

What Can I Learn From DNA Testing?

What is my "DNA Signature"?

From where did my ancestors migrate?

Was my great great grandmother really an Indian Princess?



Was my ancestor a Jewish Cohanim Priest?

Are we related?

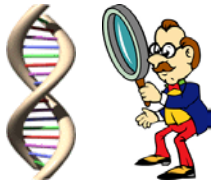
I was adopted. Who was my father?

By

Douglas M. Mumma

<http://www.mumma.org/DNA.htm>

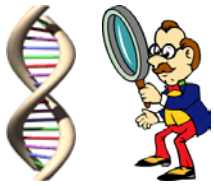
8 August 2006



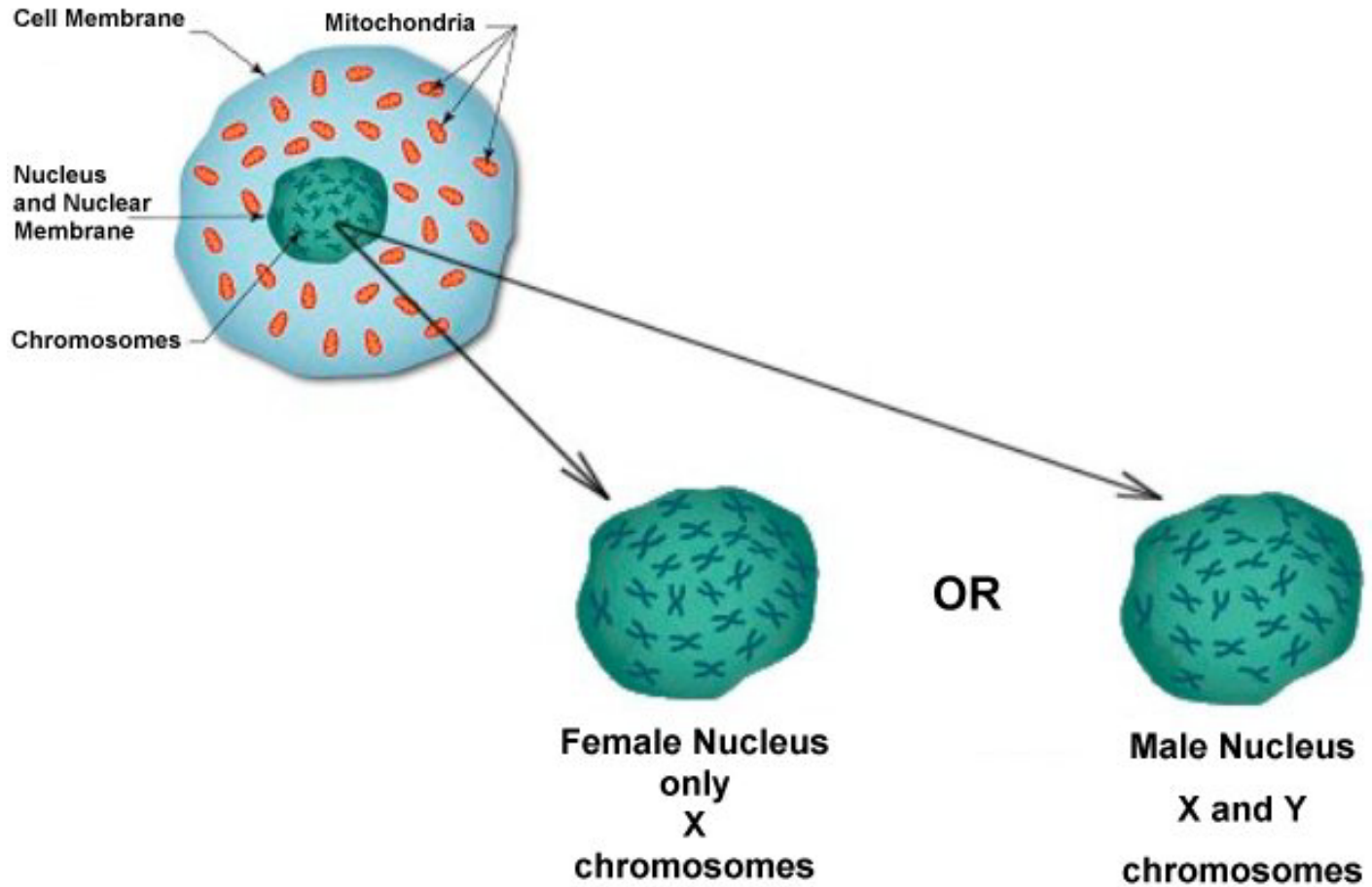
Chromosomes

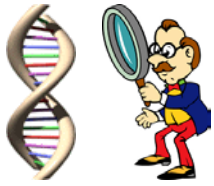
(your genetic "blueprint")

- 46 chromosomes in the cell nucleus - 23 from the father and 23 from the mother.
- First 22 are called "autosomal" and can exchange material between each other.
- Chromosome number 23 is the "sex" chromosome.
- Women have two "X" chromosomes, but men have an "X" and a "Y" chromosome.
- The male sperm contains either an "X" or a "Y".



Your DNA



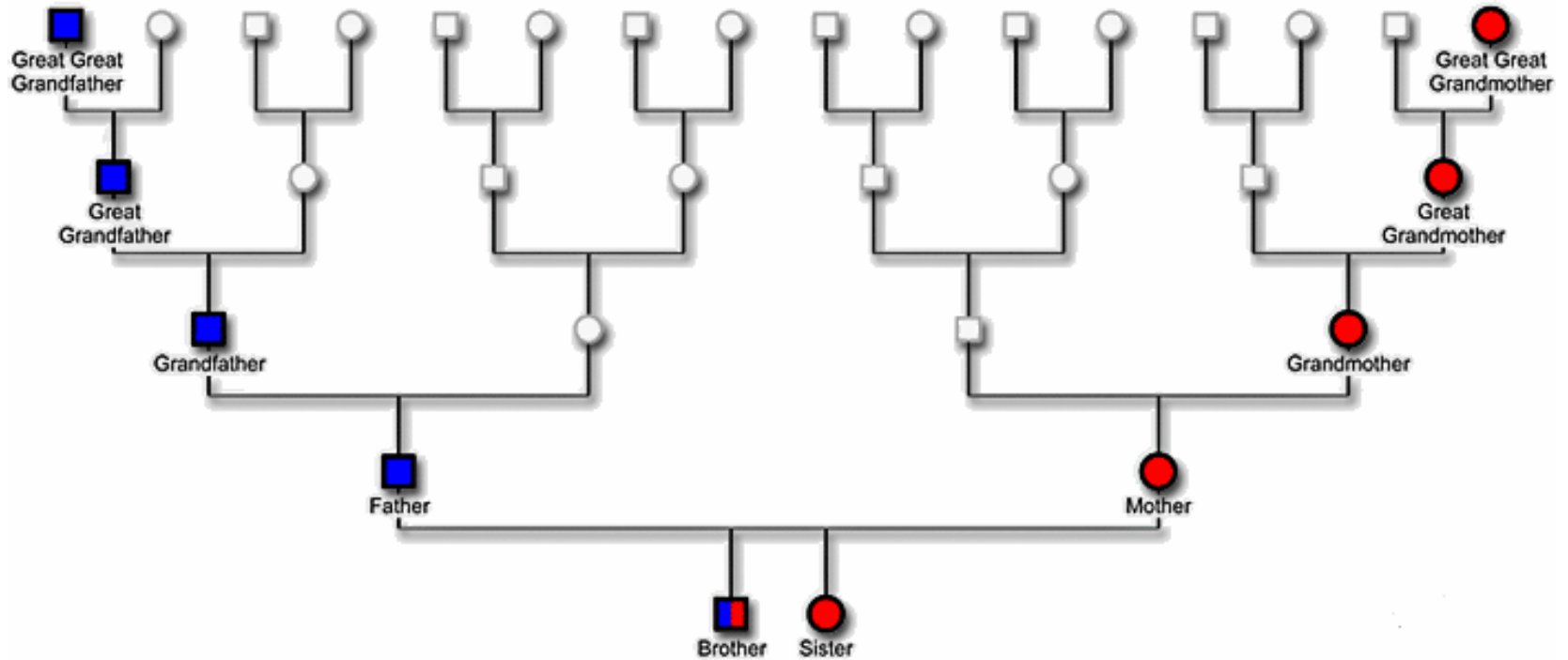


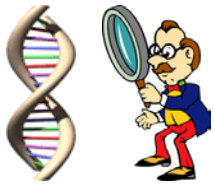
Unique Cell Properties Exploited for Genealogy

- Mitochondrial DNA ("mtDNA")
 - The mtDNA is only passed from a mother to her children (sons & daughters).
- Y-Chromosome DNA ("Y-DNA" or nucleic DNA)
 - The male Y-chromosome is only passed from father to his sons.
- Polymorphisms
 - The DNA "alphabet" sequence changes or "mutates" slowly after many generations. About 1 mutation every 500 generations for each Y-DNA marker, slower for mtDNA.

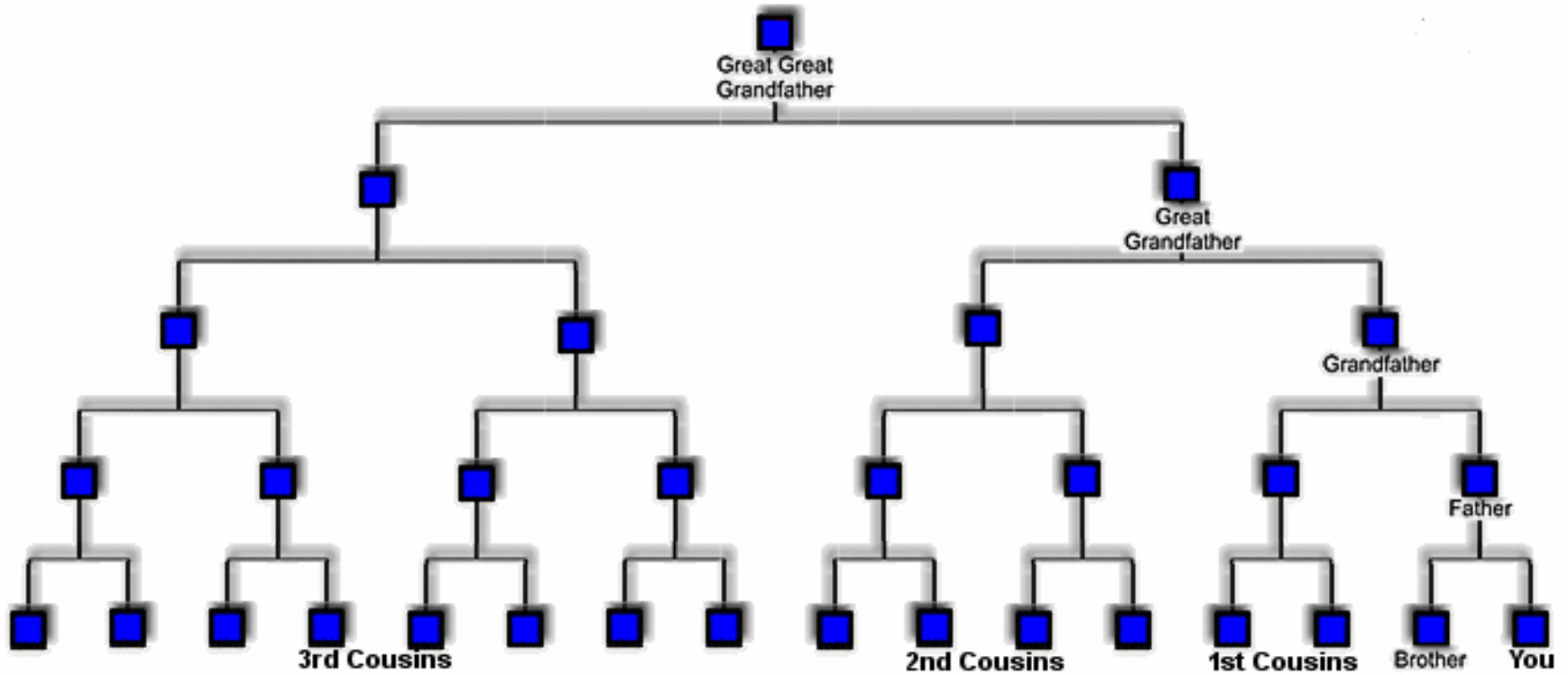


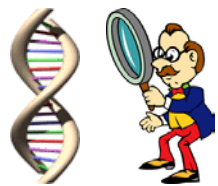
mtDNA & Y-DNA Inheritance Chart





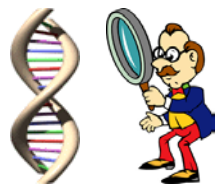
Male Y-DNA Descendancy





So, What Can I Learn From My DNA - Genealogically Speaking?

- Your DNA signature - Gee Whiz!
- The migration path your “ancient” ancestors and possible ethnic makeup.
- Whether men share a recent common paternal ancestor.
- Whether two women or a man & woman share a recent common maternal ancestor.



Solving a Genealogical Puzzle

- Clearly state the genealogical question.
- Evaluate whether DNA can answer the question.
- Have the participants DNA analyzed.
- Analyze the results – matching or not matching.
- Hopefully your puzzle will be solved.



Partial screen shot of Haplogroup results

Haplogroup Test: your Y SNP haplogroup is **R1b1**, therefore you qualify to order our deep clade test which focuses on all mutations shown on the screen after you click on the "Continue for more information" button. If we are wrong in our prediction, we will test you for our "Backbone SNP" test at no additional charge until we have your Haplogroup confirmed. If we have a deep clade test in place for the confirmed Haplogroup, we will also test you for that deep SNP at no additional charge.

Your Haplogroup

[R1b1](#)

Your SNP Tests

P25+

Haplogroup - A genetic population group associated with early human migrations determined from SNP tests or Y-STRs.

Haplotype - One person's set of Y-STR values for the markers that have been tested. Two individuals that match exactly on all markers have the same haplotype.

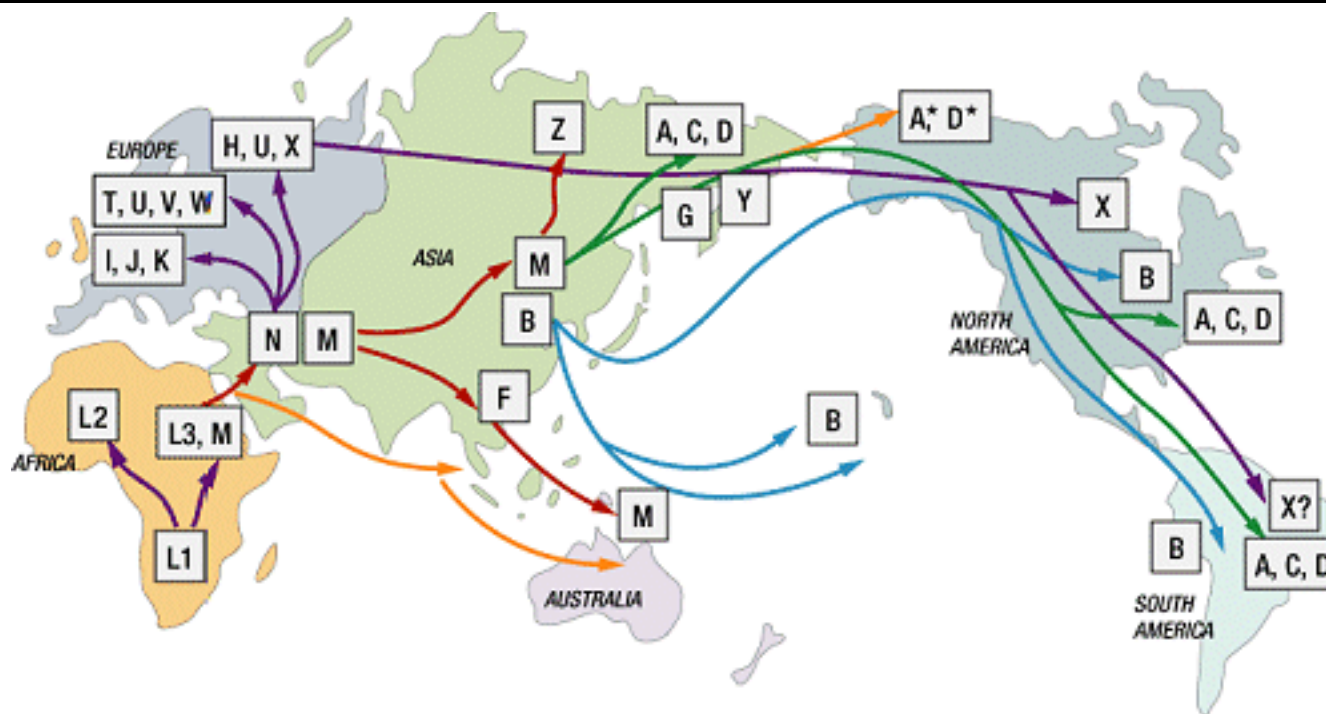


Y-DNA R1b Haplogroup Migration



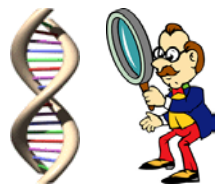


mtDNA Haplogroup Results



EXPANSION TIMES (years ago)	
Africa	120,000 - 150,000
Out of Africa	55,000 - 75,000
Asia	40,000 - 70,000
Australia/PNG	40,000 - 60,000
Europe	35,000 - 50,000
Americas	15,000 - 35,000
Na-Dene/Esk/Aleuts	8,000 - 10,000





Partial screen shot of Y-DNA results

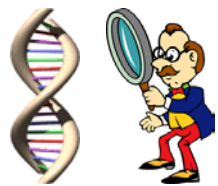
FTDNA DYS markers

We provide the actual scientific Allele values and DYS #'s for your results unless the markers were discovered at the University of Arizona and do not have a publication schedule. When that situation occurs we provide your results in "scores" to allow us to use the marker without compromising the discoverer until publication dates have been established.

We are pleased to report your results below:

[Understanding your results.](#)

Locus	DYS#	Alleles
1	393	13
2	390	25
3	19*	16
4	391	10
5	385a	10
6	385b	14
7	426	12
8	388	12
9	439	10
10	389-1	13



William F. Mumaw

"illegitimate?"

- Traditional genealogy could not connect William F. Mumaw.
- Data Suggested William was the illegitimate son of Anna Mumaw. -- Hypothesis!
- DNA confirms he is not a Mumaw. -- Fact!

	393	390	19	391	385a	385b	426	388	439	389i	392	389ii
MUMMA Haplotype	13	25	14	11	11	14	12	12	13	13	13	29
William's Descendant	14	22	14	10	13	13	11	14	12	13	11	29

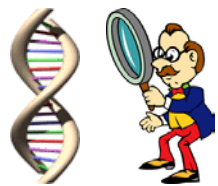


William F. Mumaw

“illegitimate? – YES!”

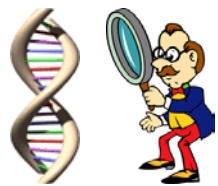
- Traditional genealogy could not connect William F. Mumaw.
- Data Suggested William was the illegitimate son of Anna Mumaw. -- Hypothesis!
- DNA confirms he is not a Mumaw. -- Fact!
- Further research suggests father is a “Webb”.
- Two “Webb” descendants provide DNA samples.
- DNA Results prove a conclusive “Webb” relationship.

	393	390	19	391	385a	385b	426	388	439	389i	392	389ii
MUMMA Haplotype	13	25	14	11	11	14	12	12	13	13	13	29
William’s Descendant	14	22	14	10	13	13	11	14	12	13	11	29
Webb #1	14	22	14	10	13	13	11	14	12	13	11	29
Webb #2	14	22	14	10	13	13	11	14	12	13	11	29

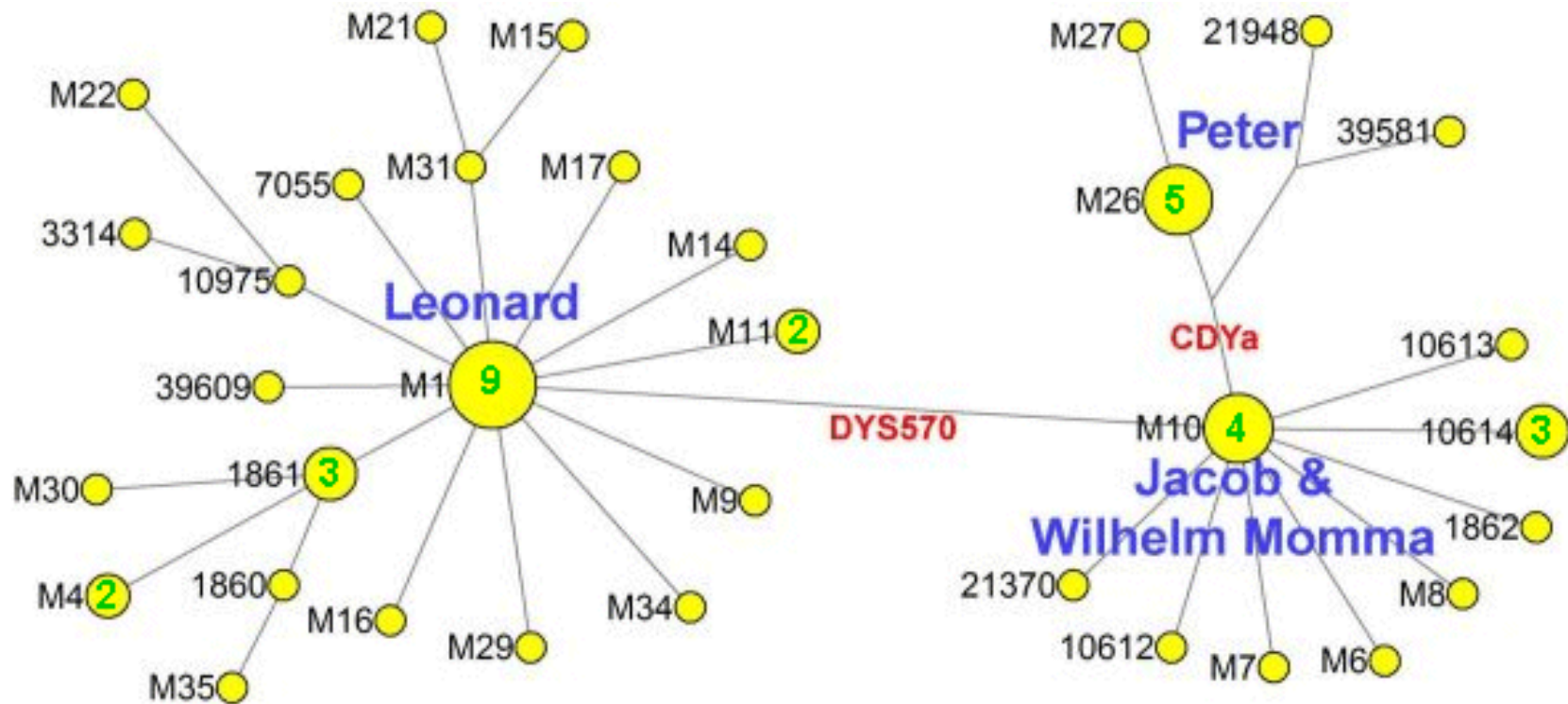


Tom Bell discovers his "genetic" surname (A needle in the hay stack!)

- Tom Bell's great grandfather was adopted.
- Tom submits his DNA to FTDNA for analysis.
- Has a perfect DNA match with immigrant Peter Mumma, 37 out of 37 markers.
- Tom's "genetic" great grandfather was identified as a Mumma.
- Results confirmed through obscure documentation



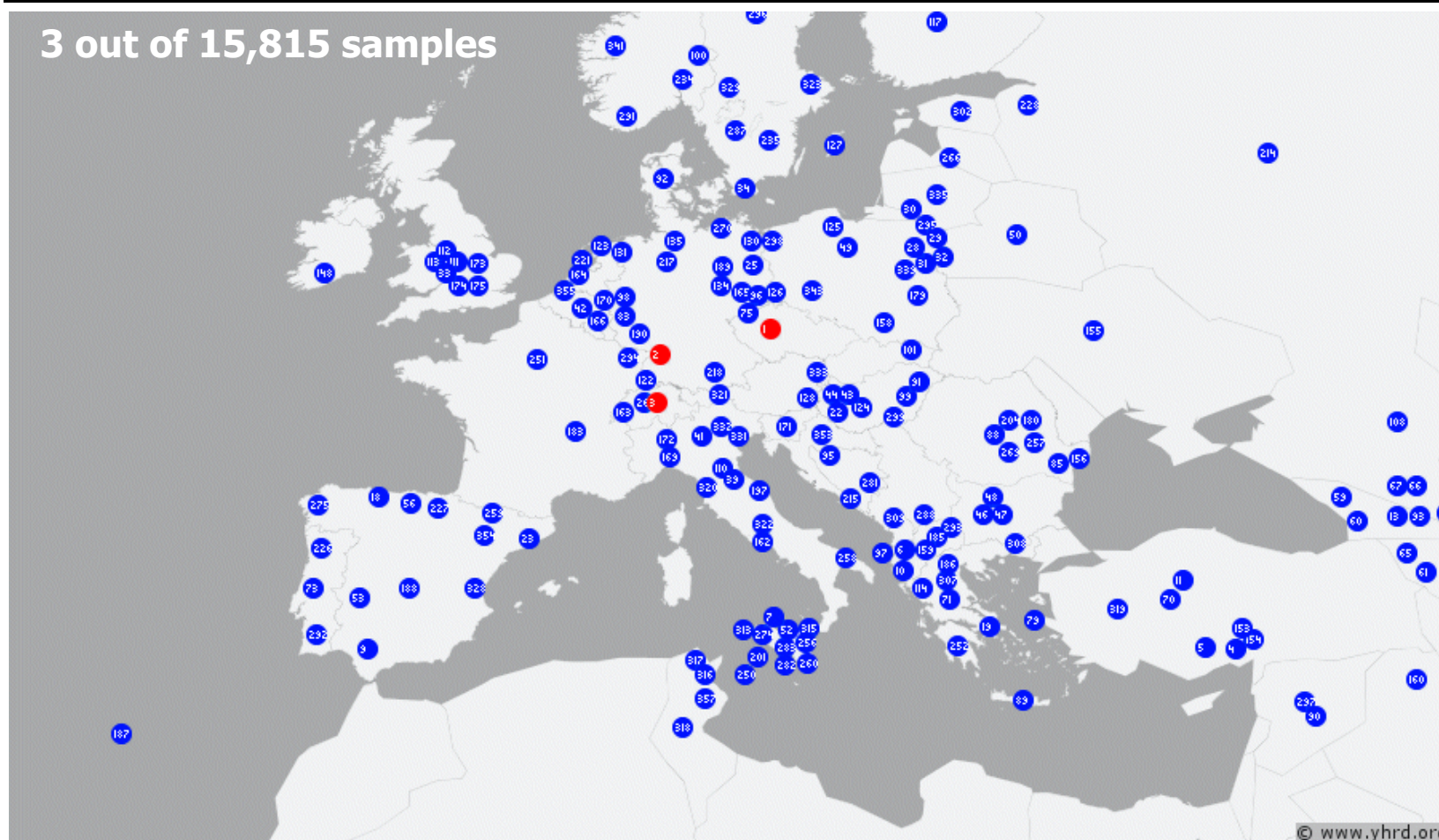
Mumma DNA Results – Cladogram (Phylogenetic Chart)



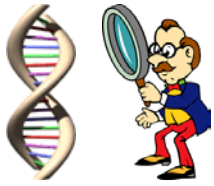


YHRD Database Haplotype Matches

3 out of 15,815 samples



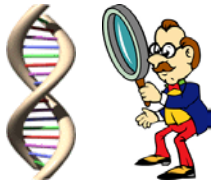
© www.yhrd.org



How Many Markers?

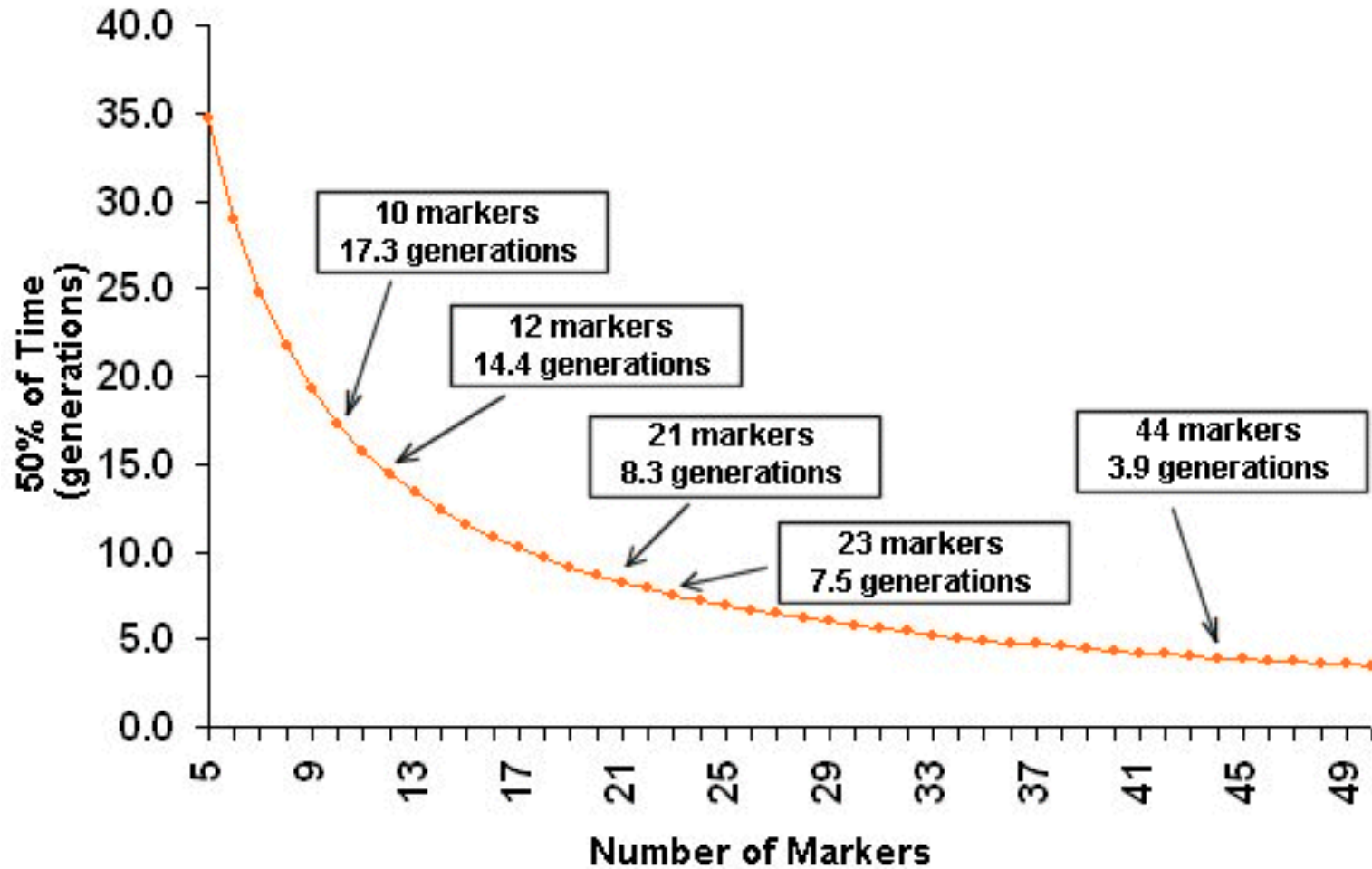
(measurements along the chromosome)

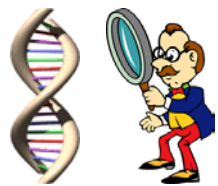
- 12 - 18 Markers (\$95 - \$99)
 - Generally adequate to prove Non-Relationships.
- 23 - 26 Markers (\$138 - \$155)
 - Non-relationships become clear.
 - May define close relationships.
- 37 - 43 Markers (\$189 - \$199)
 - Family branches may become clear.
- 67 - ? Markers (\$269 - \$?)
 - For serious surname research projects
 - Perfect matches are related



MRCA

Number of Markers vs. Generations

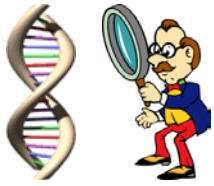




Relatedness Based on Genetic Distance

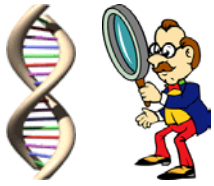
(number of mutations)

Relatedness based on genetic distances	12 Markers	25 Markers	37 Markers	67 Markers
Closely Related	-	0-1	0-2	0-3 TBD
Possibly Related	-	2-3	3-5	4-6 TBD
Doubtful Relationship	-	4	6	7 TBD
Not Related	3 or more	5 or more	7 or more	8 or more



DNA Genealogical Testing Companies

- Family Tree DNA <http://www.familytreedna.com>
12, 25, 37 & 67 markers (Uni. of Arizona)
- Relative Genetics <http://www.relativegenetics.com>
18, 26, 43 markers (BYU – Sorenson laboratories)
 - DNA Heritage <http://www.dnaheritage.com>
23 – 43 markers (Sorenson - English \$6/marker)
 - GeneTree <http://www.genetree.com>
43 markers (Sorenson - specialty is paternity testing)
- Oxford Ancestors <http://www.oxfordancestors.com>
10 markers (£180 Oxford University)



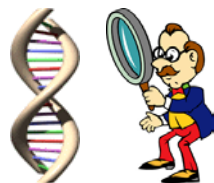
SMGF Database

(Sorenson Molecular Genealogy Foundation)

- Goal - *“Build the world's foremost collection of DNA and corresponding genealogical information”*.
- Begun in 2000 by BYU as the *“Molecular Genealogy Research Project”* funded by Sorenson.
- SMGF formed to create the SMGF databases.
- Participation is “Free” with DNA & 4 gen pedigree.

I RECOMMEND PARTICIPATION!

<http://www.smgf.org/pages/participate.jsp>



Search of the SMFG Database



**SORENSEN MOLECULAR
GENEALOGY FOUNDATION**

[Home](#) | [Contact Us](#) | [FAQ](#) | [Search Y-Database](#) | [Search mtDatabase](#)

[ABOUT SMGF](#) | [THE DATABASE](#) | [WHY PARTICIPATE](#) | [MOLECULAR GENEALOGY](#)



Y-Chromosome Search Results

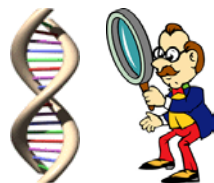
Lab Standard: Unknown/Other

Result	Pedigree	TMRCAs	Matches
DYS385	11	14	
DYS388	12	12	
DYS389I	13	13	
DYS389II	29	29	
DYS390	24	24	
DYS391	10	10	
DYS392	13	13	
DYS393	13	13	
DYS394/19	14	14	
DYS426	12	12	
DYS437	15	15	
DYS438	12	12	
DYS439	12	12	
DYS441	13	13	
DYS442	12	12	
DYS444	12	12	
DYS445	12	12	
DYS446	13	13	
DYS447	25	25	
DYS448	19	19	
DYS449	29	29	
DYS452	11	11	
DYS454	11	11	
DYS455	11	11	
DYS456	15	15	
DYS458	17	17	
DYS459	9	10	
DYS460	11	11	
DYS461	12	12	
DYS462	11	11	
DYS463	22	22	
DYS464	17	17	
GGAAAT1B07	15	15	
YCAII	19	23	
YGATAA10	13	13	
YGATAAC4	23	23	
YGATAH4	12	12	



Result Page (1 of 1): 1

Total Matches: 1



SMFG Pedigree of Participant

Gen 1

Gen 2

Gen 3

Gen 4

PROTECTED

Harold Hammond MUMA

b. 3 Jan 1894 Illinois, USA
 m. 1915 Topeka, Shawnee, Kansas, USA
 d. 25 Nov 1978 Towson, Baltimore, Maryland, USA

Elsie Virginia MARTIN

b. 20 Jan 1895 Topeka, Shawnee, Kansas, USA
 m. 1915 Topeka, Shawnee, Kansas, USA
 d. 18 Jul 1968 Oakland, Garrett, Maryland, USA

Burrus Elden MUMA

b. 17 Oct 1870 St. Elmo, Fayette, Illinois, USA
 m. 12 Mar 1893 St. Elmo, Fayette, Illinois, USA
 d. 25 Oct 1943 St. Elmo, Fayette, Illinois, USA

Cora (Cora Bell) JOHNSTON

b. 11 Jul 1872 St. Elmo, Fayette, Illinois, USA
 m. 12 Mar 1893 St. Elmo, Fayette, Illinois, USA
 d. 1 Mar 1962 Vandalia, Fayette, Illinois, USA

Christopher Carlos MARTINEZ

b. ABT 1872 Spain
 m. ABT 1890 Topeka, Shawnee, Kansas, USA
 d. ABT 1899 Topeka, Shawnee, Kansas, USA

Charlotte Virginia FRENCH

b. 27 Nov 1867 Zanesville, Muskingum, Ohio, USA
 m. ABT 1890 Topeka, Shawnee, Kansas, USA
 d. 25 Sep 1930 Topeka, Shawnee, Kansas, USA

AFN: WF18-WN

Mary Catherine FLETCHER

b. 3 Apr 1852 Wheatland Township, Fayette, Illinois, USA
 m. 29 Dec 1869 Wheatland Township, Fayette, Illinois, USA
 d. 7 May 1932 St. Elmo, Fayette, Illinois, USA

Presley Morgan JOHNSTON

b. 29 May 1847 Knox County, Ohio, USA
 m. 4 Sep 1871
 d. 25 Sep 1927 St. Elmo, Fayette, Illinois, USA

Martha (Matt) Sarah SHERA

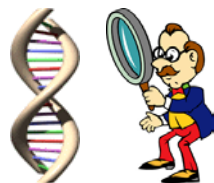
b. 26 Dec 1848 Indiana, USA
 m. 4 Sep 1871
 d. 27 Jan 1887 St. Elmo, Fayette, Illinois, USA

Thomas FRENCH

b. 3 Jul 1826 Muskingum County, Ohio, USA
 m. 6 Nov 1851 Muskingum County, Ohio, USA
 d. 4 Jun 1899 Zanesville, Muskingum, Ohio, USA

Louisa WHEELER

b. 12 Apr 1832 Muskingum County, Ohio, USA
 m. 6 Nov 1851 Muskingum County, Ohio, USA
 d. 28 Jul 1904 Zanesville, Muskingum, Ohio, USA



Partial Screen Shot of Pedigree

Harold Hammond MUMA

b. 3 Jan 1894 Illinois, USA
m. 1915 Topeka, Shawnee, Kansas, USA
d. 25 Nov 1978 Towson, Baltimore, Maryland, USA

PROTECTED

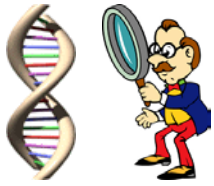
Elsie Virginia MARTIN

b. 20 Jan 1895 Topeka, Shawnee, Kansas, USA
m. 1915 Topeka, Shawnee, Kansas, USA
d. 18 Jul 1968 Oakland, Garrett, Maryland, USA



DNA Y-Chromosome Databases

- YHRD <http://www.ystr.org/index.html> **European Forensic**
42,000+ results - 11 markers - number of matches only
- Ysearch <http://www.ysearch.org> **FTDNA supported**
30,000+ results - 100 markers, surname & haplotypes
- RAO <http://www.familyreedna.com> **FTDNA users only**
72,000+ results - 67 markers
- SMGF <http://www.smgf.org> **Sorensen Molecular database**
25,000+ results - 43+ markers surnames & haplotypes & pedigrees
- Relative Genetics <http://www.relativegenetics.com>
? Results - Surnames(?) & haplotypes
- Y-base <http://www.ybase.org> **DNA heritage supported**
9,000+ 49 markers surnames & haplotypes



DNA Resource Information

Y-Chromosome Tutorial (101)

<http://blairgenealogy.com/dna/dna101.html>

DNA Information Links

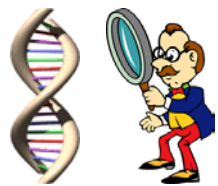
http://www.smgf.org/pages/dna_links.jsp

Mumma Surname Project Results – FTDNA

<http://www.familytreedna.com/public/mumma>

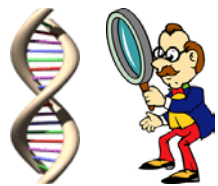
Mumma Surname Project Results – My Site

<http://www.mumma.org/DNA.htm>



Book Resources

- **Trace Your Roots with DNA** (2004)
by Megan Smoleynak Smolenyak & Ann Turner \$10
- **DNA & Genealogy** (2005)
by Colleen Fitzpatrick & Andrew Yeiser \$22
- **The Seven Daughters of Eve** (2000) mtDNA
by Dr. Bryan Sykes \$16



CODIS (FBI)

COmbined DNA Indexing System

13 CODIS Core STR Loci with Chromosomal Positions

