Trees of life & Family Trees, *Recent to Ancient*

My passions for much of my life has been genealogy (tracing my family tree), natural history, and, being a professional horticulturist, plants and trees, especially those native to my home in the Pacific Northwest.

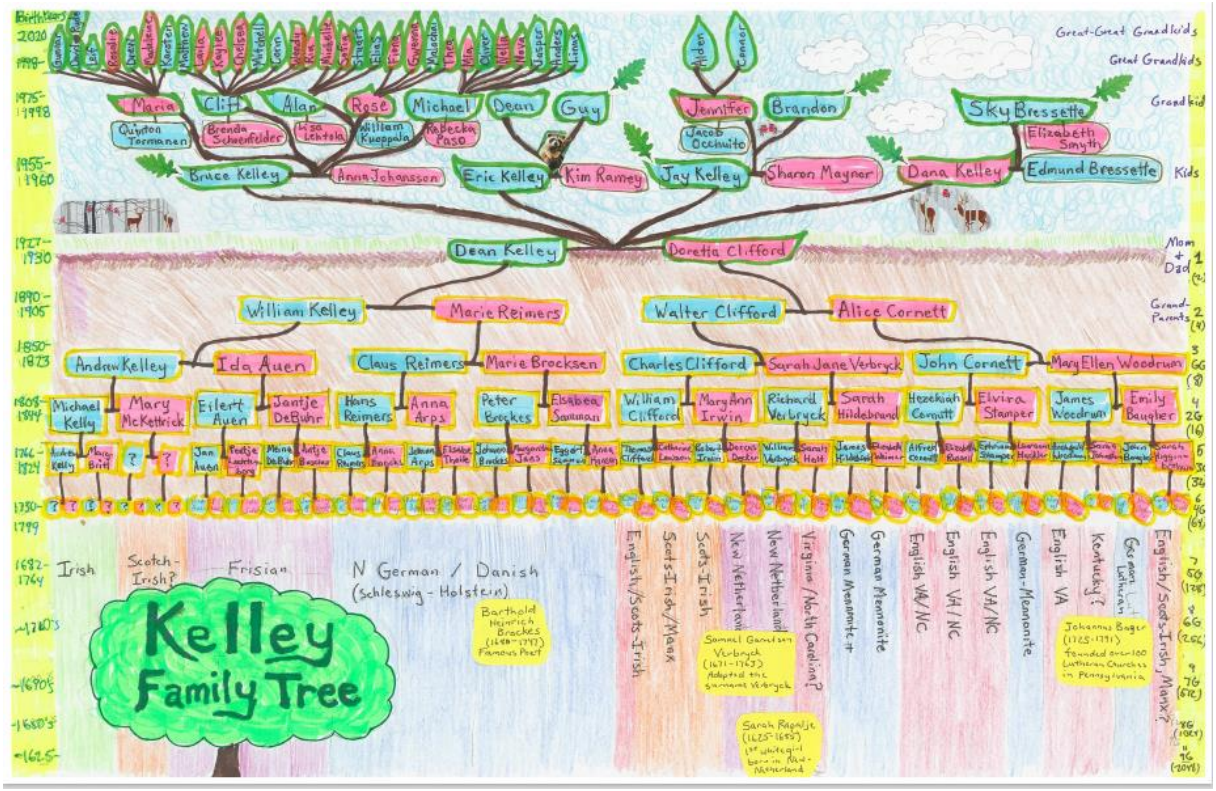
Tree: "*a woody perennial plant, typically having a single stem or trunk growing to a considerable height, developing branches at some distance from the ground".*

A representation of a "Tree of Life."

Trees are used as a metaphor for a pedigree chart of a family's ancestors & descendants.

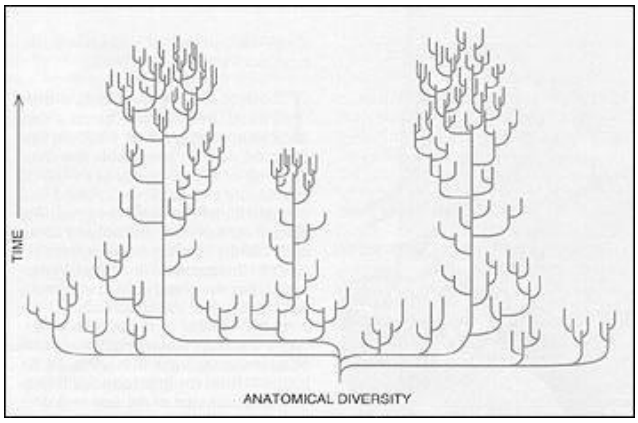
When we trace our ancestral *"roots,"* our family tree has simple bifurcating branches, doubling each generation through maternal and paternal lines. But as we move forward in time in a descendancy chart, a person may have many children, sometimes more than twenty, resulting in the possibility of many descendants in future generations, OR they may have no living children where the branch comes to a dead end, becoming extinct.

Below is my family tree showing the descendants and ancestors of my parents. The "roots" show the doubling of each ancestral generation downward. The "branches" shows the children, grandchildren and current great grandchildren and a great-great grandchild of my parents. As you can see, it is a bit lopsided, with my oldest brother currently having 30 grandchildren, another brother has 2 so far…and none yet for myself and another brother…



The Great Basin Bristlecone Pines, *Pinus longaeva,* are the oldest known trees in the world. One individual is thought to be over 5,000 years old. Many old-growth Douglas Firs, Western Red Cedars, and Western Hemlocks where I live in the Pacific Northwest are over 1000 years old. By comparison only a small percentage of human beings live past 100 years old. In 1000 years, an old growth tree, may have witnessed 30-40 generations of the humans. In 5000 years, they may have witnessed about 200 generations of humans, if humans even lived nearby…

A better analogy for the history of life is not a tree but a bush. As the eminent paleontologist, Stephen Jay Gould, wrote: *"Life is a copiously branching bush, continually pruned by the grim reaper of extinction, not a ladder of predictable progress."* The picture on the right from http://brembs.net/gould.html shows a more representative depiction of the *"tree of life*." To me it looks like a combination of an Aspen Grove which spreads by underground root sprouts and a "Krummholz tree" that is constantly pruned back by the elements in subalpine zones, (Great Basin Bristlecone Pine is one representative Krummholz species.)



"NEW ICONOGRAPHY OF LIFE'S TREE shows that maximal diversity… is reached very early in life's…history. Later times feature extinction of most of these initial

Whitebark Pine, another "Krummholz" tree species (crooked tree in German) shaped by the subalpine elements.

Unless they are avid genealogists like me, few people know much about their ancestry past their grandparents or great grandparents. Even fewer people can trace any of their lines back 1000 years unless they are lucky to trace it to aristocracy in Europe or family histories in Asia where there is documentation of their lines. (Even then there is no guarantee that there wasn't a few NPE's (Non-parental events) along the way (adoptions or children "*born on the wrong side of the blanket;"* this could be children conceived as a product of a premarital or extramarital affair or rape.) Even experienced genealogists are lucky to be able to trace all their lines back 8 generations (in my case about 260 years, to around the 1700's, during the American Colonial Period). It doesn't seem that long ago and may be considered recent history, but looking at it in the perspective of how many generations back it is …it is farther back than we would think…

My most challenging line is my Irish Kelly side because most historical records were destroyed Ireland. (See the unknowns in the right side of my tree on the previous page.) My earliest known ancestors on this line are my 3rd great grandparents, Andrew Kelly & Margaret Britt, born sometime in the 1770's or 1780's. I do not know the names of my 2nd great-grandmother, Mary McKettrick Kelly's parents. Because of her surname, I am just guessing she was Scotch-Irish or Scottish. (I have a romantic notion, that since Michael Britt Kelly often worked as a tutor, maybe she was a governess in a household where he worked. He was 36 when they married. Some family members claim he was studying for the priesthood when he met and married her. I think this may have been guesswork due to the scribblings in Latin and Greek in his bible. They were married in the Church of Ireland, not the Catholic Church.

It is difficult to trace maternal lines because maiden names were often not included on documents; (except in some countries such as Spanish-speaking countries). U.S. census records before 1850 only gave the name of "heads of household," so didn't even include the first name of most women.

Genealogy in most Scandinavian countries is difficult because surnames were not adopted, in some cases, until around 1860. Prior to that patronymic names were used…so there were a lot of Andersons, Johanssons, Hansens, Larsons, etc., making it difficult to know if you have the right "son of," even if records exist…

Genetic genealogy has allowed me to break through a few of my "brick walls." I have been able to compare my family tree to my DNA matches' family trees and have been able determine the exact relationships with some of those "DNA cousins." There are other family lines that I know I descend from but cannot determine the exact lineage that would extend my tree back to a *"Most Recent Common Ancestor"* with those DNA matches.

Other issues make genealogical research challenging. I recently read an explanation of the difference between the terms *endogamy* and *pedigree collapse.* The definitions are as follows.

Endogamy: *"the custom of marrying only within the limits of a local community, clan, or tribe."*

Pedigree collapse: *"The phenomenon in which ancestral inbreeding causes the number of a descendant's distinct ancestors to be smaller than that predicted by a binary tree."*

I found in my own family tree several instances of *endogamy.* The most recent is where my grandfather married the sister of his cousin's wife. But I have also found several instances of the siblings in one family marrying the siblings of another family.

Pedigree collapse is the result of inbreeding when ancestral couples who marry are related to each other in some way (they have common ancestors). The term pedigree collapse comes from the fact that ancestors appear in your pedigree chart more than once, they are not distinct from all the others. Endogamy does not necessarily cause pedigree collapse, unless it occurs frequently over a period of time in a small community such that cousins, close or distant, marry.

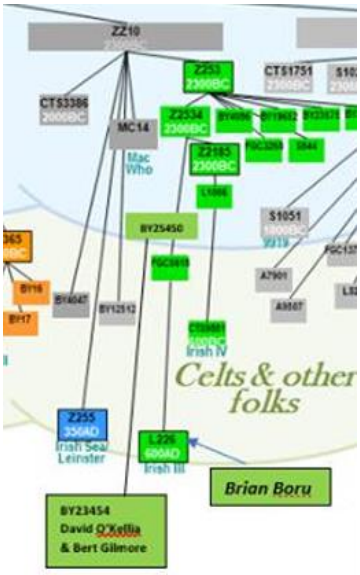
We know that inbreeding may lead to the high incidence of genetic disorders when close relatives marry especially when several generations of cousins (or siblings) marry. Classic cases can be found in royal families of Europe (and Egypt). But single incidences of relatives marrying, may not necessarily result in genetic disorders. My grandmother, who knew I was taking a class in genetics when I was in college, once asked me about the risk, because she thought that she could have married a half-brother without knowing it. I have confirmed that her father had been married and divorced before he married my grandmother's mother through an old photo labelled "John Cornett's first wife," and through newspaper clippings reporting his marriage and divorce. My grandmother also knew her father had had other relationships, as he had had several "housekeepers" after her mother died. After studying my DNA matches, I have not found any *unknown* half-brothers for her, I did find several instances of a couple of her nephews and possibly a brother "*sowing some wild oats."* Her father did remarry again at 53 after he got the 13-year-old younger sister of his son's wife pregnant, ultimately having 3 children with her (The youngest is still alive and is a DNA match to us.) ...another instance of endogamy!

Of course, if we could trace our trees back far enough, we are all related. Our pedigrees would have to "collapse." For each n number of generations back, we have 2^n ancestors of that generation. For example, 20 generations back we would have 1,048,576 ancestors just of that one generation. But in reality, we are likely to have less than that because not all of them would be distinct or different individuals. This would especially

be true in more homogeneous populations where endogamy is prevalent. In my family tree, endogamy is most prevalent in my grandmother's Cornett side from the Blue Ridge Mountains of Virginia and North Carolina. I have several DNA matches who are related 3 to 5 or more different ways from this population. I also have traced the trees of many extended families. My father-in-law's heritage is all French-Canadian and my mother-in-law's mother's side are all ethnic Germans from the Odessa region in "Little Russia" what is now Ukraine. The ways that these family trees criss-cross make them more confusing, and being of just one ethnicity, less interesting to me. Consequently, I currently do not spend much time researching on those trees. Other lines have more interesting stories to tell and puzzles to solve.

My folks started doing genealogy in the 1980's. Back then most was done through correspondence in the mail, sending away for documents and contacting distant relatives. My mom had begun corresponding with several distant relations on my grandfather's Clifford side from Ligonier, Pennsylvania. Back then, people would send each other their pedigree charts and family group sheets, so comparisons could be made. Today, at Ancestry.com, we do the same thing, except we can look at other people's trees without making direct contact with them. The problem is that many trees have errors where assumptions were made, and that error is copied repeatedly to other people's trees. But we also had that same problem back then. My 4th great-grandfather, Charles Clifford, was married to a woman by the name of Jane Gordon. Some researchers had assumed that she was the daughter of a Thomas Gordon from Hunterdon, New Jersey, simply due to proximity to the Cliffords. Thomas Gordon's line traces back to aristocracy in Scotland and to early Stuart Kings of Scotland and Robert the Bruce. Other researchers, however, started to question this connection, especially since Thomas Gordon's known children had names such as Epenetus, Agesilaus, Franklin & Othniel. Would he have a had a plain Jane. too? Although I do not think that Thomas Gordon is her father, I believe that Jane Gordon was a Scotch-Irish girl who was related to this family in some way, possibly a niece. I have tried using DNA matches, including from DNA shared with me from distant Clifford cousins, to determine some possibilities of her parentage, but every time I thought I had some possibilities, I would check to see if I could find the same ancestral couples in DNA matches of other people unrelated to the Cliffords, and they would show up in those match lists, too…Some of those early colonial Americans had so dang many descendants, that when you search for that surname, that person or ancestral couple, will show up in some of almost everyone's matches' trees! It is soooo frustrating that ancestry.com does not have a chromosome browser and does not show more distant shared matches, so that you can tell whether the matches with potential shared ancestors are likely to be on the right side of the family!

Even though I cannot document my lineage back to Robert the Bruce, I still believe he is my ancestor as is shown by the math in this YouTube video: EVERY baby is a ROYAL baby – Numberphile https://www.youtube.com/watch?v=Fm0hOex4psA. By the same reasoning, I also believe I descend from Brian Boru, William the Conqueror, Charlemagne, and perhaps some distant German rulers…whose histories I am not as familiar. (Our Kelley/Kelly paternal haplogroup *IS* closely related to the O'Brien's who descend from Brian Boru.)



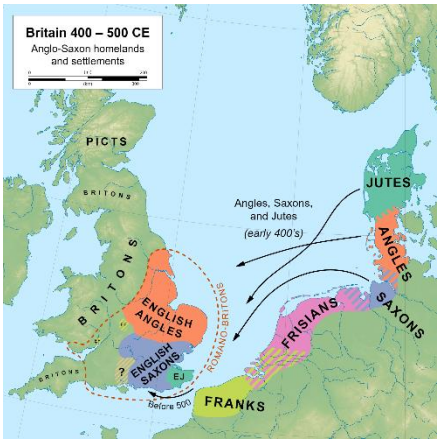
Our closest Y-DNA matches descend from David O'Killia. Our shared haplogroup has been updated to R-BY123821 (Bert Gilmore remained in BY23454).

Ethnicities

Following is a chart of my and my brothers' predicted ethnicities:

Ethnicity estimate from our family tree		**Ethnicity estimate from Ancestry.com**	**Dana**	**Bruce**	**Eric**
Schleswig-Holstein	25%				
Other West German/Swiss/Alsace	12.5%	Germanic Europe	12%	23%	25%
East Friesland	12.5%				
New Netherland *(mostly Dutch but included Belgium, France, Germany, Schleswig-Holstein, East Friesland, Spain, Norway, & England.)*	6.25%				
English	21.9%	England & NW Europe	52%	29%	36%
Scotch/Manx	15.6%	Scotland	16%	27%	6%
Irish	6.25%	Ireland	2%	2%	2%
		Wales			3%
		Norway	10%	15%	14%
		Sweden	2%	4%	12%
		Finland			2%
		Baltics	1%		

As you can see, most of my North German, Frisian & Dutch, gets lumped into Ancestry's category "England & NW Europe." Since England was settled by the Angles, Jutes, & Saxons, (among others), they are very closely related to my Northern Germans. My brothers got more of the Scandinavian from those Northern Germans, especially my blonde brother, Eric (My red-headed brother got more Scotland, whereas, I, a strawberry blonde got more England & NW Europe). As I have delved more deeply on my mother's tree, I found that all her "Irish" appears to be Scotch (Scotch-Irish or Ulster Scots) or Manx, (maybe some Flemish, too). Some of our Scandinavian is likely due to the Vikings, and is probably why our Irish estimates are so low. I also noticed that I had several Norwegian DNA matches at myHeritage, who appeared to be related on my Frisian side. The Frisians in particular were known as sailors, they traded widely, so are likely to have intermixed frequently with other ethnicities. My ancestry going back to New Netherland (The Netherlands includes West Frisians), another center of trade, is also mixed.



I like to say the North Sea is my Ethnic Center!

I heard this quote as I was researching history of Scotch-Irish in America "When the English would arrive in the New World, the first thing they would do would be to build a church, the Germans would build a barn, but the Scotch-Irish would build a whiskey still." My mom's ancestry is mostly of those 3 ethnicities, along with the New Netherland component: percentages from her tree (& ancestry estimates): 43.8% (44%) English, 25% (21%) German, 18.7% (31%) Scotch-Irish/Manx, 12.5% New Netherland, & (4%) Norway). Her ancestry typifies the history of colonial America. Depending on the class they were from, the English came as empire builders, younger sons looking to make their fortunes, those looking for religious freedom or those pressed into service of the others. The Germans were looking for land to farm as well as religious freedom. The Scotch-Irish were known as fierce fighters who valued their independence, both in religious matters and in politics. Their

fighting skills were highly valued as settlers pushed into the wild frontiers. The New Netherlanders were focussed on trade and being a much more diverse population, helped to establish our ideas of tolerance for different ethnicities and religions.

Ancient Ancestors

Family tree DNA gives you a likely percentage of autosomal DNA that you may have inherited from 3 major groups of Ancient European Peoples. GEDmatch also has some admixture calculators for these groups. There was some variablility in these results for me. In addition, they had different names and I was unsure whether, the names were equivalent in each category, but I summarized them in the following table:

Group	**FtDNA**	GedMatch puntDNAL K10	GedMatch puntDNAL K12	GedMatch GedrosiaDNA Ancient EurasiaK6	Mean, Median, Mode
(Western) Hunter-Gatherer	42%	46%	40%	42%	42,42,42
Early (Anatolian Neolithic) Farmer Natufian?	45%	27%	36%	36%	36,36,36
Metal Age Invader (Caucus Hunter-Gatherer)	14%	25%	22%	20%	20,21

Looking at a chart for the averages from different countries for the Gedmatch puntDNAL K12, mine is close to what would be expected from weighted averages for my different ethnicities, I get: Actual/Average:

- Western Hunter-Gather 40/45
- Anatolian Farmer 36/33
- Metal Age Invader 22/20

So I have a little less Hunter-Gatherer and a little more Anatolian Farmer and Metal Age Invader than the expected average, but it is close. I was closest to the average for the English: 43.5/35/19 which would make sense with my highest predicted ethnicity at Ancestry being English & NW Europe at 52%.

Western Hunter Gatherers were likely the earliest inhabitants of Europe. "During the Mesolithic (10,000 – 4,000 BC), the WHGs inhabited an area stretching from the British Isles in the west to the Carpathians in the east."

Early Neolithic Farmer: Neolithic (4,000 – 2,000 BC) In Wikipedia it says: "agriculture was brought to Western Europe by the Aegean populations." One calculator called them Anatolian, which is on the east side of the Aegean Sea…another said Natufian, which basically goes back nearly to the Fertile Crescent and the advent of agriculture in the Middle East.

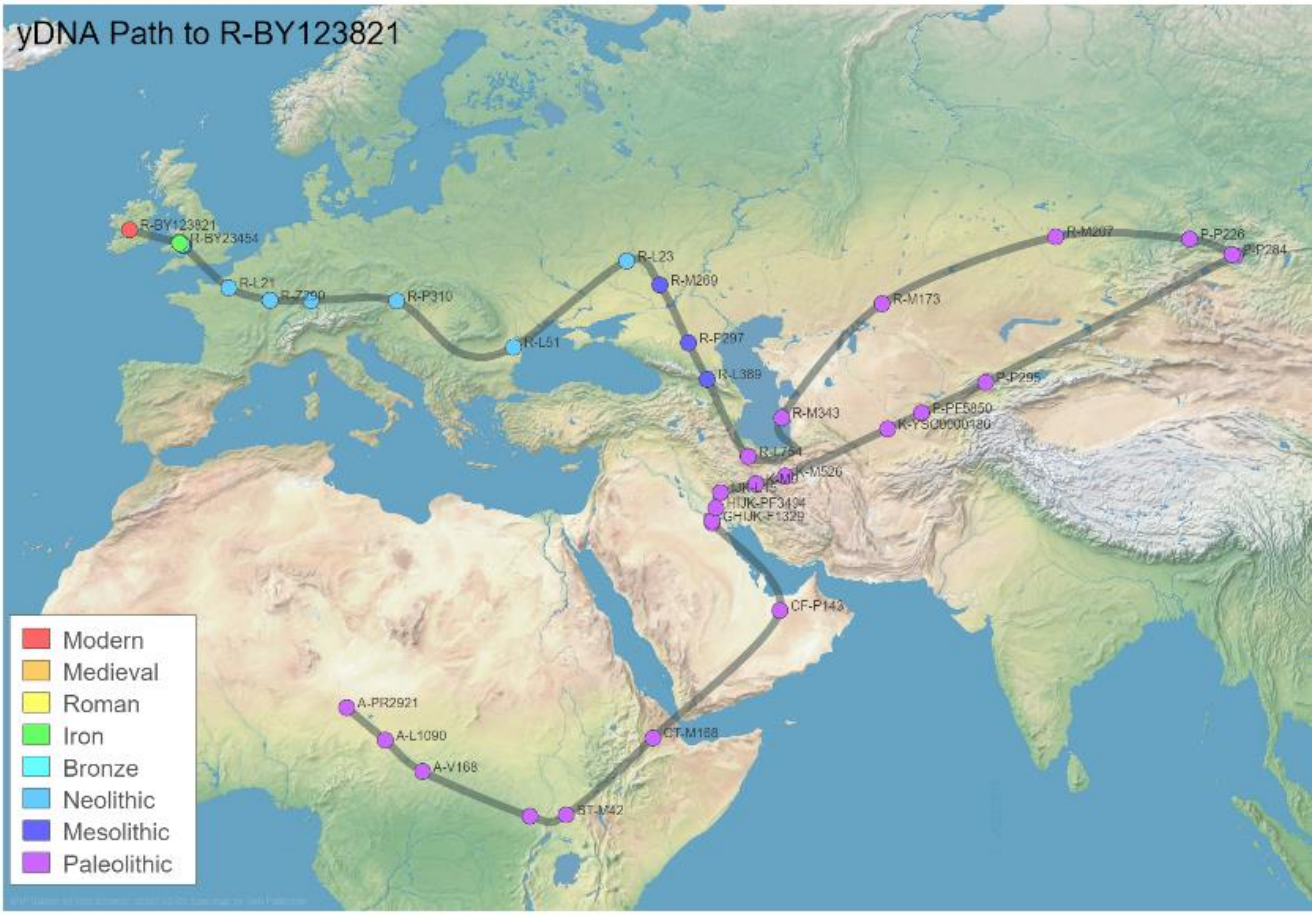
Metal Age Invader: "The people of the Yamnaya culture were likely the result of a

- **Stone Age**
  - Paleolithic Era (2,500,000 – 10,000 BC)
    - Lower Paleolithic (2,500,000 – 200,000 BC)
    - Middle Paleolithic (200,000 – 40,000 BC)
    - Upper Paleolithic (40,000 – 10,000 BC)
  - Mesolithic Era (10,000 – 8,000 BC)
  - Neolithic Era 8,000 – 3,000 BC)
- **Metal Age**
  - Copper Age (4,500 – 3.500 BC)
  - Bronze Age (3,300 – 1,200 BC)
  - Iron Age (1,300 BC – 200 AD)

genetic admixture between the descendants of Eastern European Hunter-Gatherers and people related to hunter-gatherers from the Caucasus. People with this ancestral component are known as Western Steppe Herders." This is an interesting group because this population, associated with the domestication of horses, ushered in the Bronze Age (3,300 – 1,200 BC). These people are thought to have brought the Proto-Indo-European language to Europe and West Asia from which most of the today's existing European, West Asian and Indian languages descend. *The term Causcasian for white Europeans was developed because 18th century scholars thought that humans had their origin in the region of the Caucasus Mountains, where they thought Noah's Ark landed. They thought that other races either evolved separately or were degenerate from original humans. But we know now, that all humans evolved in Africa. But, It is clear that the Western Steppe Herders from just north of the Caucasus Mountains had a significant impact on human history in Europe, West Asia, and the much of the world and created a new "beginning," by spreading the technologies of metallurgy and horsemanship.*

Y-DNA studies have shown that the most common European haplogroup is R-M269. This haplogroup is thought to have descended from the Yamnaya, those Metal Age Invaders/horseman. This means that most men in Europe's paternal lines, descend from these people.

As I showed before my paternal Kelly line descends from Irish type III Celts, which are downstream of R-M269 (see the last dark blue circle in the map below). They descended from proto-Celts who date from the late Bronze Age, ca. 1200-900 BCE. Who in turn descended from the Bell Beaker culture which arose around 2800 BCE. The Bell Beakers descended from Yamnaya culture, "the Metal Age Invaders" as described above, who lived from about 3300 BCE to 2600 BCE, from the late Copper Age to the early Bronze Age. You can see the approximate path of our YDNA haplogroup through the Bronze age in light blue below.

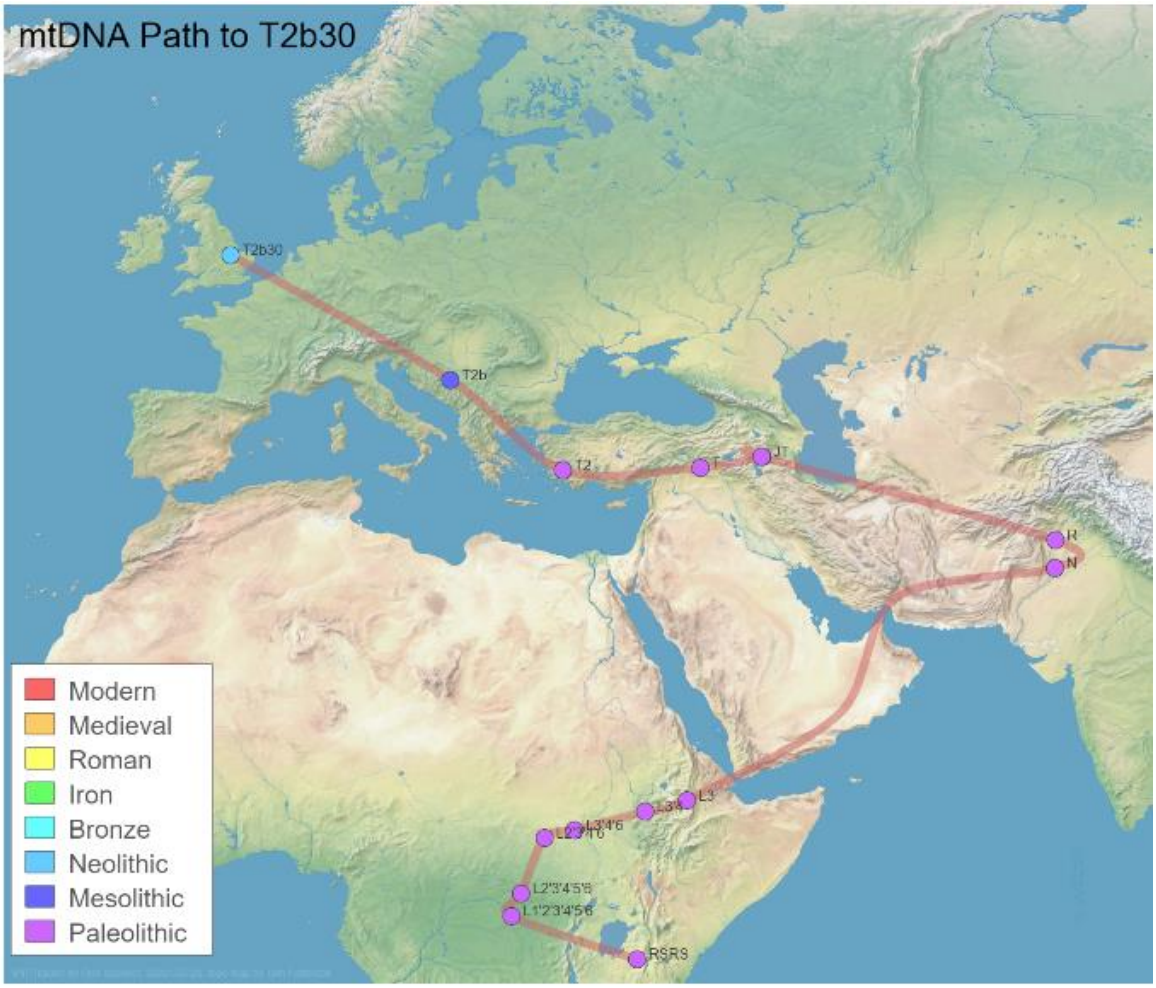


Code version 2021-05-29; Y tree updated 2021-05-16; mt tree updated 2021-05-16

(A teacher I had in high school, who was of Irish descent, used to say: “All the Irish are good for is drinking and fighting among themselves.” I know it is a stereotype, but it is my impression that the early Irish and Scots, with their clan loyalties, spent most of their time fighting and stealing each other’s cattle…perhaps a cultural behavior inherited from those Metal Age Invaders?)

In contrast, it is much more difficult to assign my mitochondrial DNA, my maternal line, to one of these major groups. My mtDNA haplogroup is T2b30. T2b is considered by far the most successful, accounting for roughly half of all T2 individuals in Europe. Haplogroup T2b was found in skeletons from late Mesolithic hunter-gatherers Sweden and is the best evidence so far that this haplogroup was present in Europe before the continent was colonized by Neolithic farmers. They were absent from the Fertile Crescent during the Early Neolithic Period, but two T2b lineages were found in in early Neolithic skeletons (c.6350 BCE) in northwestern Anatolia, so it appeared to be present among near Eastern Farmers before they entered Europe. T2b was also present in samples from the Bronze Age, Corded Ware Culture and the Unetice culture, who were associated with proto-Germanic and Proto Celtic-Italic speakers. ---So it appears that the haplogroup was widely spread and likely originated in Hunter-Gatherers, but they intermarried and assimilated, and were swept along with the migrations of Anatolian Farmers and later with Bronze Age Invaders in Europe.

My earliest known ancestor on my maternal line is Ann Scott Higginbotham (b. ca. 1781 in North Carolina). Looking at the genealogies of several of my mtDNA matches, I believe she might descend from a family named Haynes, possibly a daughter of James Scott and Mary Haynes. If I follow her maternal line back, it goes back to Northern Ireland, then Scotland, and then Isle of Man. My matches self-reported that their ancestors came from England (1), Ireland (2) and Scotland (1) … (one from Czechia (Bohemia)). (I believe the ones from Ireland were likely Scotch-Irish).

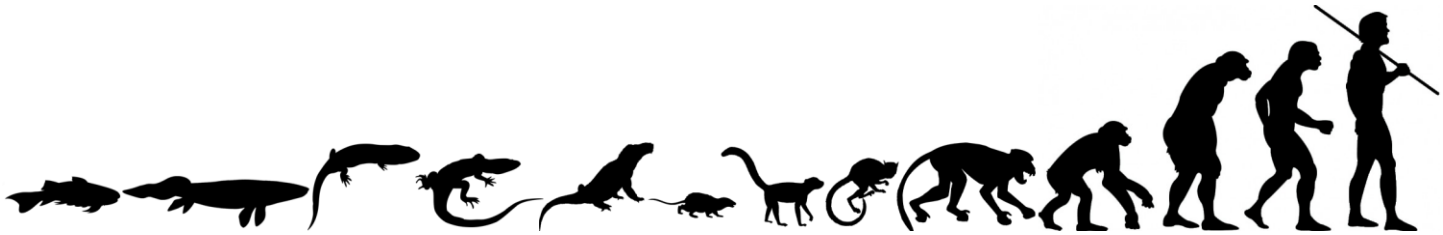


Code version 2021-05-29; Y tree updated 2021-05-16; mt tree updated 2021-05-16

Homo sapiens are only one surviving branch of a much more diverse family tree of hominid species. We now know, however, that Homo sapiens and Neanderthals interbred and many of us carry some of those Neanderthal genes. So a bit of Neanderthal remains with us. Some people also carry the genes of Denisovans who were more recently identified using DNA analysis on a finger bone found in a cave in Siberia in 2010.

Neanderthals interbred with modern humans about 47,000–65,000 years ago (late middle Paleolithic). According to DNA tests, I reportedly have 226 Neanderthal variants or about 1.5% Neanderthal. 1.5% would be equivalent to having a 4th great-grandparent who was Neanderthal, except that the chromosome segment sizes inherited from Neanderthals are likely much smaller since they are farther back…

We are all related, it just depends on how far back we must go to get the MRCA, *most recent common ancestor,* even if we must go back to Africa all the way to Mitochondrial Eve or Y-chromosomal Adam! Mitochondrial Eve is the maternal ancestor of all living humans. Y-chromosomal Adam is the paternal ancestor of all living humans. Estimates vary but they both appeared to have lived about 200,000 years ago when modern humans emerged in Africa, but it is possible that they were not modern Homo sapiens… It is important to note, that Mitochondrial Eve & Y-chromosomal Adam were NOT the first humans, it is just that their mtDNA & YDNA were the only ones that survived to be passed down to all living humans today.



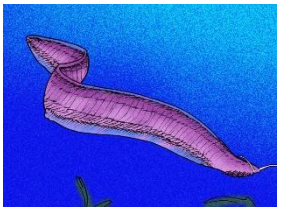
*Our **"Inner Fish"** It was about ~375 million years ago when the first fish crawled up onto land.*

Mammals, birds & modern reptiles descend from a common reptilian ancestor which lived ~320 million years ago.

Earliest Mammals evolved ~200 million years ago. During the time of the dinosaurs, small mammals (mostly shrew- sized) lived in their shadow. Soon after the end-Cretaceous mass extinction (66 million years ago), many new species of mammals evolved.

The first primates appeared about 55 million years ago.

Modern humans evolved about 200,000 years ago.



Pikaia was a primitive chordate, a possible ancestor to all vertebrates. It was discovered in the Burgess Shale. It lived about 530 million years ago.

Eucaryotes, organisms whose cells contain a distinct nucleus with chromosomal DNA, appeared ~ 2.7 billion years ago. They are thought to have evolved from simple bacteria that captured other bacteria which became mitochondria and chloroplasts (in plants).

Life itself began on earth about 3.5 billion years ago. It is hard for us to conceive of the immensity of that amount of time…but it is amazing what nature has wrought…what we see and what we are now are all contingent on events of the past… ***"Oh, What a Wonderful World."***