

The Yarbrough DNA Project

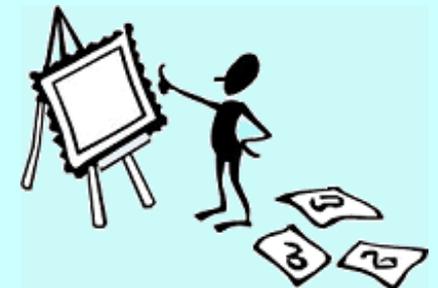
What the DNA Tests Indicate

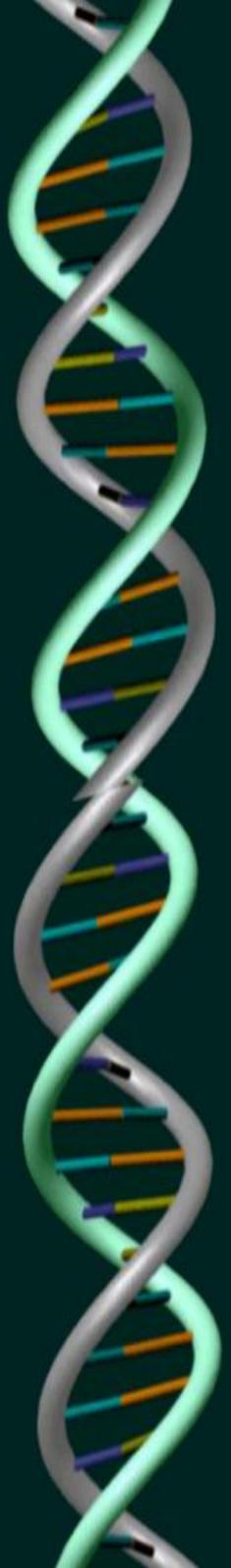
Leonard Yarbrough

2012 Conference

**The Yarbrough National Genealogical & Historical Association, Inc.
Petersburg, VA**

October 19, 2012





The Yarbrough DNA Project

1. Introduction - Background & Purpose
2. Project Status & Results to date
3. Overview of DNA - Definitions & the Science
4. About the Tests - Which ones and Who does the testing
5. Concluding Remarks

The Yarbrough DNA Project

• **Why it is needed - at present there is more not known about the first four generations of Yarboroughs in the New World than is known. Records required for provenance do not exist.**

* There are only two proven sons of Richard the Immigrant; there are likely others. Who was/were his wife/wives?

* There are several Yo. families in close proximity in early Amelia County, VA. How are they related, if at all, and what was their origin?

• **What we know - there are numerous Yarborough lines, but how they all connect (and to whom) is more conjecture than certainty.**

• **The Project Mission - Obtain DNA from as many Yarbroughs with provenance to original immigrant(s), and to encourage all Yarbroughs to be tested so that the family groups can be matched genetically.**

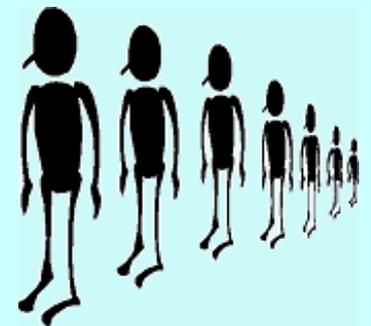
• **So far, there are eleven family groups that have been identified by DNA testing; nine are American and two are British.**

• **Overarching Premise – everyone tested will permit the posting of his/her test results and lineage data at the DNA Project Website. {Test results are posted on protected web pages accessible to each tested individual ; however, the markers for earliest known ancestor's are posted (with permission) on a public page}.**



What the Project Provides

- Listing of Patriarchs (oldest known ancestor within a Yarbrough family grouping);
- **yDNA results (donor's DNA markers shown as those of the donor's oldest given ancestor, when given);**
- yDNA markers of other tested individuals and their oldest given ancestor;
- **mtDNA results (indicates matches on a global basis);**
- Other sources of information about genetics and genealogy;
- **Notifications about other tested individuals who have matching markers.**



The DNA Tests*

- 37-Marker - a minimal marker test for genealogical comparisons;
- **67-Marker - a more complete marker set.**
- 111-Marker - the most complete marker set.

The more markers tested, the more accurate the test results, in terms of "nearness" of related kinsmen sharing the same DNA sequences.

Test kit costs are proportional to the number of markers obtained. Typically, prices range from \$169.00 to \$359.00, although there are also advanced "super" and combined tests whose costs vary from \$289.00 to \$837.00.

Our testing service, Family Tree DNA (hosted at <http://worldfamilies.net/surnames/yarbrough>)

from time to time offers test kits at discounted prices.

- - *These tests are for males; there are also tests specific to females.*



Currently Identified Yarbrough Family Groups*

Group 1 (38 members)

Thomas Yarborough 1685 - ~1761
William Yarborough 1692 - 1748
Joseph Yarborough ~1725 - ?
Jonathan Yarbrough ~1740 - 1811
John Yarbrough 1725 - 1785
George Yarbrough, Sr. 1743 - 1798
Moses Yarbrough ~1743 - 1772
Joseph Yarborough 1756 - 1820
William Yarbrough ~1758 - ~1833
James Yarbrough 1765 - 1835
Thomas Yarbrough 1768 - 1840
Joel S. Yarbrough 1780 - ?
Thomas G. Yarbrough 1785 - ~1860
Henry Murray Yarbrough 1785 - 1854
William John Yarbrough ~1790 - ~1860
William Roland Yarbrough 1799 - 1877
Francis Marion Yarbrough 1820 - ~1860

Group 2 (1 member, Scandinavian haplogroup)

P. A. Yarbrough (no ancestor provided)

Group 3 (1 member, African-American)

John Yarbrough ~1825 - ?

Group 4 (13 members)

Joshua Yarborough I 1710 - 1800
Edmund Yarbrough 1766 - 1850
Shem Yarborough 1775 - 1850
Jonathan Yarborough 1822 - ~1880
Joseph Manuel Yarbrough 1832 - 1871
William H. Yarbrough 1828 - 1896

Group 5 (2 members)

William Yarborough 1645 - 1749
John Swanson Yarborough 1744 - 1862

Group 6 (1 member)

William Yarbrough 1740 - ~1838

Group 7 (2 members)

John Yarbrough 1790 - 1843

Group 8 (1 member)

Rufus Yarbrough ? - ?

Group 9 (1 member)

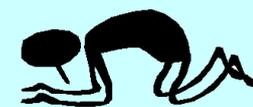
Calvin Yarborough 1839 -

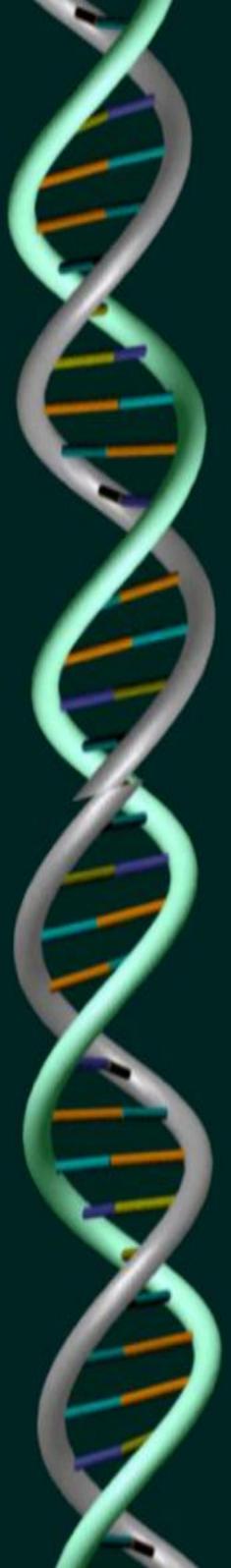


* - "Family group" or "group" should not be confused with "haplogroup"; our family group is a sub-set of a haplogroup.

Matches with Known Contemporaries (Abbreviated Set)

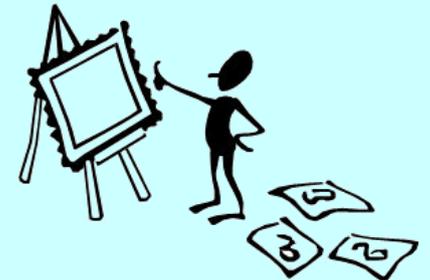
12 MARKER - EXACT MATCH	7 MATCH(ES)	25 MARKER - GENETIC DISTANCE - 1	4 MATCH(ES)
Bennie F Yarbro (Y37)		L A Yarber (Y37)	
Cy Yarborough (Y67)		Mr. Roger N Yarbro (Y37)	
Jan Anthon Yarbrough (Y37)		Cy Yarborough (Y67)	
Mr. Kevin B Megginson		Raymond Yarbrough (Y37)	
Linzy Price Megginson Jr. (Y67)			
Dr. Anthony Arthur Gatenby		37 MARKER - GENETIC DISTANCE - 1	3 MATCH(ES)
Raymond Yarbrough (Y37)		Bennie F Yarbro	
		Jan Anthon Yarbrough	
12 MARKER - GENETIC DISTANCE - 1	1 MATCH(ES)	Linzy Price Megginson Jr. (Y67)	
L A Yarber (Y37)			
		37 MARKER - GENETIC DISTANCE - 2	4 MATCH(ES)
25 MARKER - EXACT MATCH	3 MATCH(ES)	L A Yarber	
Bennie F Yarbro (Y37)		Mr. Roger N Yarbro	
Jan Anthon Yarbrough (Y37)		Cy Yarborough (Y67)	
Linzy Price Megginson Jr. (Y67)		Raymond Yarbrough	
		67 MARKER - GENETIC DISTANCE - 2	2 MATCH(ES)
		Cy Yarborough	
		Linzy Price Megginson Jr.	





Projects Results So Far:

- 82 Yarbroughs have been tested to date; more tests are in progress.
 - There are several individuals with non-Yarbrough surnames who belong to a Yarbrough family group.
- Richard does not appear to be the progenitor of the Joshua Yo. line.
 - Where does he fit in the scheme of things?
 - Richard's DNA is needed to resolve the question.
- While we know we derive from our English cousins, testing so far does not show any direct links. This is expected to change as more testing data are obtained.



DNA – The Science

- Deoxyribonucleic acid (DNA), the hereditary material in humans and almost all other organisms. Nearly every cell in a person's body has the same DNA, mostly located in the cell nucleus, but a small amount is found in the mitochondria* (mtDNA). Each person's DNA is unique, with short segments (Short Tandem Repeats, or STR's) of DNA passed from generation to generation; these are used as a basis of identifying family groups and common ancestors.
- DNA information is a code made up of four chemical bases: adenine (A), guanine (G), cytosine (C), and thymine (T). Human DNA consists of about 3 billion bases, and more than 99 percent of those bases are the same in everyone. The order, or sequence, of these bases determines how an organism is defined, somewhat as letters of the alphabet form words and sentences.
- DNA bases pair up with each other, A with T and C with G, to form base pairs. Each base is attached to a sugar molecule and to a phosphate molecule. Together, a base, sugar, and phosphate make a nucleotide. Nucleotides are arranged in two long strands that form the double helix spiral. Its structure is somewhat like a ladder, with base pairs forming the ladder's rungs and the sugar and phosphate molecules forming the vertical side pieces.
- DNA replicates itself; each strand of DNA in the double helix is the pattern for duplicating the sequence of bases. This is critical, as each new cell needs an exact copy of the DNA in the old cell.

*mitochondria: a small spherical or rodlike bodies, bounded by a double membrane, in the cytoplasm of most cells: contains enzymes responsible for energy production

DNA – Definitions & Terms

● **STR** - Short Tandem Repeats, or repetitive segments of DNA that appear sequentially at specific locations on various chromosomes. These locations are markers used for describing and analyzing DNA samples.

● **Marker** - (i) a non-coding Y-chromosome DNA consisting of numbers designating individual DNA segment numbers obtained from testing and analysis (*example: DYS393*=13. This means at marker #393, the value is 13*); (ii) any unique (and recurring) DNA number sequence used for descriptive and analytical purposes; e.g., 13 24 14 11 10 15 12 12 12 13 29

● **Chromosome** - a bundle of tightly coiled DNA. Humans have 23 paired chromosomes; 22 pairs of non-sex specific chromosomes and one pair of sex chromosomes (X & Y**). A single chromosome of each pair is passed from each parent to their child(ren).

● **Haplogroup**: a genetic grouping of alleles that are closely enough linked to be passed on to successive generations; branches in the human genetic tree. Haplogroups are determined by yDNA and mtDNA testing (and are different).

- **Patriarch** - the earliest identified male ancestor of a haplogroup.
- **Matriarch** - the earliest identified female ancestor of a haplogroup.

* - Standard nomenclature, from the Cambridge Reference System.

** - This is the basis for the DNA test performed on male descendents



Definitions & Terms Cont'd

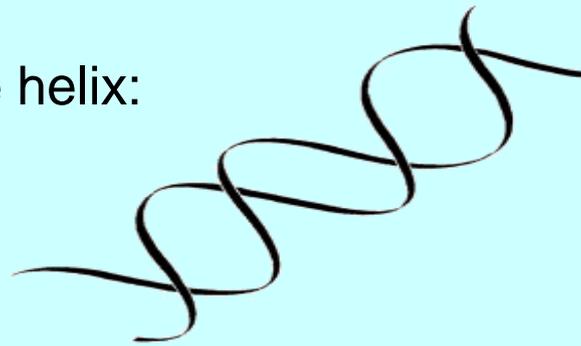
- **yDNA**: non-recombining DNA which determines whether a child will be male or female. Y-DNA passes from father to son almost unaltered for long periods of time.
- **mtDNA**: mitochondrial DNA, or energy releasing organelles located in the cytoplasm of cells, which contain their own DNA. Mitochondrial DNA is passed from mother to child, but only females continue to pass on their maternal mitochondria to their children.
- **non-paternal event**: the genetic results of an individual do not match those of his surname, due to some event in the past, such as an unrecorded adoption, an unrecorded name change, an infidelity, or the result of a rape.
- **DNA Marker Tests** - typical commercial laboratory DNA tests are offered in marker sets of various discrimination: 37-markers, 67-markers, and 111-markers. The greater the number of markers, the better the ability of the test to determine generational distances.
- **Genetic Distance** - (i) a crude measure of the generational separation between two members of a family group; (ii) the sum of the differences between respective markers in a DNA sample set*.
- **Additional terms and definitions can be found at**
<http://www.worldfamilies.net/glossary> and
<http://www.genetree.com/glossary>.

* The genetic distance between a human and a chimpanzee reflects a difference in DNA markers of only 5%. The phrase, "monkey's uncle" may be more accurate than we would like to believe.



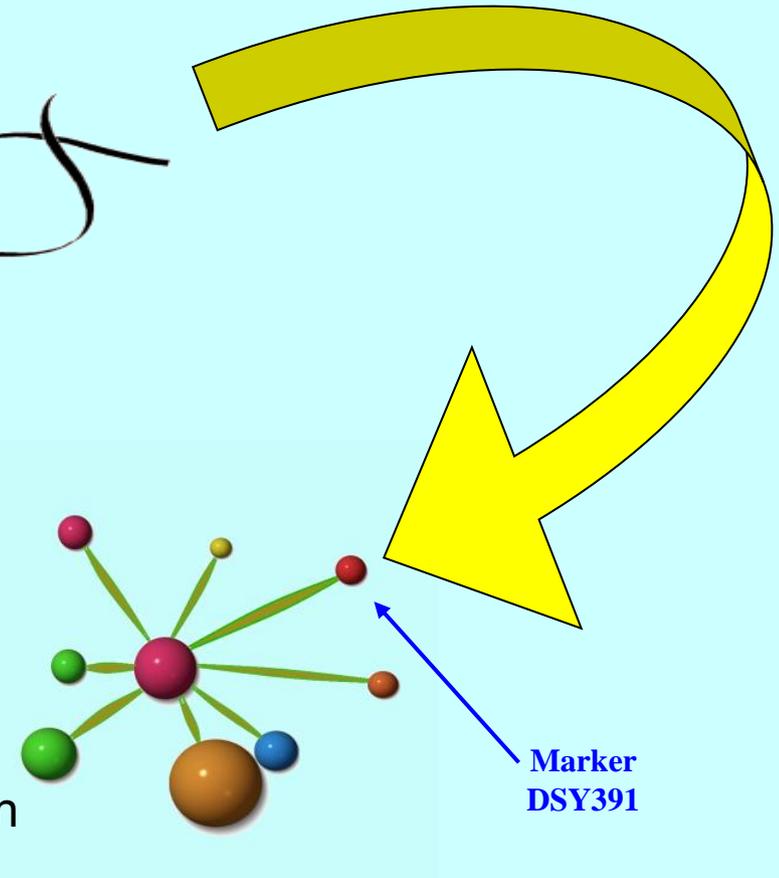
Visualizing DNA

- Imagine a double helix:

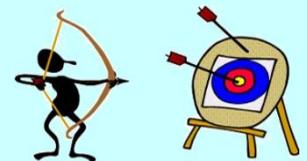


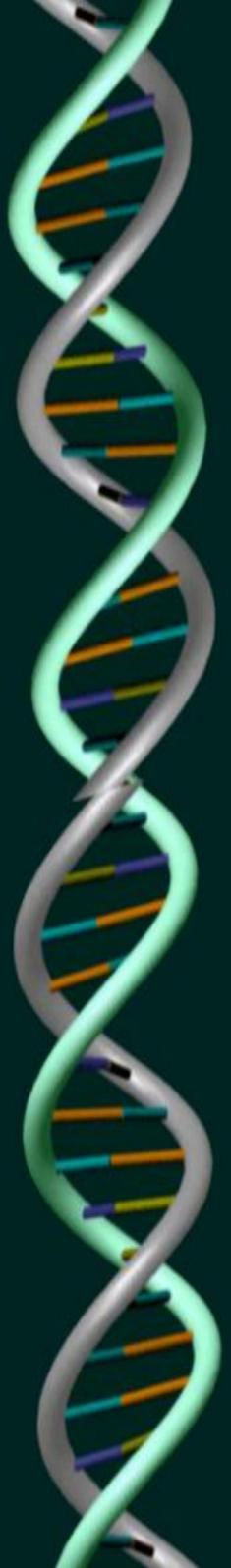
- Imagine a Chromosome:
(these which make up the double helix)

- At specific locations on the chromosome, there are STR's; the number of STR's at a specific location on the Y chromosome is the marker "value" that is reported in the yDNA test results.



- Thus, 12 repeats of a specific sequence of chemical compounds at marker DYS391 would be commonly reported as DYS391=12.





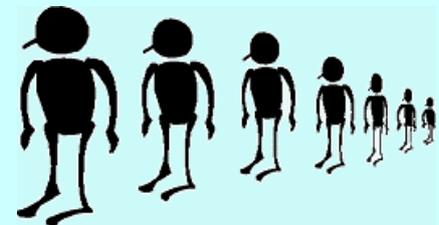
Y. Family Group Marker Distinctions

25 Marker Data Set

GB#1	13 23 14 10 11 14 12 12 12 13 13 29 18 9 9 11 11 24 15 19 29 15 16 17 18
GB#2	13 23 14 10 13 14 11 14 11 12 12 28 15 8 9 8 11 23 16 20 28 12 14 14 16
Am#1	12 25 14 11 12 14 12 12 12 14 13 30 18 9 10 11 11 25 14 18 29 15 16 16 16
Am#2*	12 22 14 10 13 14 11 14 11 12 11 28
Am#3	12 25 14 11 11 14 12 12 12 13 13 29 17 9 10 11 11 25 15 19 29 15 15 17 17
Am#4	13 24 14 11 10 15 12 12 12 12 13 29 16 8 9 11 11 25 15 19 30 15 15 15 18
Am#5	13 24 14 10 11 14 12 12 12 13 13 29 18 9 10 11 11 25 15 19 29 13 15 17 17
Am#6	13 24 14 11 11 14 12 12 12 13 14 29 17 9 10 11 11 25 15 19 30 15 16 16 18
Am#7	13 24 14 12 11 14 12 12 11 14 13 30 17 9 10 11 11 25 15 18 30 15 15 16 16
Am#8	13 24 14 11 11 14 13 12 12 13 13 29 18 9 9 11 11 24 15 19 30 14 15 17 17
Am#9	15 21 17 10 17 18 11 12 12 13 11 30 18 8 10 11 11 27 14 21 31 13 16 16 18

This is a busy chart, but —

- So much for the seven brothers myth once again;
- The markers are similar in all cases, and the differences could very well be a result of mutations, as well as testing errors.



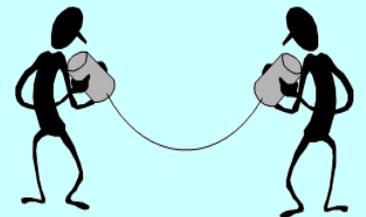
* - Only 12 markers are available for this family group

Ordering a Test Kit

Go to

<http://www.familyreedna.com/group-join.aspx?Group=Yarbrough>

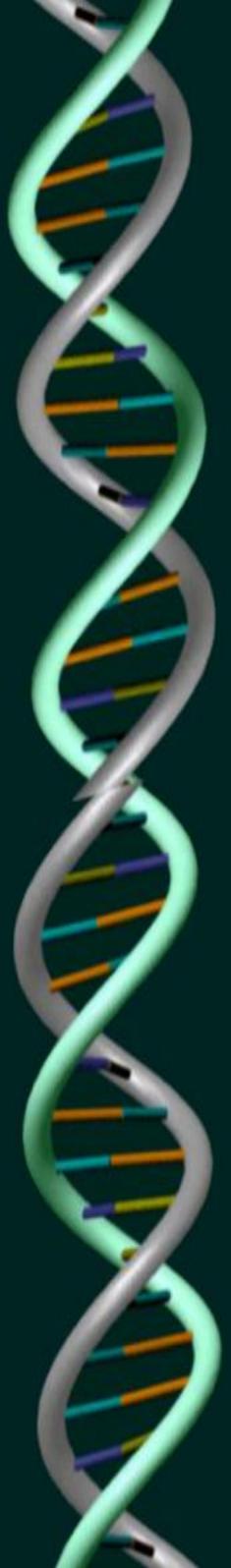
- This site provides a listing of DNA test kits, pricing, and information about the tests.
- A 37 marker test kit is a minimal test; a 67 marker test is better.
- The test kit consists of two cheek scrapers , two collection tubes, and return packaging and will arrive within two weeks after ordering.
- Follow the collection instructions – remember the samples must be from a male family member for the yDNA test.
- In three to six weeks, the testing laboratory will provide the results (email and USPS). A web address for the test data, a username and a password will be given, which will allow access the test data.
- The Yarbrough DNA Project site can be accessed at <http://www.worldfamilies.net/surnames/yarbrough/>. This site provides a comprehensive listing of all participants' marker data and the current family groupings,



What the Testing Lab Provides

- Certificates showing yDNA and mtDNA Test Results (37, 67, or 111 markers). [{Samples shown on following charts.}](#)
- mtDNA results include Haplogroup, Mutations, Genetic Makeup of the donor, global distribution of kinswomen.
- Explanatory Material: how to interpret results, global distribution, list of known matching persons, references.





FamilyTreeDNA Certificate – Y-DNA

This Certificate confirms that you have had your DNA analyzed by Family Tree DNA. The outcome from each of the sixty-seven Loci examined is reported in the table below. For your benefit we have listed the Locus designation for all sixty-seven Loci utilized by the geneticists supporting our company. If your alleles for the sixty-seven Loci match another person exactly, then you share the same Haplotype. DNA testing is a genealogical tool designed to aid individuals wanting to "connect" to other relatives lost in time and where the paper trail no longer exists.

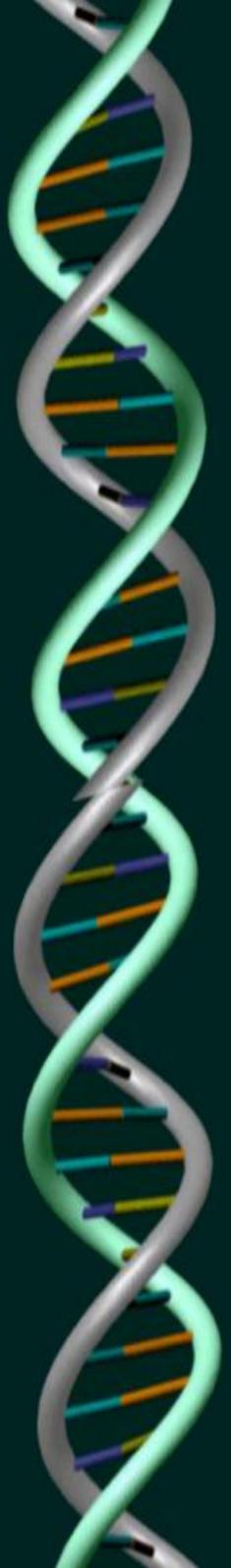
Leonard S. Yarbrough

Your Kit # **157143**

DYS #	393	390	19/394	391	385a	385b	426	388	439	389-1	392	389-2	
Allele	13	24	14	11	10	15	12	12	12	12	13	29	
DYS #	458	459a	459b	455	454	447	437	448	449	454a	454b	454c	454d
Allele	16	8	9	11	11	25	15	19	30	15	15	17	18
DYS#	460	H4	YCA IIa	YCA IIb	458	607	576	570	CDY a	CDY b	442	438	
Allele	11	9	19	23	16	15	18	17	36	37	12	12	
DYS #	531	578	395S1a	395S1b	590	537	641	472	408S1	511			
Allele	11	9	15	16	8	10	10	8	10	10			
DYS #	425	413a	413b	557	584	436	490	534	450	444	461	520	486
Allele	12	23	23	16	10	12	12	16	8	13	19	20	14
DYS#	617	565	487	572	640	482	565						
Allele	12	11	13	10	11	13	12						

September 17, 2009

Matthew E. Kaplan
Matthew E. Kaplan



Certificate – mtDNA

Family Tree DNA certifies that a mitochondria DNA sample taken from

Leonard S. Yarbrough

differs from the Cambridge Reference Sequence (CRS) at the numbered positions indicated by presence of the base designated A, C, G or T:

Haplogroup U4 Kit # 157143

The letters designate the base – adenine, cytosine, guanine or thymine – that occurs at each of those positions in place of the one shown in the 568-base portion of the CRS printed below. These are distinctive of this sample and may be compared to other people to confirm or rule out common descent, providing genetic evidence of genealogical relationships.

16134T, 16356C, 16519C

16010	16020	16030	16040	16050	16060	16070	16080	16090	16100
ATTCTAATT	AAACTATTCT	CTGTCCTTC	ATGGGGAAC	AGATTGGGT	ACCACCCAG	TATTGACTCA	CCCATCAACA	ACCGCTATGT	ATTTGTTACA
TACTGCCAG	CCACCATGA	TATTGTACGG	TACCATAAAT	ACTTGACCAC	CTGTAGTACA	TAAAGACCA	ATCCACATCA	AAACCCCTC	CCCATGCTTA
CAAGCAAGTA	CAGCAATCA	CCCTCAACTA	TCACACATCA	ACTGCAACTC	CAAAGCCAC	CCCAACCCAC	TAGGATACCA	ACAAACCTAC	CCACCCTTAA
CAGTACATAG	TACATAAAGC	CATTTACCGT	ACATAGCACA	TTACAGTCMA	ATCCCTTCTC	GTCCCATGG	ATGACCCCC	TCAGATAGGG	GTCCCTTGAC
CACCATCCTC	CGTGAATCA	ATATCCCGCA	CAAGAGTGT	ACTCTCCCTG	CTCCGGGCC	ATAACACTTG	GGGTAGCTA	AGTGAACCTG	TATCCGACAT
CTGGTTCTTA	CTTCAGGGTC	ATAAAGCCTA	AATAGCCAC	ACGTTCCCT	TAAATAGAC	ATCAAGATG			

The Cambridge Reference Sequence is the accepted mtDNA standard. Each of the lines above lists 100 of the bases that occur in the CRS, starting at position 16,001 and ending with 16,568. Each line lists 100 positions, divided into groups of 10 for convenient reference. Each column is headed by the number for the last position in that group.

August 5, 2009 _____

Matthew E. Kaplan
Matthew E. Kaplan

Concluding Remarks

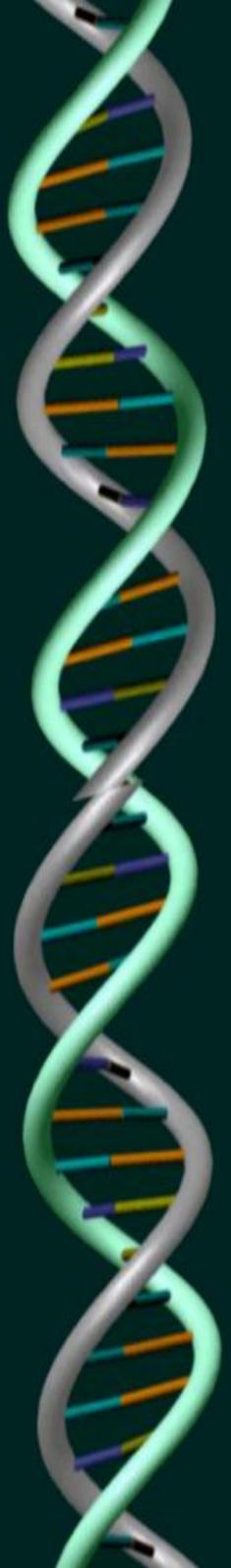
Project Results:

- 82 tests to date;
- More tests are needed to provide a more robust data set;
- Family lore has Richard the ancestor of haplogroup #4; testing suggests perhaps haplogroup #1.

DNA Testing:

- DNA “inheritances” differ for men and women; for genealogical purposes, the yDNA tests of males are required to establish relationships.
- DNA testing can refute or confirm a relationship but can not “prove” a relationship;
- DNA testing cannot determine the exact nature of a relationship; only hard evidence (acceptable documentation) does that.





Finally

A dedicated DNA Project Manager is needed –

- **Better than average PC skills;**
- **Some technical background (education and/or experience);**
- **Available time to devote to project.**

**Contact any of the YNGHA Board members or the
webmaster([http://webmaster@yarbroughfamily.org](mailto:webmaster@yarbroughfamily.org)).**

References

- **Double Helix**, James Watson, Scribner, New York, 1968. Watson, Francis Crick and Maurice Wilkins won the Nobel Prize in Physiology in 1962 for their discoveries about the molecular structure of nucleic acids. Their pioneering work was the basis of the Human Genome Project, among others that are now on going.
- **The Seven Daughters of Eve**, Bryan Sykes, W. W. Norton & Company, New York, 2001. An engaging account of the origin and locales of the proto-matriarchs of the human species.
- For more information about DNA,
<http://ghr.nlm.nih.gov/handbook/basics/dna>.
- For more information about DNA Testing,
<http://www.worldfamilies.net> or
<http://www.familytreedna.com>
- For more information about the Yarbrough DNA Project,
<http://www.worldfamilies.net/surnames/yarbrough>

