don't be disappointed at low percentages. FTDNA uses "averages" so it may be off by 1 or 2 generations in your case.

¹ Permission to use their names has been given

1.3 GedView

In addition to having great capabilities for viewing and searching **GEDCOM** files, GedView can also show a list of potential Y-DNA test candidates. On the menu at the top, select the  icon and it will display only the male descendants for the selected person in a separate window. It will also show the mitochondrial list of descendants too! Download from: <http://www.intronvaria.com/GedView.html>

This window can be re-sized and scrolled to view the entire list of descendants. You can also expand/collapse each family with the +/- buttons to the left of the name. Anyone with a '?' for death date is a living "cousin" you can approach for a Y-DNA sample.

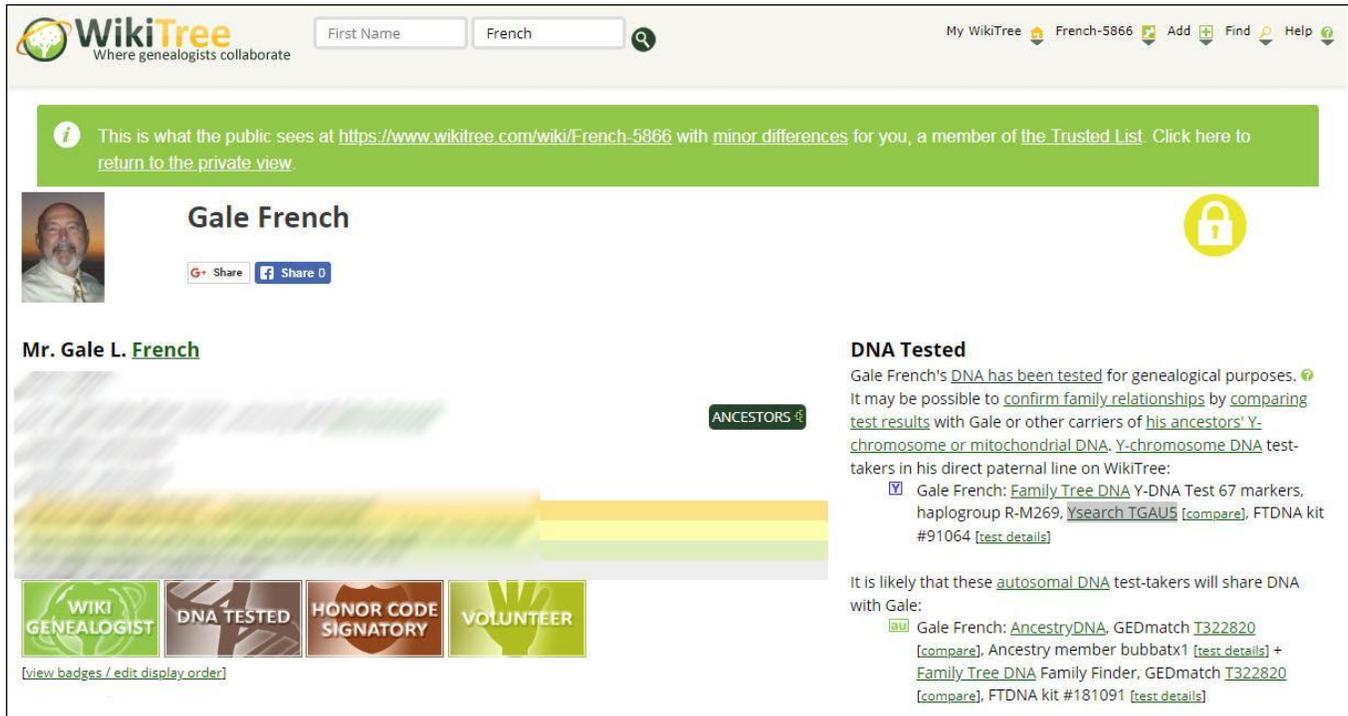


Other GEDCOM viewers may also have this Y-DNA display capability.²

² **NOTE:** GedView has problems with some GEDCOM files (notably those produced directly from Ancestry.com). If you have problems, load that GEDCOM into FamilyTreeMaker or RootsMagic and make another GEDCOM for viewing.

1.4 WikiTree

If you have an account at WikiTree, you can track all of your DNA information (Y, mtDNA & atDNA) and it provides tools to help manage and use your results (e.g., links to your results in FT-DNA and mitoYDNA).



The screenshot shows the WikiTree profile for Gale French. At the top, there is a search bar with 'French' entered. A green notification banner states: "This is what the public sees at <https://www.wikitree.com/wiki/French-5866> with minor differences for you, a member of the Trusted List. Click here to return to the private view." Below this is a profile picture of Gale French and a lock icon. The name "Gale French" is displayed, along with social media share buttons for Google+ and Facebook. Underneath, it says "Mr. Gale L. French". A blurred family tree is visible with an "ANCESTORS" button. To the right, the "DNA Tested" section lists: "Gale French's DNA has been tested for genealogical purposes. It may be possible to confirm family relationships by comparing test results with Gale or other carriers of his ancestors' Y-chromosome or mitochondrial DNA. Y-chromosome DNA test-takers in his direct paternal line on WikiTree: Gale French: Family Tree DNA Y-DNA Test 67 markers, haplogroup R-M269, Ysearch TGAUS (compare), FTDNA kit #91064 (test details)". Below this, it says "It is likely that these autosomal DNA test-takers will share DNA with Gale:" followed by "Gale French: AncestryDNA, GEDmatch T322820 (compare), Ancestry member bubbatx1 (test details) + Family Tree DNA Family Finder, GEDmatch T322820 (compare), FTDNA kit #181091 (test details)". At the bottom, there are four badges: "WIKI GENEALOGIST", "DNA TESTED", "HONOR CODE SIGNATORY", and "VOLUNTEER". A link "[view badges / edit display order]" is also present.

Figure 2 - WikiTree



Pop Quiz #1

I don't have any matches at FT-DNA, what tool should I use to see if I might have some matches elsewhere?

1.5 Scaled Innovations

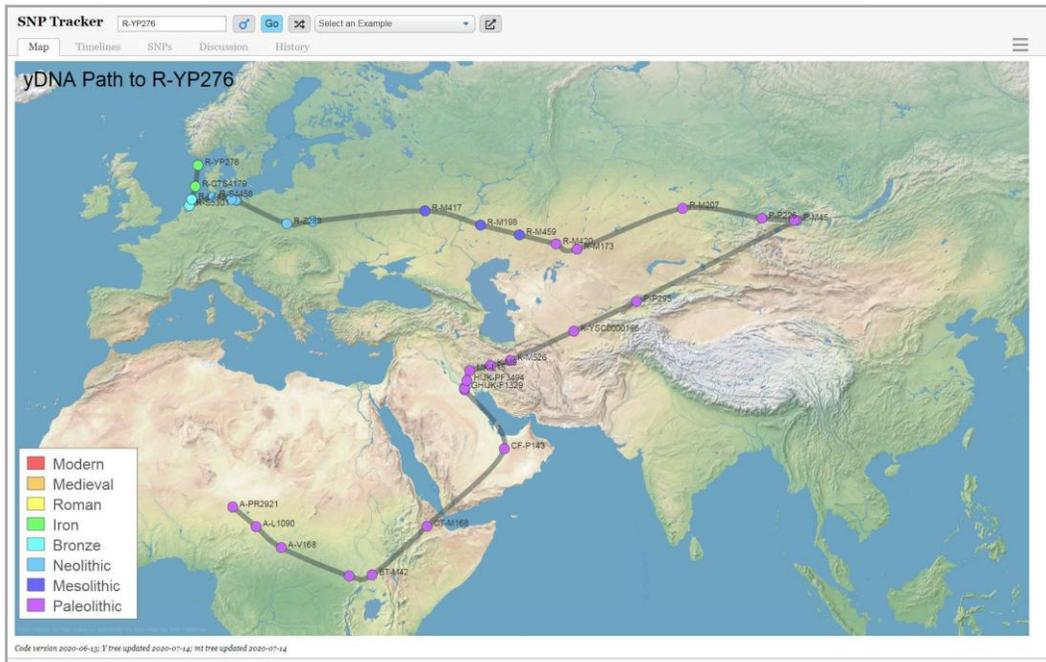
Robert Spenser has a website that is full of interesting tools for DNA analysis. Explore this site if you're interested in scaling up collaboration and innovation, or in the analysis and graphic presentation of complex datasets.

<http://scaledinnovation.com/gg/gg.html?nm=tools>

1.5.1 SNP Tracker

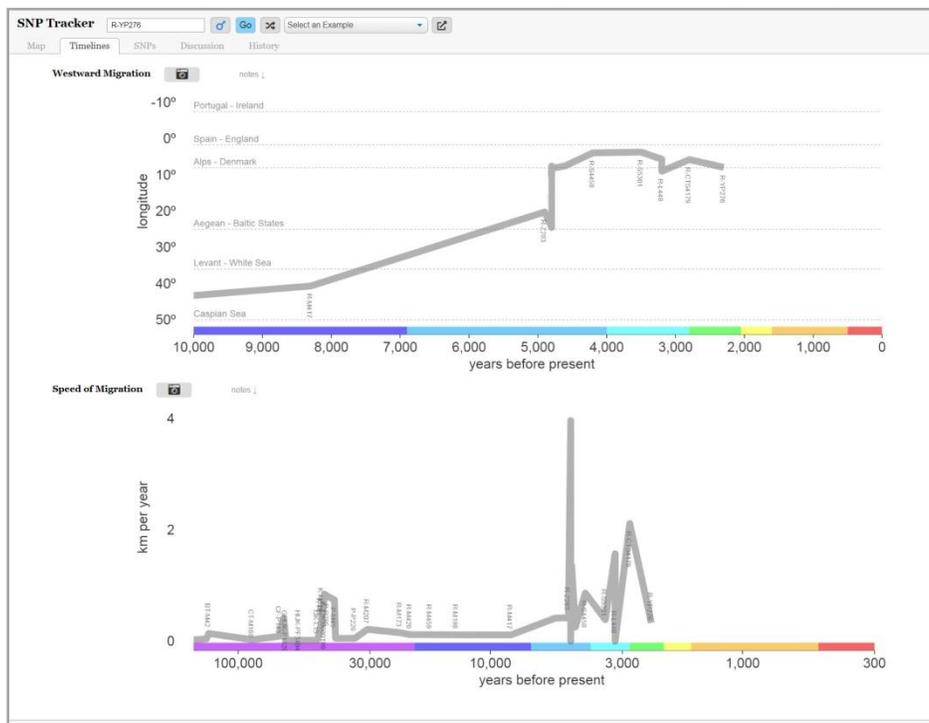
This tool ('Map' tab - tabs across the top) allows you to enter a Haplogroup (e.g., R-YP276) and then see on a map the evolution and 'track' that this Haplogroup has taken up to your terminal SNP.

<http://scaledinnovation.com/gg/snpTracker.html>



Note that this tool also works with mtDNA data.

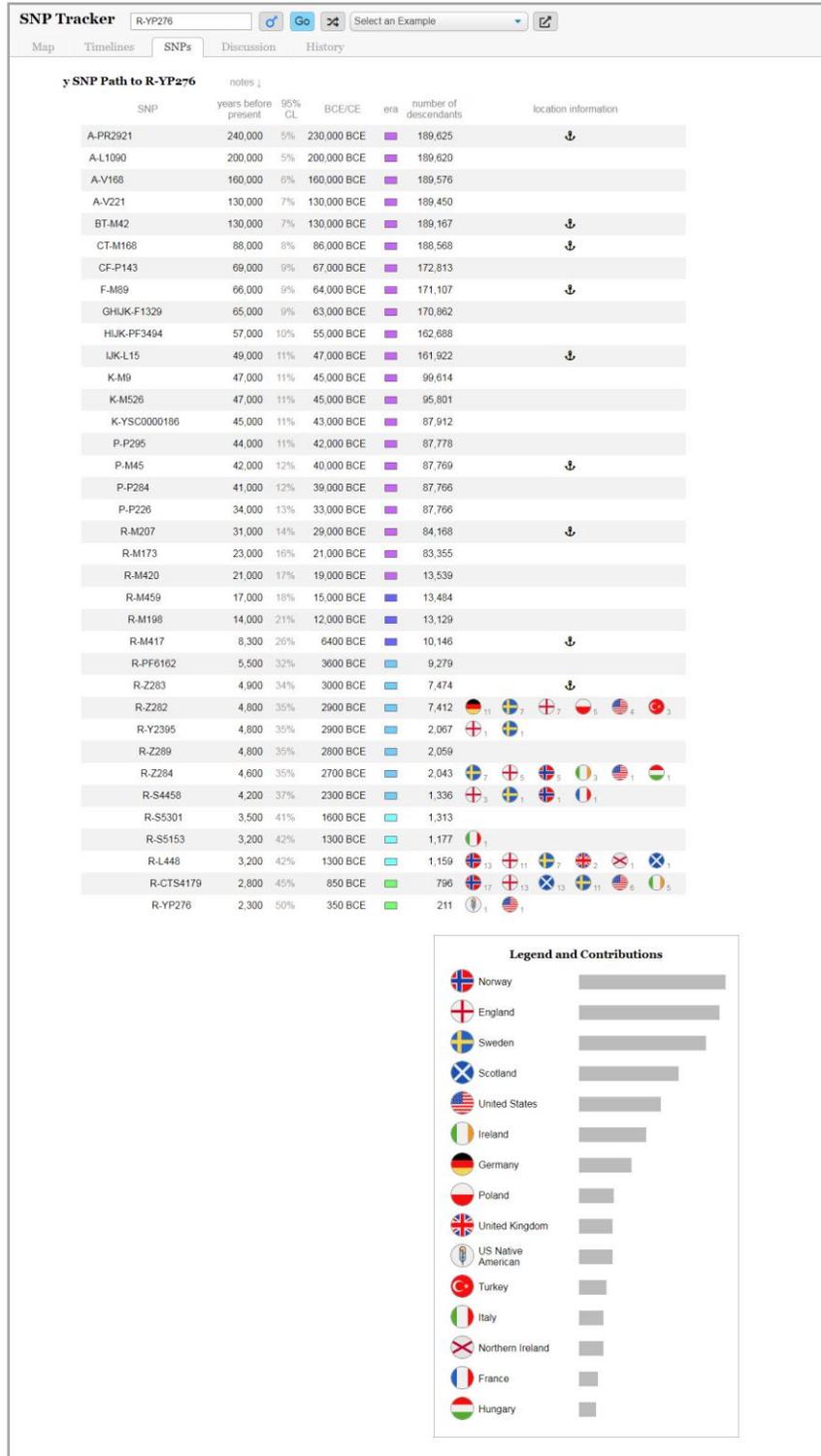
If you click on the 'Timelines' tab, you can see the Westward Migration and Migration Speed of your Haplogroup.



Clicking on the SNP Tracker '**SNPs**' tab on the same page takes you to a chart that shows the evolution of your Haplogroup with:

- SNP name
- **Y**ears **B**efore **P**resent / **B**efore **C**ommon **E**ra dates
- Era (see color Legend on 'Map' tab)
- Number of descendants (in FTDNA)
- 'Flag' indication of Countries included

So **R-YP276** is about 2300 years old, 350 BCE, is from the Iron era and has U.S. and Native American ancestry.



1.6.2 Fluxux and Network

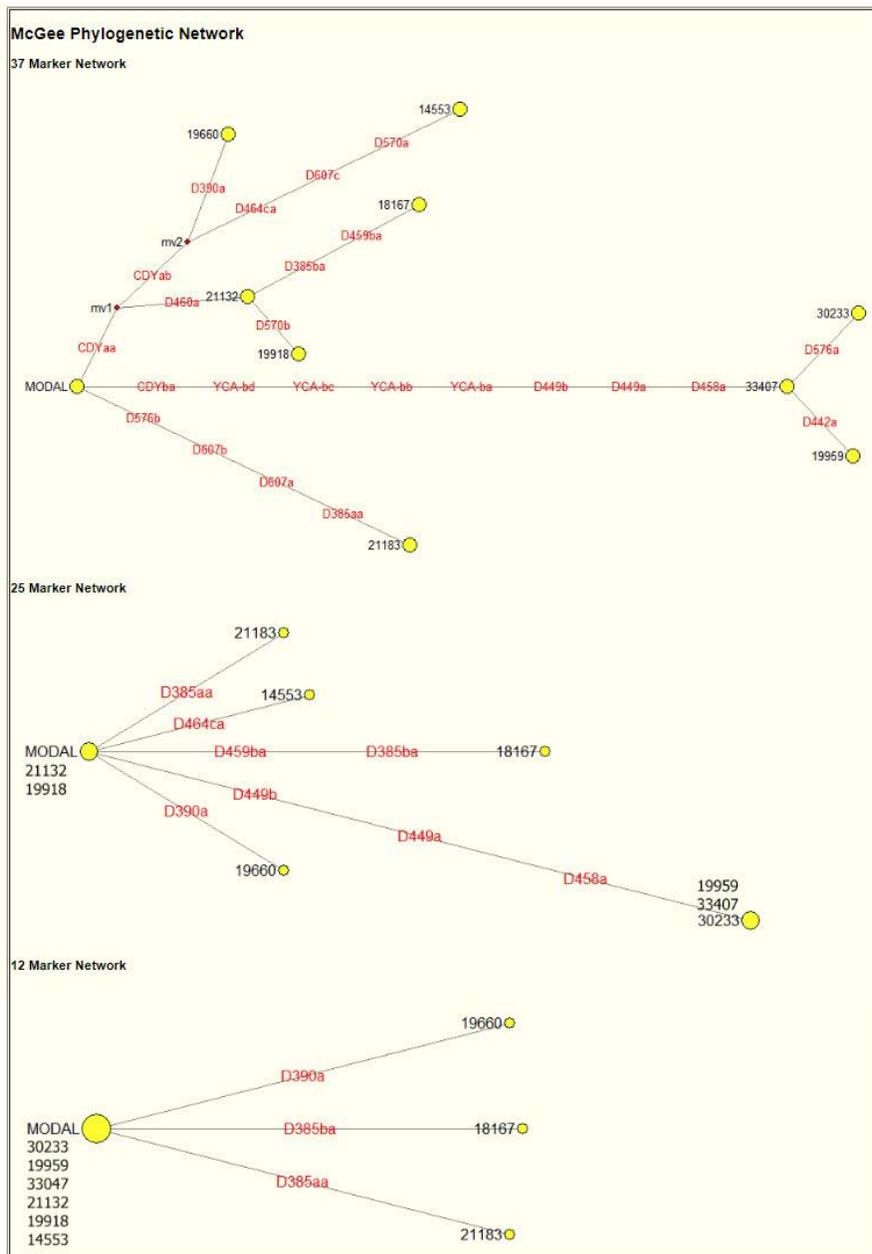
If you check the 'Fluxux' box (red arrow in Figure 6 - Dean McGee Y-Utility) when you do the McGee Y-Utility, it generates a file that can be used by network drawing programs. McGee has a demo video:

<http://www.mymcgee.com/tools/McGeeNetworkMovie.htm>

```
Fluxus data - paste into a .ych file
D393,D390,D19,D391,D385,D426,D388,D439,D3891,D392,D38911,D458,D459,D455,D454,D447,D437,D448,D449,D464,D460,YGH4,YCA11,D456,D607,D576,D570,CDY,D
442,D438,D531,D578,D3955,D590,D537,D641,D472,D4065,D511,D425,D413,D557,D594,D436,D490,D534,D450,D444,D481,D520,D446,D617,D568,D487,D572,D640,D4
92,D565
3,2,3,3,0,9,6,2,3,6,3,2,0,5,4,3,4,4,1,0,3,3,0,2,3,1,2,0,3,5,4,4,0,8,3,4,9,0,3,9,0,2,6,9,7,2,8,3,2,3,3,6,4,5,3,8,8,4
modal
13,24,15,11,11,12,12,10,14,11,17,15,8,11,11,23,14,20,30,12,11,12,19,15,16,16,18,35,12,11,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
1
T10235
13,24,15,11,11,12,12,10,14,11,17,15,8,11,11,23,14,20,30,12,11,12,19,15,16,16,18,35,12,11,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,
```

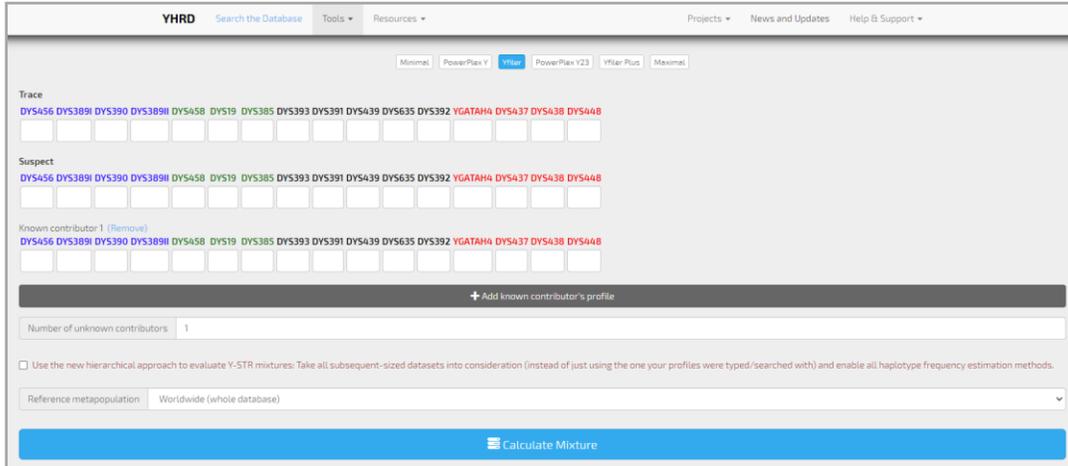
Network 10 is a free software package that runs on a PC that allows you to create Network charts of Y-STR data from the McGee Utility. Copy & Paste the data as a **.YCH** text file and use this to create a network chart.

<https://www.fluxus-engineering.com/sharenet.htm>



1.7 YHRD

YHRD will generate reliable Y-STR haplotype frequency estimates for Y-STR haplotypes to be used in the quantitative assessment of matches in forensic and kinship casework. It provides assessment of male population stratification among world-wide populations as far as reflected by Y-STR and Y-SNP frequency distributions. It also provides advanced tools and further resources concerning Y-STRs and Y-SNPs. Below is their tool page for Mixture Analysis. They also have a great list of resources. <https://yhrd.org/>

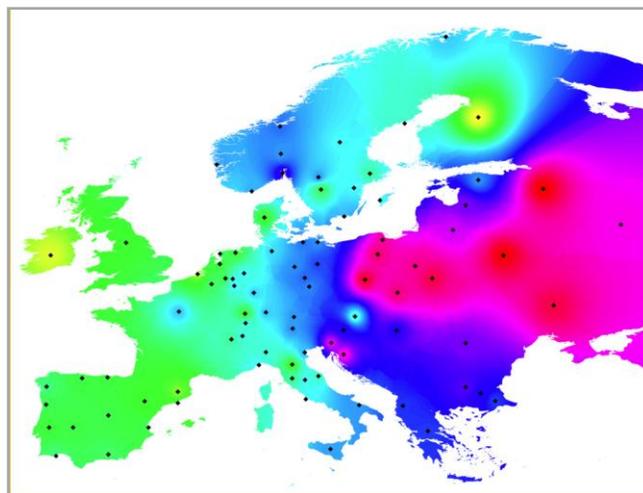


This chart shows the Current State of the Database.

Current State of the Database

Summary		Metapopulations	Y-SNPs	Geographical	
Dataset	Y-STR loci	Number of haplotypes	Number of population samples	Number of national databases	Number of metapopulations
Minimal	DYS19, DYS389I, DYS389II, DYS390, DYS391, DYS392, DYS393, DYS385	307,169	1348	136	32
PowerPlex Y	DYS391, DYS389I, DYS439, DYS389II, DYS438, DYS437, DYS19, DYS392, DYS393, DYS390, DYS385	266,542	1125	127	31
Yfiler	DYS456, DYS389I, DYS390, DYS389II, DYS458, DYS19, DYS385, DYS393, DYS391, DYS439, DYS635, DYS392, YGATAH4, DYS437, DYS438, DYS448	246,821	1038	120	31
PowerPlex Y23	DYS570, DYS389I, DYS448, DYS389II, DYS19, DYS391, DYS481, DYS549, DYS533, DYS438, DYS437, DYS570, DYS635, DYS390, DYS439, DYS392, DYS643, DYS383, DYS458, DYS385, DYS450, YGATAH4	73,006	370	71	28
Yfiler Plus	DYS570, DYS389I, DYS635, DYS389II, DYS627, DYS480, DYS458, DYS19, YGATAH4, DYS448, DYS391, DYS450, DYS390, DYS438, DYS392, DYS518, DYS570, DYS437, DYS383, DYS449, DYS393, DYS439, DYS481, DYS38751, DYS533	73,810	282	55	29
Maximal	DYS19, DYS389I, DYS389II, DYS390, DYS391, DYS392, DYS393, DYS385, DYS438, DYS439, DYS437, DYS448, DYS456, DYS458, DYS635, YGATAH4, DYS481, DYS533, DYS549, DYS570, DYS576, DYS643, DYS38751, DYS449, DYS480, DYS518, DYS627	23,221	77	16	20

The **Metapopulation Information** tool shows the Haplotype frequency distribution of metapopulations (e.g., European).



1.8 ISOGG

International Society of Genetic Genealogy (ISOGG) has many advanced Y-DNA tools listed on their Web-site: http://isogg.org/wiki/Y-DNA_tools

They also have a link to compare Haplogroups in the 'old' nomenclature. https://isogg.org/tree/OLDISOGG_YDNA_SNP_Index.html

1.9 Haplogroup from Autosomal

Here is a link to an article on how to get your Y Haplogroup from an Ancestry atDNA test: <http://www.geneticgenealogist.net/2016/01/how-to-get-ydna-haplogroup-from.html>

1.10 Haplogroup Converters

The Y-DNA Phylogenetic Tree is rapidly growing as new research reveals more mutations (SNPs) and deeper sub-clades. These tools allow you to see what an older Haplogroup ID may be called today (R1a1a vs. R-M512) or what today's nomenclature used to be. See the Reference section (5.1 on page 23) if you have your results but haven't got a Haplogroup to use a Haplogroup predictor tool to estimate your Haplogroup.



Pop Quiz #2

I've got a close match that shares common ancestor, what is the easiest way to find another relative to test?

1.11 SAPP

Dave Vance has created a website with tools for Y-DNA analysis and display. Below is a (partial) network hierarchy that shows SNP mutations from specially formatted inputs. Kits are shown in yellow boxes; calculated nodes are shown in blue. <http://www.jdvtools.com/SAPP/>

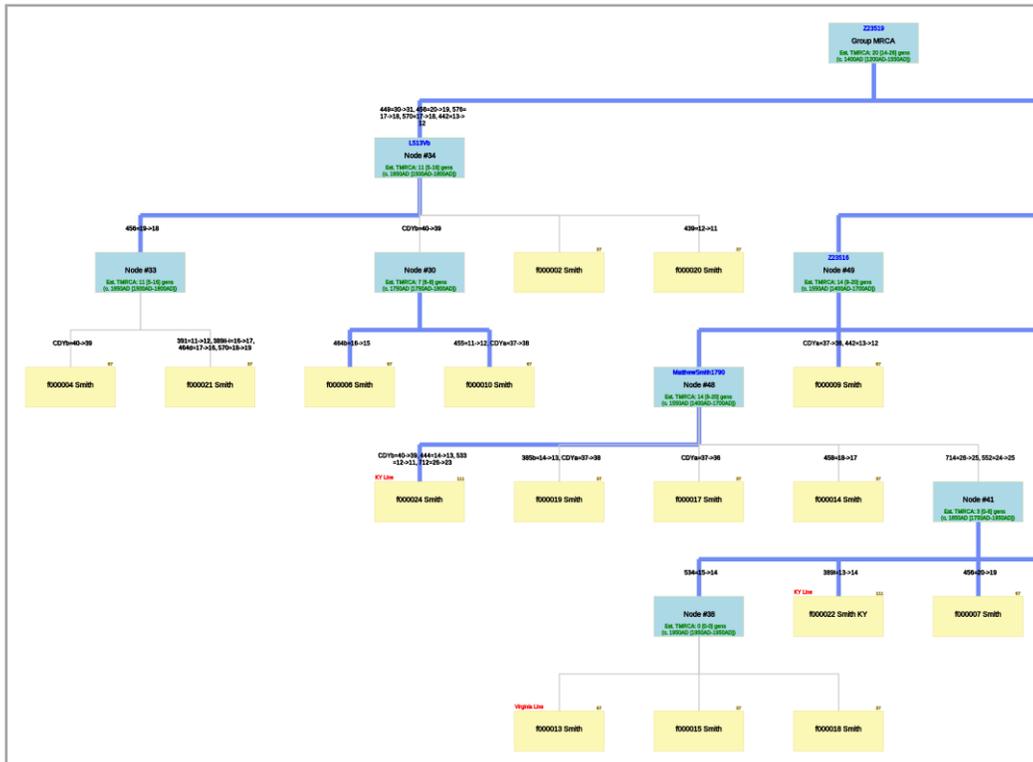


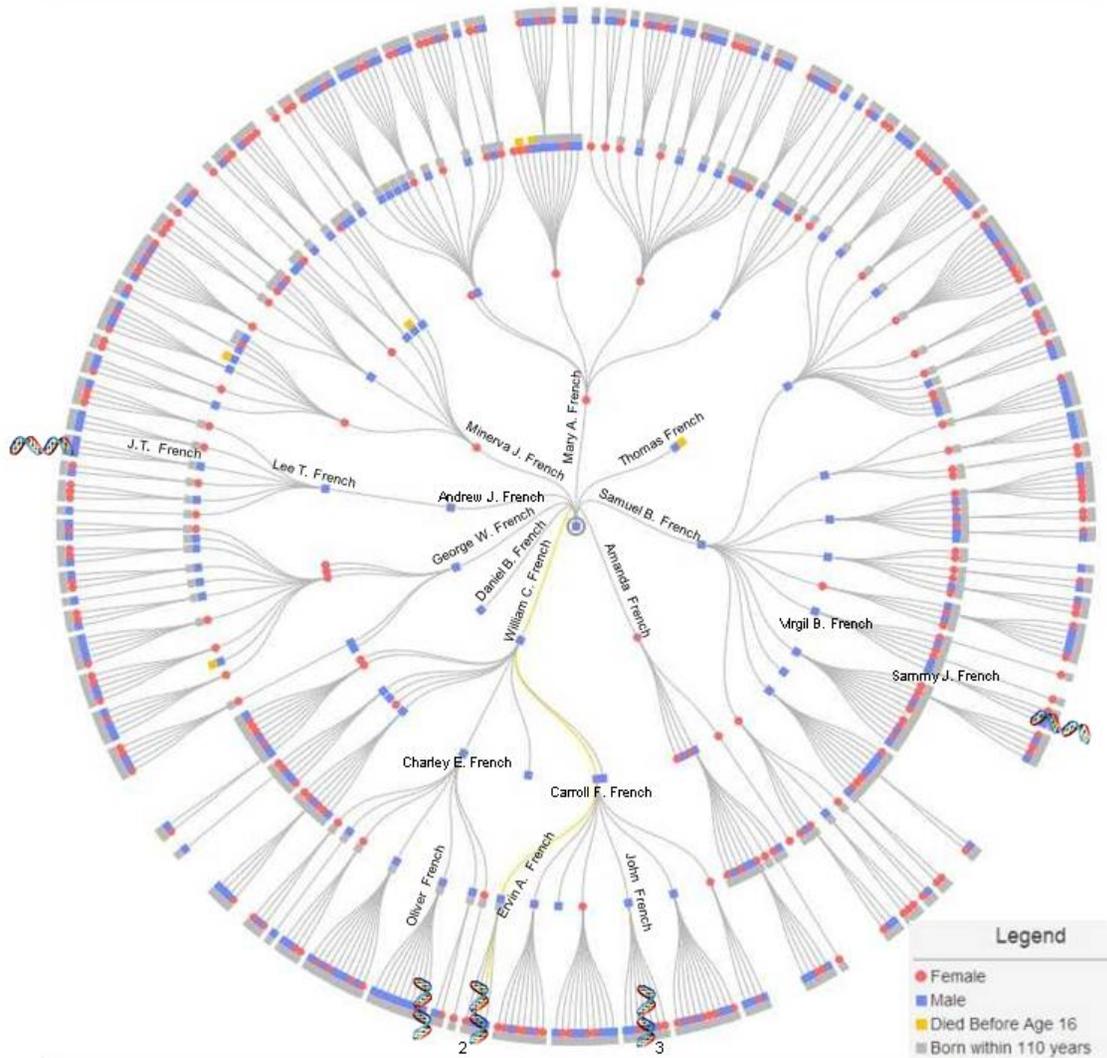
Figure 7 - SAPP Network chart

1.12 Puzzilla

Puzzilla is a free tool available from Family Search (<https://partners.familysearch.org/solutionsgallery/s/list?category=charts>) that helps researchers see descendants in FS FamilyTree using compact symbols that reveal patterns of incomplete research and other work in collateral-lines. This means you **must** have a very robust tree on Family Search.

The chart below³ (done with Puzzilla) is of my Paternal family research that went back to William French b:1813 (in the center) and shows all his descendants. For each eligible male line, I've tried to get a Y-DNA sample [indicated by the DNA helix]. The legend explains that a red dot ● is female, a blue square ■ is male, a yellow ■ square means died before 16 (child bearing age) and a grey square ■ means born within last 100 years (private). You can see for George W. French, there are no males (he "daughters out") so no Y-DNA from that branch. Thomas French died young, so he had no sons to propagate that line. Daniel B. French had no children.

The idea with this tool is that DNA should always be an 'active' part of genealogical research. If you are "waiting" for a match, that is a 'passive' use of DNA. Seek them out; make your own matches occur with targeted testing. It shows where there may be ancestors to Y-DNA test. I've spent energy and MONEY to actively get these matches!



³ Note: I've brought the Puzzilla chart into a graphics editor and added the ancestor names, Helix and number of tests. Puzzilla shows the names in a pop-up box when you hover over them.

2 Other

2.1 FT-DNA Regional Projects

There are many regional/geographic Projects at FT-DNA; and it seems that they have recently merged the Haplogroup Projects into the regional projects. The project administrators are the most knowledgeable people about your results and can give you the best advice about what to do next.

2.2 Ancestry

As stated before, Ancestry no longer offers or supports (e.g., searching) Y-DNA. If you took the test with them or entered your results manually (to search), then you can get your old results. The 1st link (Paternal Lineage) is not active. The 2nd link (Purchased for...) allows you to:

- Download the results as a .CSV file
- View/Download a printable .PDF file



Take these results and upload them to mitoYDNA.org. Or for a small fee, you can transfer them to FT-DNA. See: [Family Tree DNA Y-DNA STR Transfer program](#)

2.3 Sorenson tests

If you had your Y-DNA done by a Sorenson Genomics lab (a long time ago!) upload them to mitoYDNA.org. You can transfer them to FT-DNA and take advantages of the services there. See: [Transfer Sorenson results to FT-DNA](#)



2.4 ISOGG & the Phylogenetic Tree

ISOGG maintains the phylogenetic tree (<https://isogg.org/tree>) and its history. There are 20 major Haplogroups (A-T). You can look at the evolution of the tree by clicking on previous years at the bottom of the page.

If I wanted to look at Haplogroup 'R' (the most common among men), click on the 'R' in the list of major groups. You will get a list of ALL the R Haplogroups (see chart below) and their subclades. Use your Browser's **FIND** feature if you are looking for a particular subclade/SNP (as shown below for YP414). And just like comets, the person/organization that discovers the SNP gets to name it! SNPs from FT-DNA's BigY test start with **BY** or **FT**.

SNP starting letters indicate the scientist or organization that originally found it.

- defined on the ISOGG main page
- CTS = Chris Tyler-Smith, Ph.D.
- PF = Paolo Francalacci, Ph.D.

Figure 8 - ISOGG Haplotree

While looking at your HaploTree results, you may see "ads" for SNP Packs listed for your Haplogroup (e.g., like the **R1b DF27 SNP Pack** below). It tests 161 SNPs; the M343 tests 154. That's quite a bargain compared to \$39 a SNP!

When you have done SNP testing or a SNP Pack, you will see the list of SNPs tested at the bottom of your HaploTree. It shows a minus sign if the SNP was not detected and shows a plus sign if the SNP was found. You can also download the SNPs as a CSV file.

Tests Taken

CTS11962-, CTS1211-, CTS1733-, CTS3402-, CTS4179+, CTS4385-, CTS8277-, CTS8746-, CTS8816-, F1345-, FGC9988-, L1029-, L260-, L448+, L657-, L664-, M198+, M2747-, M417+, M420+, M458-, M459+, PF6155-, PF6162+, PF6188-, PF7521-, S23201-, S23592-, S24902-, S2857-, S2858-, S2859-, S2880-, S2894-, S3473-, S3477-, S4458+, S5153+, S6842-, Y14244-, Y15121-, Y17491-, Y2395+, Y2604-, Y2613-, Y2905-, Y2914-, Y2921-, Y33-, Y35-, Y40-, Y4135-, Y4459-, Y47-, Y57-, Y5992-, Y874-, Y934-, YP1013-, YP1014-, YP1015-, YP1034-, YP1051-, YP1129-, YP1136-, YP1137-, YP1168-, YP1178-, YP1182-, YP1211-, YP1214-, YP1272-, YP1337-, YP1341-, YP1364-, YP1368-, YP1567 *, YP1570-, YP1703-, YP234 *, YP237-, YP254-, YP256-, YP263-, **YP276+**, YP282-, YP285-, YP340-, YP343-, YP355-, YP358-, YP360-, YP386-, YP3896-, YP3927-, YP398-, YP4101-, YP4102-, YP4123-, YP413-, YP4131-, YP4132-, YP414-, YP4141 *, YP415-, YP416-, YP417-, YP418-, YP4243-, YP430-, YP431-, YP432-, YP441-, YP442-, YP443-, YP444-, YP4444-, YP445-, YP4467-, YP451 *, YP4514-, YP4515-, YP4517-, YP4519-, YP4535-, YP4557-, YP515-, YP517-, YP520-, YP541-, YP543-, YP544-, YP547-, YP556-, YP559-, YP582 *, YP589-, YP593-, YP610-, YP621-, YP654-, YP694-, YP704-, YP728-, YP729-, YP870-, YP942 *, YP943-, YP951-, Z2035-, Z2122-, Z2123-, Z280-, Z281-, Z282+, Z283+, Z284+, Z287-, Z685-, Z92-, Z93-, Z94-

[Download SNPs as CSV](#)

* No call or heterozygous call

SNP Packs are obtainable for Haplogroups **E, G, I, J, L, N, Q, R & T**. To find what SNP Packs are available for your Haplogroup, logon to your FT-DNA account and at the upper right click on the **Upgrade** button. Then click on Advanced Tests and select the filter for **'SNP Pack'**.

3.1.2 BigY

While SNP Packs will show if you are positive for a **known** SNP, the BigY test looks at over 23.6 million SNPs and discover new SNP mutations that are unique to your paternal lineage, your surname or to you! BigY was covered in detail in Lesson #2. In recent changes to BigY, the BAM file is now a separate cost (no longer free, but BigY cost is lower). They did this since most people don't use the BAM file.

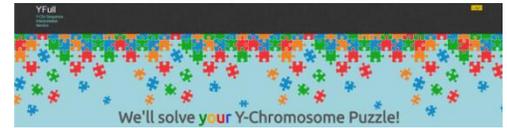


Pop Quiz #3

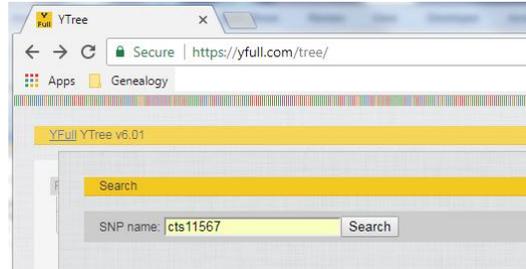
Suppose you contact a match and he says he tested in 2012 and he is **'R1b1a1a2a1a2'** ("old" terminology). How do I compare apples and oranges? What's his base Haplogroup in "new" terminology?

3.2 YFull

YFull's NextGen Sequence Interpretation reports about your BAM file (from FT-DNA BigY test) are provided online (\$49). They also provide other downloads and reports.



YFull also has a tool on their website that lets you find out the age of your subclade or terminal SNP. Go to <https://yfull.com/tree/> and click on the 'Search' button at the top right.



Enter your subclade (**CTS11567** in this example) and click on 'Search' button and you will get a screen with a green subclade group. **R-Z2572** Click on that button; it will show the age (4500 Years Before Present) to MRCA. It also shows new SNPs (identified by the YF prefix; found by YFull) and their geographic regions (indicated by the flag and 3-letter country code).



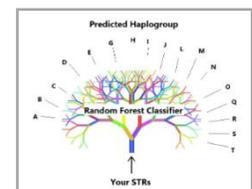
3.3 YSEQ



YSEQ provide STR and SNP testing. They also have a set of utilities to analyze your Y-DNA but you must purchase the analysis kit. They also do Whole Genome testing. YSEQ is owned and operated by Thomas and Astrid Krahn (former employees of FT-DNA). <https://www.yseq.net/>

They also have a Haplogroup Predictor tool and lets you enter your STR values to predict your terminal SNP. It was developed by Hunter Probyn with input and support from Thomas Krahn (2019). The Haplogroup prediction is backed by a Random Forest model .

<http://predict.yseq.net>



3.4 Full Genomes

The Full Genomes Corporation (<https://www.fullgenomes.com/>) have announced the launch of a new Y-chromosome next generation sequencing product known as the **Y Elite 2.1**. The technical details are as follows:



- Length coverage: 13.2+ megabases (a conservative estimate)
- Read length: 250 base pairs
- Coverage: 50x

They say that it's "better SNP calling and better STR calling quality". Cost is \$645.⁰⁰ (U.S.). They also provide whole genome sequencing.



Pop Quiz #4

What tool will allow me to estimate the age of my terminal SNP?

4 Glossary ⁴

- **Allele** - One of the possible values for a marker or a gene.
- **Base** - A base is a unit or building block of DNA. Adenine (A), cytosine (C), guanine (G), and thymine (T) are the four primary bases in DNA. The order of bases is the sequence of DNA.
- **EKA/MDKA** - **E**arliest **K**nown **A**ncessor -or- **M**ost **D**istant **K**nown **A**ncessor
- **GEDCOM** - An abbreviation for "**G**enealogical **D**ata **C**ommunications". A standard file format for genealogy records.
- **Genetic Distance** - Genetic Distance is the number of differences, or mutations, between two sets of results. A genetic distance of zero means there are **no** differences in the results being compared against one another. (see table for 111 markers)

# of Markers	Genetic (Allelic) Distance											
	0	1	2	3	4	5	6	7	8	9	10	
12	Related	Possibly Related	Probably Not Related	Not Related								
25	Related	Related	Probably Related	Probably Not Related	Not Related							
37	Very Tightly Related	Tightly Related	Related		Probably Related	Possibly Related	Not Related					
67	Very Tightly Related	Tightly Related		Related		Related		Probably Related	Possibly Related		Not Related	

- **Haplogroup** - A haplogroup is a major branch on either the maternal or paternal tree of humankind. Haplogroups are associated with early human migrations. Today these can associated with a geographic region or regions.
- **Haplotree** - A Haplotree is the phylogenetic tree that defines your Haplogroup and all its sub-clades
- **Haplotype** - A haplotype is the set of values for a set of DNA values. For example, the results of the Y-DNA12 test for one person is their haplotype.
- **Locus** - A locus is a specific location in your genetic code. In a genetic map of our DNA, the locus tells us where to find any base. The plural of locus is loci.
- **Marker** - A marker is a physical location (locus) on the chromosome. The term is often used colloquially in genetic genealogy to refer to a short tandem repeat (STR).
- **Most Distant Ancestor** - the person along your paternal line that your paper research shows as the "oldest" male ancestor you have found. Also **Earliest Known Ancestor**.
- **Most Recent Common Ancestor (MRCA)** - the most recent ancestor from which the two individuals descended

⁴ **NOTE:** the Glossary "grows" with each lesson (and includes definitions from previous lessons) so that you don't have to go back to other Lessons to get definitions.

- **Named Variant** - a named SNP identified by Haplogroup (A-T) and followed by a SNP name (e.g., M269).
- **Non-Matching Variants** - SNPs that are different between kits, usually denoting different branches.
- **Novel SNPs** - newly found mutations that have not been registered in a Haplotree data base. They will get a new SNP name.
- **Non-Paternal Event (NPE)** - a break in the Y chromosome line due to adoption, infidelity or numerous other causes. Also **Mis-Attributed Parentage**.
- **Phyloequivalents** - similar SNP(s) discovered independently, but it is unclear of the order in which they occurred. More testing may show the true order of mutations.
- **Private Variant/SNP** - SNP(s) unique to one person's kit or an immediate family (father, brother, son).
- **Shared Variants** - SNPs that exist in two or more kits.
- **Short Tandem Repeat (STR)** - A short DNA motif (pattern) repeated in tandem. ATGC repeated eleven times would give the marker a value or allele of 11.
- **Singleton** - one person with a unique SNP mutation shared with nobody else.
- **SNP** - a variation in a single nucleotide that occurs at a specific position in the genome, where each variation is present to some appreciable degree within a population.
- **Subclade** - term used to describe a subgroup of a subgenus of a haplogroup.
- **Terminal SNP** - the last named SNP tested for a kit. This may or may not be the last SNP in the ancestral line; only the last tested for this person.
- **Unnamed Variant** - an unnamed SNP, identified by coordinates along the Y chromosome.
- **Variant** - a mutation on the Y chromosome.
- **Y-Chromosome** - One of the two sex chromosomes, X and Y. The Y-Chromosome passes down from father to son. Females do not receive it. As the Y-Chromosome is passed on through the paternal line, it is valuable for surname based genealogy studies.
- **Y-DNA Backbone test** - If a person's Y-DNA haplogroup cannot be predicted with 100% confidence, the SNP Assurance Program at FTDNA will test your sample with our Backbone SNP test for FREE. This test is a "deep" multiple SNP test. Specifically, if we cannot predict a person's Y-DNA haplogroup with sufficient confidence that they can join the National Geographic's Genographic Project, we will automatically perform a Backbone SNP test in order to identify the haplogroup assignment. Backbone tests take about 6-8 weeks from the time they are ordered.

5 Resources

Once you have clues to people who might match your DNA, there are gold mines of resources just waiting to help you move farther along in your search.

5.1 Internet

- The resources we've used in class, of course: FamilyTreeDNA.com.
- FT-DNA surname project websites: <https://www.familytreedna.com/projects.aspx?>
- ISOGG: <http://www.isogg.org> Tools: http://isogg.org/wiki/Y-DNA_tools
- mitoYDNA - <https://www.mitoydna.org/> **TMRCAs & Mutation calculator**
- World Families - <http://www.worldfamilies.net/ydna>
- Y Transfer: <https://www.familytreedna.com/landing/ydna-transfer.aspx> **Ancestry & Sorenson**
<https://www.familytreedna.com/learn/imports/transfer-dna-heritage/optin-dna-heritage-conversion/>
<https://www.familytreedna.com/learn/transfer-y-dna-testing-results/> **FAQ**
- Y-Utility website: <http://www.mymcgee.com/tools/yutility.html>
<https://dna.cfsna.net/HAP/Modified-yUtility.htm> **New Updated**
Tutorial Video <http://www.mymcgee.com/tools/McGeeNetworkMovie.htm> **uses Flash (allow Pop-Ups)**
<https://www.fluxus-engineering.com/sharenet.htm>
- WikiTree: <https://www.wikitree.com>
- 3rd Party Tools - <http://www.23andyou.com/3rdparty>
- Haplogroup predictors - Whit Athey <http://www.hprg.com/hapest5/>
Vadim Urasin <http://predictor.ydna.ru/>
YSEQ <http://predict.yseq.net>
- ISOGG Haplogroup Tree - <https://isogg.org/tree>
- Old notation Lookup - http://www.isogg.org/tree/OLDISOGG_YDNA_SNP_Index.html
<https://ybrowse.org/gb2/gbrowse/chrY?>
- BigY - <https://www.familytreedna.com/learn/y-dna-testing/big-y/big-y/>
https://www.familytreedna.com/learn/wp-content/uploads/2014/08/BIG_Y_WhitePaper.pdf
<https://www.facebook.com/groups/ftdna.big.y/> **Facebook page**
- YFull - <https://isogg.org/wiki/YFull>
<https://yfull.com/tree/> **Search and find age of SNP**
- YSEQ - <https://www.yseq.net/>
<https://phylogeographer.com/str-match-finder/>
- DNA Explained - <http://dna-explained.com/2014/09/04/what-does-and-doesnt-a-y-dna-match-mean/>
<https://dna-explained.com/2012/08/10/to-snp-or-not-to-snp/>
<https://dna-explained.com/2012/08/06/where-is-my-haplogroup-from/>
- Professional help - http://www.theroot.com/articles/history/2015/01/hiring_a_professional_genealogist_tips_and_rates.html
(BY: HENRY LOUIS GATES JR.)
- If you haven't found what you want yet, visit Cindy's List <http://www.cyndislist.com/> for an incredible list of genealogy resources organized by category.

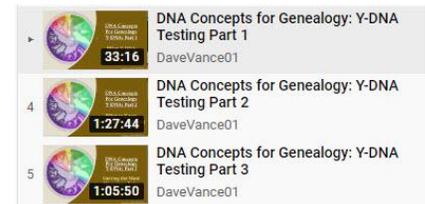
- Use your personal network. If you have friends or family who are interested in family history or genealogy, brainstorm with them about where to look for information. They may have ideas or resources that can help in your search.
- Give back. Share what you know and help others when you can. The old saying, “What goes around, comes around” has been proven over and over and over.

5.2 Books

- Bettinger, Blaine T. - "**Guide to DNA Testing and Genetic Genealogy**" ©2016, Family Tree Books, Cincinnati, OH [ISBN-13: 9781440343326 9781440345395] << available as book or e-Book >>
- Aulicino, Emily - "**Genetic Genealogy: The Basics and Beyond**", ©2014, AuthorHouse LLC, Bloomington, IN [ISBN13: 9781491840900]
- Smolenyak, Megan & Turner, Ann - "**Trace Your Roots With DNA: Use Your DNA to Complete Your Family Tree**", ©2004, Rodel Books, New York [ISBN 1594860068 (ISBN13: 9781594860065)]
- Pomery, Chris - "**DNA and family history : how genetic testing can advance your genealogical research**", ©2004, Dundurn Group, Toronto, Ontario
- Dowell, David R. (Ph.D.) - "**NextGen Genealogy: The DNA Connection**", ©2015, Santa Barbara, California : LIBRARIES UNLIMITED, an imprint of ABC-CLIO, LLC
- Hill, Richard - "**Findina familv : mv search for roots and the secrets in mv DNA**". ©2012, Richard Hill (self published), Grand Rapids, Michigan. << available as book or e-Book >>
- Griffeth, Bill- "**The Stranger in My Genes**", ©2016, UPNE Book Partners, Lebanon, NH [ISBN-13: 978-0-88082-344-9]

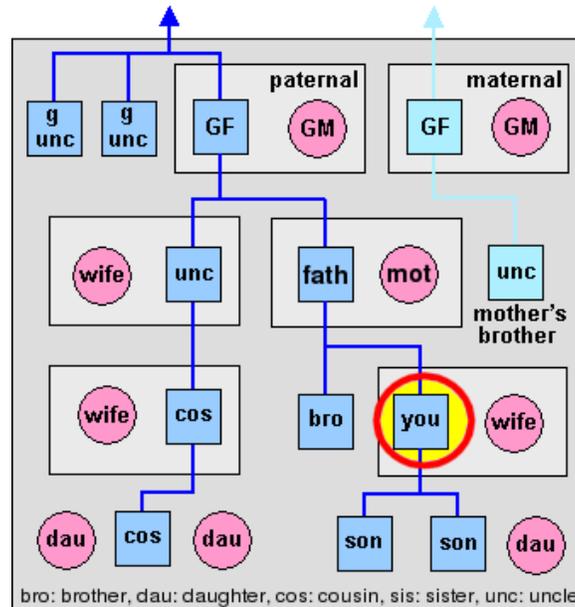
5.3 Videos

- <https://www.youtube.com/watch?v=qiv0Ny6nvAY> Help, My Y-DNA Matches Have a Different Surname! (FT-DNA 1:29:56)
- https://www.youtube.com/watch?v=Wicb2_bEIYo Adoptions & illegitimacies - using DNA to solve adoption mysteries (Dr. Maurice Gleeson 1:03:40)
- John Cleary - STRs & SNPs Parts 1,2 & 3
 - <https://www.youtube.com/watch?v=hlxvdayxZil> (23:23)
 - <https://www.youtube.com/watch?v=6I5QARvvhb38> (23:14)
 - <https://www.youtube.com/watch?v=pxexkvfus6w> (18:06)
- Dave Vance - DNA Concepts for Genealogy: Y-DNA (3) [Dave Vance Videos](#)



6 Pop Quiz Answers

1. mitoYDNA.org. This repository *may* have people who have not tested at FT-DNA and may turn up some matches.
2. GedView; use the  icon for the highlighted common ancestor to find another relative to test. You can also use your Family Tree software to look at that line but then you have to find the eligible male descendants (dark blue in the chart below) on that line.



c/o - SMGF

3. **P312** or **S116**. Go to the ISOGG Haplogroup Tree 'R' and search for the '**R1b1a1a2a1a2**' (blank at the end so you don't get lower ones) value.

.....	R1b1a1a2a1a2	P312/PF6547/S116
.....	R1b1a1a2a1a2~	A433, A625/FGC19610, L86.2, L220.1, L221, L253, L289, L326, M228.1
.....	R1b1a1a2a1a2a	DF27/S250
.....	R1b1a1a2a1a2a~	BY127, BY264, L1231, L1245/S1264, L1246/S1285
.....	R1b1a1a2a1a2a1	Z195/S227, S355/Z196
.....	R1b1a1a2a1a2a1~	L629
.....	R1b1a1a2a1a2a1a	Z272, Z274/S229

4. YFull. ("*YFull*", Page 19)

7 Epilogue

Class Notes

7.1 Summary

Y-DNA tools can help you analyze and compare your results to determine paternal ancestors (surname). Y-DNA provides your Haplogroup to show ethnicity and geographic roots.

7.2 Access to Materials

Your Moodle login will continue to be available to you. If you'd like to retake the class, you are welcome to sign up as space is available. No additional donation will be requested (although they are certainly welcome!). Email DNAAdoptionHelp@gmail.com if you wish to re-take this class.

7.3 Class Forum

The class forum will be available for follow-up questions for an additional 4 weeks subsequent to the posting of Lesson 3. Participants will also have the option of re-taking this class for free within one year. Contact DNAAdoptionHelp@gmail.com if you wish to re-take this class.

7.4 Class Survey

Please tell us what you thought of the class by taking our 10 minute survey! We're always open to ideas and suggestions, and your feedback matters. Thank you!!

<https://moodle.dnaadoption.org/mod/feedback/view.php?id=4636>

Stay in Touch! Let us know how your journey is going.

DNAAdoptionHelp@gmail.com



c/o - The Parish Lantern



c/o - www.my-tool-shed.co.uk