

Applying Genetic Genealogy to Family History Research

by Sara E. Lewis

While working on two books, *Images of America: Gloucester County* (2005) and *Images of America: Mathews County* (2007), I spent many days in Gloucester, the county where I grew up, and Mathews, the county where my parents, grandparents, and many ancestors lived (see Figures 1 and 2). As I collected photographs and stories for the Mathews book, I was particularly touched by the spirit of my ancestors.

After completing the book, I resurrected my genealogical work. I found that I was once again particularly interested in a puzzling branch of my family tree: my direct Lewis ancestry. My last known paternal ancestor is Robert T. Lewis (1828-1893) who married Diana F. Marchant in 1855 and lived on Queen's Creek in the Hallieford area of the county on what is today Lewis Lane. The 1860 census lists my 2nd great-grandparents as family number 611 in Mathews Magisterial District Number 3. Also in the household were my great grandfather, then four-year-old Charles L. Lewis, his one-year-old brother John, and 11-year-old Roseline Shipley.

Although this was as far back as anyone in our family has been able to trace, from an early age, when I first took an interest in local history, I thought that I might somehow be descended from the more prominent Lewis family of Warner Hall in Gloucester. I had researched them and other colonial and early American Lewises, but without finding a connection (List 1).

While looking into the Warner Hall family I came across the Lewis Surname DNA Project at Family Tree DNA. In late 2007, realizing that my 85 year old father was the last male Lewis in our line, I asked him to submit to DNA testing for the sake of our family tree. He did and we compared his DNA pattern (or haplotype) to nearly 300 others in the Lewis Surname database.

We learned that we were not related Councilor John Lewis of Warner Hall or any of the other lineages of Lewises in the Surname group. We found ourselves included in a list of DNA results that could not be assigned to a known Lewis immigrant.

While I certainly was angry with myself for wasting so much time looking for a connection where there was none, I was also excited because this reoriented me. I was anxious to learn more about why I genetically mismatched the Warner Hall Lewises yet more closely matched others.

It is not the purpose of this article to explain DNA science as it is much too complex for a short article by a non-specialist. Most individuals new to the application of DNA science to genealogy read more as they want to learn while interpreting results. I used Family Tree DNA's resources to analyze my father's DNA. Their website and staff were very helpful. Recent advances have made the application of genetics to genealogy more affordable, useful, and easy to understand by those who are curious about proving or disproving earlier research and family lore. Books that I have enjoyed as I have learned more are *The Seven Daughters of Eve*; *Saxons, Vikings, and Celts*; and *Adam's Curse* by Dr. Bryan Sykes.

That said, I will explain a few points briefly. It is important to note that DNA analysis applies ONLY to your direct paternal (your father, your father's father, your father's father's father, etc.)

and direct maternal (your mother, her mother, your mother's mother's mother, etc.) lines. The DNA that is analyzed in each case is of a different type. For the paternal line, nuclear DNA is used. Nuclear DNA contains 23 pairs of chromosomes. Twenty-two are the same; they recombine the parents' DNA. If a child is a boy, the 23rd is different because it pairs an X and a Y chromosome. Only males carry the Y, so scientists sequence a portion of it to prove or disprove relationships. The mother's DNA analysis has to do with the mitochondria, units outside the nucleus and within the cell that mothers pass on to all of their children. In human reproduction, sperm does not pass its mitochondria to the egg at conception, so mitochondrial DNA (mtDNA) does not contain information about the father. Mitochondrial DNA can only be examined for information about the mother and her direct maternal ancestors.

Therefore, DNA analysis can't help you trace your father's mother's father or your mother's father's mother. To help with the in-between branches, you can ask a cousin who is a direct descendant to have his or her DNA tested.

Of the two types of DNA, Y-DNA passed by the father yields results that can supplement genealogical work within an historic time frame. The mother's mtDNA is only useful to explain if you descend from the same family or not within the last 20,000 years or so. It is most useful to prove that you are definitely NOT related or that you possibly COULD BE related to another person within an historically meaningful time frame.

When examining DNA, scientists look for differences in particular sections of the Y-DNA or mtDNA to assign individuals to haplogroups. There are separate haplogroups for males and females. Haplogroups (from the Greek word *haplo* for simple or single) were developed after analyzing thousands of samples and looking for patterns in the mutations.

My father's Y-DNA told us that we were not related to the Lewises of Warner Hall, because our DNA shows that we are not of the same haplogroup. My father's DNA belongs to haplogroup I1. Most of the Lewises in the Lewis Surname Group, including the Lewises of Warner Hall, are in the R1b haplogroup.

The hierarchy of haplogroups (Figure 3) uses the letters of the alphabet in sequential order with A and B, the oldest haplogroups, originating only in Africa. The C through R haplogroups were carried in three migrations to other parts of the world. Later haplogroups mutated from haplogroups that evolved earlier. Therefore haplogroup I is older than haplogroup R. Another book by Brian Sykes, *Saxons, Vikings, and Celts*, notes that the relatively youthful R haplogroup is the most abundant group today and their group makes up about 70 to 90 percent of the population of modern England, Scotland, and Wales. (Figure 4) The I group makes up about 10 to 20 percent and other haplogroups make up less than 3 percent of modern England, Scotland, and Wales. These percentages probably hold true for the haplogroups of descendants of early emigrants from these Old World regions to the Chesapeake Bay region of America.

Haplogroups are further subdivided by a sequence of letters, then a sequence of numbers, then letters again and so forth. Within the I haplogroup, my father's DNA was further subdivided into the I1 haplogroup.

I took this a step further and sorted our I1 *haplogroup* subdivision and compared the various *haplotypes* in it with our haplotype. A haplotype is a particular pattern of coding called Short Tandem Repeats (STRs).

At certain points called markers a value is recorded for the number of STRs. Family Tree DNA offers haplotype tests for 12, 25, 37, and more markers. A 12-marker haplotype is a series of 12 STR values recorded at each of 12 locations on the chromosome. A 25-marker haplotype includes results from 25 locations and a 37 marker test from 37. More locations allow an individual to hone in on how closely he is related to other people in a test group.

Looking at the 12 marker results only, we see in Figure 5 that our Lewis haplotype, listed as the top row of 12 numbers, matched no more than 10 of the 12 markers with other Lewises in the I1 haplogroup. Family Tree DNA is able to calculate the probability of how closely we are related to a common ancestor given that we mismatch on 2 of the 12 markers. Their calculation is that there are probably at least 1,000 years between my father and the most recent ancestor he shares with another Group I1 Lewis.

Family Tree DNA categorizes the Lewis DNA project group as a group for a common surname that shows some defined clusters representing older branches of the family. These Lewis groups developed when surnames first arose to deal with heredity matters and feudal tenant management. The Lewis group also includes many single haplotypes, like ours, and others that represent younger Lewis surname branches (or groups of people who adopted surnames in a more recent time, perhaps as late as the seventeenth or eighteenth centuries) when surnames became common. The Lewis group may also include haplotypes that represent non-paternity events like illegitimacy and adoption. In addition, the sample of nearly 300 names really isn't very large. Again, Dr. Bryan Sykes explains this phenomenon in *Adam's Curse*.

Luckily for me, Family Tree DNA has a total database of more than 13,700 Y-DNA samples and I checked the box that allowed Dad's sample to be compared to the entire database. I discovered that we were an exact match on 12 markers with four other people -- whose last names were Poppe, Webb, Evans, and Baldwin!

On 25 markers, we were still an exact match with one of them, Mr. Webb. I corresponded with that person and found that his family emigrated from Wales and settled in the coal mining area of Tennessee.

On 37 markers, Mr. Webb mismatched with us on 3 more markers bringing the match total to 33 out of 37. But another person, Mr. Evans, rose to the top of the list because he mismatched with us on only 1 additional marker, bringing the total to 35 out of 37 matches. (Figure 6 compares my father's haplotype to Mr. Evans's haplotype.)

I wrote to Mr. Evans and found that his earliest known ancestor is Evan E. Evans, born in 1771 in Montgomeryshire, Wales. Family Tree DNA's probability calculator calculated that there is about an 80 percent chance that we share a common ancestor around the year 1700. There is more than a 90 percent chance that we share a common ancestor between 1500 and 1600, perhaps during the reign of Queen Elizabeth I.

I compared our DNA to other Evans group participants in Family Tree DNA's Evans surname group and found that we appeared to be as close to them as we were to other Lewis in the I haplogroup (Figure 7 shows my father's and Mr. Evans's haplotype in the top rows and others in the Evans surname group below.). I then looked back at my Lewis data. Interestingly, I discovered that there are two other Lewis-Evans 12-marker pairs in Family Tree's database. (Figure 8 shows the Lewis-Evans matches that I found in comparing the Lewis and Evans haplotypes, my father's and our Mr. Evans in the top pair and two other pairs below.)

Now that I know this, I am looking into a trip to Wales! Of course, with the strong Welsh tradition in Mathews, I had suspicions about this earlier. In the Montgomeryshire area, I have found many references to individuals named Evan ap Lewis and Lewis ap Evan. ("Ap" is a Welsh word meaning "son of.")

I have become very interested in the DNA of Mathews and Gloucester families. Because I know that we are sometimes related to families on the Eastern Shore or in Middlesex or elsewhere around the Chesapeake Bay, I have formed a geographic DNA project on Family Tree DNA (see http://www.familytreedna.com/public/Early_Chesapeake/default.aspx?publicwebsite.aspx) to look for genetic cousins among ancestors who settled in the counties around the Chesapeake Bay.

In James Horn's book, *Adapting to the New World: English Society in the Seventeenth-Century Chesapeake*, he notes that merchants loaded ships with food, manufactured wares, and indentured servants. The ship captains would sell or consign them to planters over the next few months as they traded around the Bay. Hundreds of merchantmen engaged in this business through the seventeenth century. Horn points out that the transfer of English society to the area is something that is little understood. Historians have dealt with the American colonial story with little attention paid to the transatlantic connection; it hasn't been easy to make the connection because so many arrived in the region as indentured servants and records are scarce. The fact that so many genealogists have trouble making the transatlantic leap illustrates his point.

For example, Mathews' families like the Gwynns have general references or family lore that connects them to the Welsh. However, historians and genealogists cannot usually document the link across the Atlantic back to England. There were many reasons why people left the old world for the new, but the fact that most were coming from England, Wales, Scotland, and Ireland to escape persecution or because they were among the poor and landless who came here as indentured servants doesn't help genealogists! There are few records because some didn't want to tell why they were here and others were illiterate. English histories stress politics, religion, the enclosure movement, and other reasons for what is described as one of the great human diasporas. Many references describe the bleak conditions for many during the 18th and 19th centuries. Up to the mid-19th century emigrant ships from London and Liverpool arrived in New York filled with the poor listed simply as laborers and servants.

Currently, in the Family Tree DNA that I am administering (Early Chesapeake at http://www.familytreedna.com/public/Early_Chesapeake/default.aspx?publicwebsite.aspx), I have several members who have traced their earliest known ancestor to an indentured servant. I

have two men with the surname Hagen who didn't know each other before they had their DNA analyzed. They found each other because they are 37 out of 37 marker matches, closer than my father is to Mr. Evans at 35 out of 37. One has records of his ancestors back to Thomas Hagen the Immigrant of Charles County, Maryland. The other had documented his earliest known ancestor as Francis Hagen, who appears in Frederick County, Maryland about 1780. They hope that other Hagens will join the group to help them connect the dots.

Fred Hagen said, "The more we can get men's DNA tested the more unknown cousins we can locate. Prior to my DNA test I did not know about Richard, nor about Dan [Hagen] or Don [Hagen]. After my test, there they were. For years I struggled ... thinking I must be the only one searching for my family roots. Now I know there are a lot of us doing just that ... the money I spent on my DNA test was the best investment in my genealogy searching I had spent to date and it advanced my research years ahead of going to courthouses and archives ... Since Richard, Dan and Don were located several more DNA cousins have been found. Our family keeps growing."

Another member of the group knows that his ancestor is William Thornton, who emigrated in 1641 to what would become Gloucester County. He was sponsored by Richard Lee of York County and provided animal husbandry services. Mr. Thornton, four other Thorntons, an Addison, a Harris, a Goodall, a Harvey, and my father are all in the I1 Haplogroup. Though there are a fair number of mismatches (we are closest to Mr. Goodall). Forrest Morgan of Mathews is in subdivision I2b of our I haplogroup. He has found six Morgan matches that were unknown to him before DNA analysis. All of this illustrates the type of exciting connections that are in store for us as we begin to build a DNA database of immigrants to the Chesapeake Bay region.

DNA genealogy tools will help those of us who feel certain that our ancestors came from England, Wales, Scotland, and Ireland connect to others with paper trails and to others in the old world who share our DNA. Genetic genealogy may provide a way to make the transatlantic leap to our ancestors' English communities. In *Adapting to the New World*, James Horn says "... the likelihood of recovering the local English origins of large numbers of settlers of particular Chesapeake counties is remote ...". Perhaps in the case of the Chesapeake Bay immigrants, genetic genealogy can do what traditional paper research cannot.

Figure 1 and 2 - Lewis and Jones Pedigrees

Of my eight great grandparents, all but two were born in Mathews (one unknown, one North Carolina). The remaining six lines and branches trace through Mathews County. They include the surnames Lewis (Figure 1), Marchant, Forrest, Davis, Winder, Hudgins, Peed, Dawson, Mitchem (or Machen) and Jones (Figure 2), Foster, Smith, Armistead, Williams, and Hall. An article that included information gathered at that time appeared in the June 2007 issue of *Family Tree Searcher*.

Figure 1 - Lewis Family

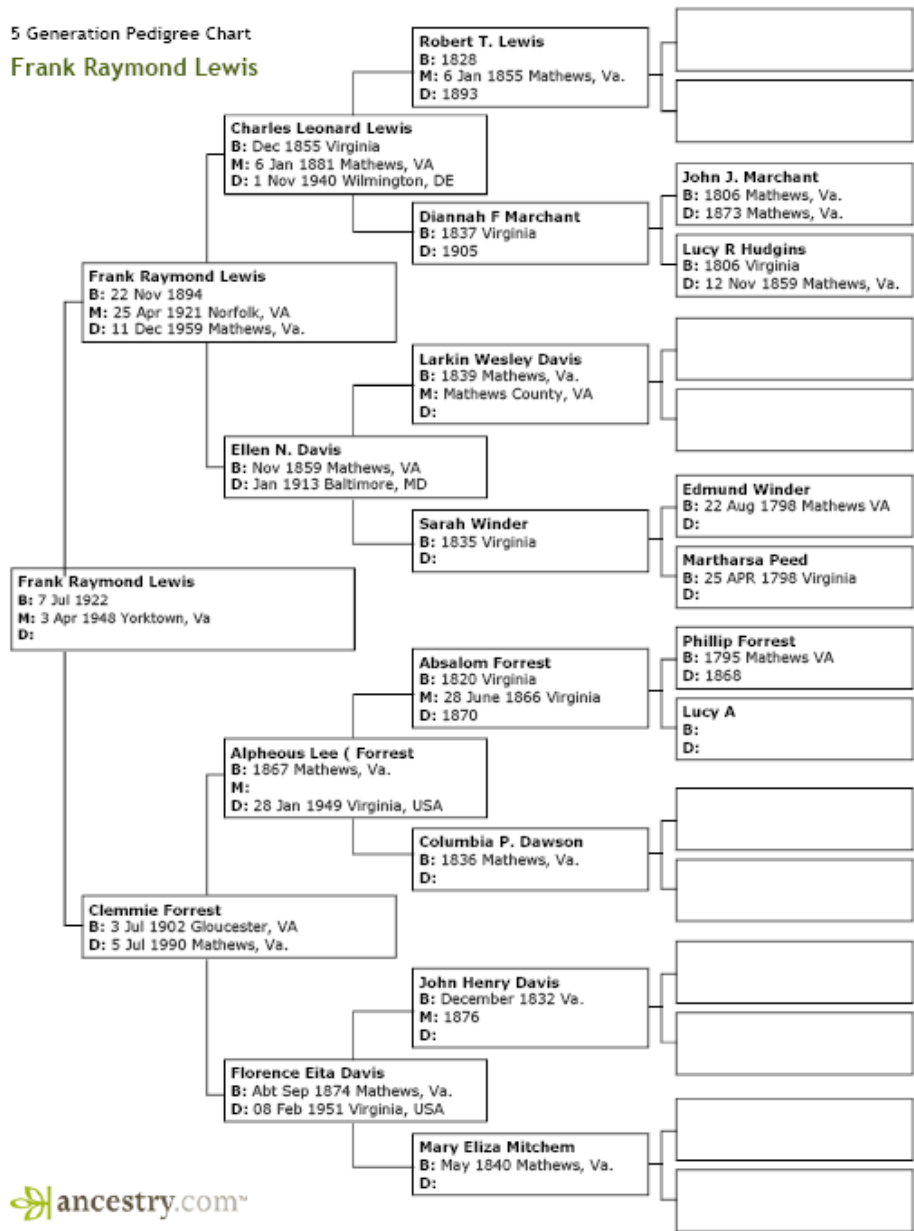
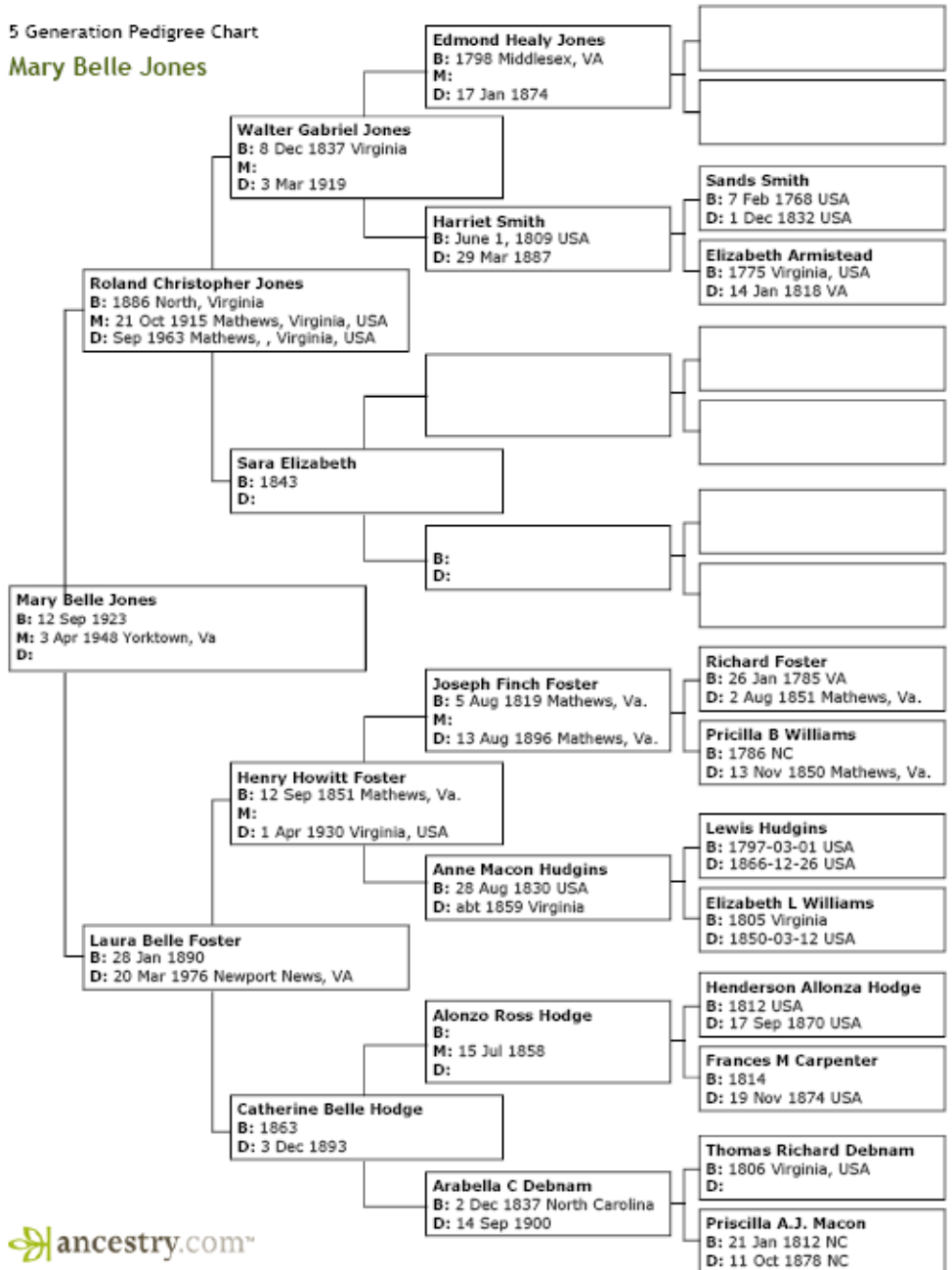


Figure 2 – Jones Family



List 1 - Some Lewises of Gloucester and Mathews

- Land patents were issued to John Lewis Jr. in 1655 and other John Lewises in 1667, 1711, and 1719.
- There were also patents made to Major William Lewis in 1654 and 1656 and Nicholas Lewis in 1773 and 1780.
- Lewises listed in the 1784 First Census of the United States for Gloucester County's Kingston Parish which became Mathews include Thomas, John, Christopher, and Robert.
- The 1810 Federal Census for Mathews includes Chris T. and George Lewis.
- The 1820 Federal Census for Mathews includes Elizabeth, George, James, John R., Nancy, Samuel, Sarah, and Thomas Lewis.
- A land book at the Mathews Clerks' Office shows several Lewises with small lots near a headwater of Queen's Creek where my father, grandfather, great-grandfather, and 2nd great-grandfather lived: George W. Lewis's property abuts land marked "Shipley and Others." (see photo)
- *Lewises, Meriwethers and Their Kin*, by Sarah Travers Lewis (Scott) Anderson, mentions that most Lewis families of Virginia trace their ancestry to one of six Lewis families who did not claim to be kin. One of the six she listed is Zachary Lewis, who emigrated from Wales in 1694. A descendant of Zachary, the Reverend Iverson Lewis, came to Mathews to preach in the area where his cousins lived. His visit led to the founding of Mathews Baptist Church where my Lewis ancestors were active church members.

Photo 1. Plats from book at Mathews Clerks Office

A clan of Lewises lived around the headwaters of Queen's Creek in Mathews before 1850. This photo was taken of a plat in a book at the Mathews County Clerks' Office

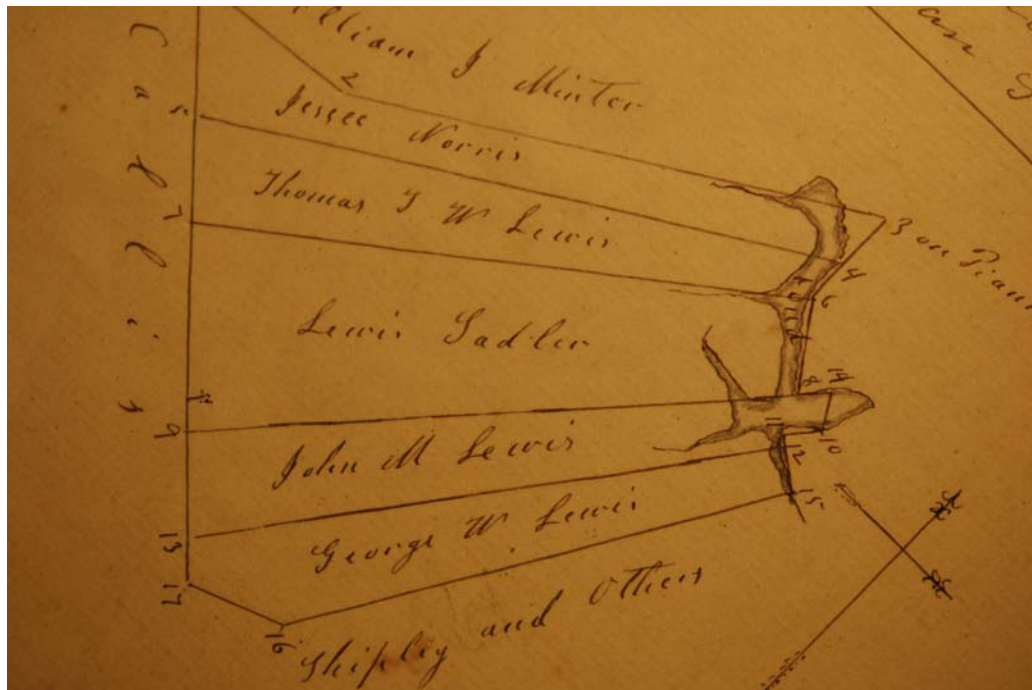


Figure 3. Hierarchy of Haplogroups

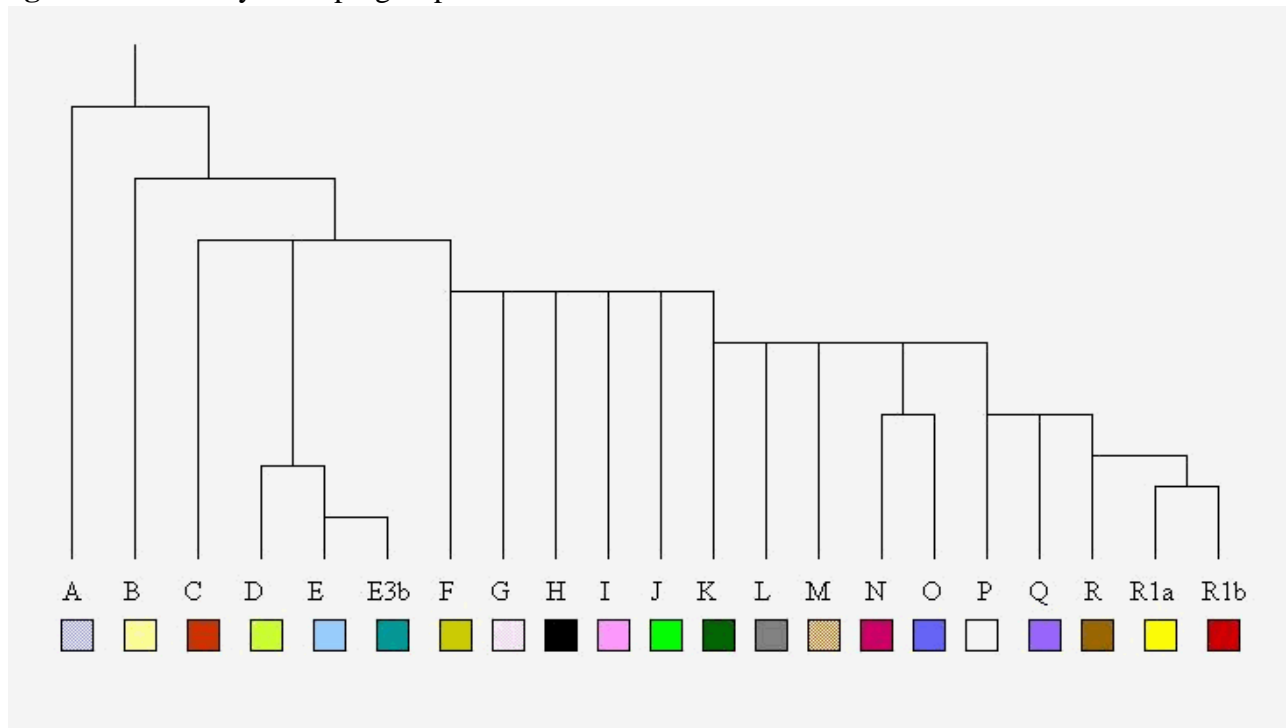


Figure 4. Haplogroup Distribution in England, Wales and Scotland from *Saxons Vikings and Celts*

	England	Wales	Scotland
R1b	64.0	83.2	72.9
I	22.2	11.0	15.4
R1a	5.2	1.4	8.8
E3b	2.1	3.1	1.5
J	2.7	0.7	1.2
Other	3.6	0.7	0.3

Figure 5 - Lewis Haplotypes in I1 Haplogroup

Haplogroup	393	390	19	391	385a	385b	426	388	439	389-1	392	398-2	
Our Haplotype	I1	13	23	15	10	13	15	11	14	11	12	11	28
Other Lewis Haplotypes	I1	13	23	14	10	14	15	11	14	11	12	11	28
	I1	13	23	14	10	14	15	11	14	11	12	11	28
	I1	13	22	15	10	13	14	11	14	11	12	11	28
	I1	13	22	15	10	13	14	11	14	11	12	11	29
	I1	13	22	15	10	13	14	11	14	11	12	11	29
	I1	13	22	14	10	13	14	11	14	11	12	11	27
	I1	13	22	14	10	13	15	11	14	11	12	11	28
	I1	13	22	14	10	13	14	11	14	11	12	11	28
	I1	13	22	14	10	13	13	11	14	11	12	11	29
	I1	13	22	14	10	14	14	11	14	11	12	11	29
	I1	13	22	14	10	14	14	11	14	11	12	11	28
	I1	13	22	14	10	14	14	11	14	11	12	11	28
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	I1	13	22	14	10	14	14	11	14	11	12	11	28
	I1	14	23	14	10	15	15	11	14	11	12	11	28
	I1	13	23	14	11	14	15	11	14	11	12	11	29
	I1	13	23	15	11	14	14	11	14	11	12	11	28
	I1	13	23	14	10	14	14	11	14	11	12	11	28

Figure 6 - Lewis Evans 37-Marker Haplotype Comparison

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Haplo	393	390	19	391	385a	385b	426	388	439	389-1	392	398-2
I1	13	23	15	10	13	15	11	14	11	12	11	28
I1	13	23	15	10	13	15	11	14	11	12	11	28

458	459a	459b	455	454	447	437	448	449	464a	464b	464c	464d
18	a	9	a	11	22	16	20	29	12	14	14	16
17	a	9	a	11	22	16	20	29	12	14	14	16

YCA II a	YCA II b	456	607	576	570	CDY a	CDY b	442	438	531	578
10	10	19	20	15	14	17	21	36	37	12	10
10	10	19	20	15	14	17	21	37	37	12	10

Figure 7 - Lewis-Evan I1 Haplogroup 12-Marker Haplotype Comparison

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I1	15	23	14	10	14	14	11	13	11	12	11	20
I1	15	23	14	10	14	14	11	14	11	12	11	20
I1	15	22	15	10	14	14	11	14	12	12	11	20
I1	15	23	14	10	14	15	11	14	12	12	11	20

Figure 8 - Lewis-Evans I1 Haplogroup 12-Marker Haplotype Matches

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I1	15	23	15	10	13	15	11	14	11	12	11	20
I1	15	22	14	10	13	14	11	14	11	12	11	20
I1	15	22	14	10	13	14	11	14	11	12	11	20
I1	15	23	14	10	14	14	11	14	11	12	11	20
I1	15	23	14	10	14	14	11	14	11	12	11	20

 = Evans
 = Lewis

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