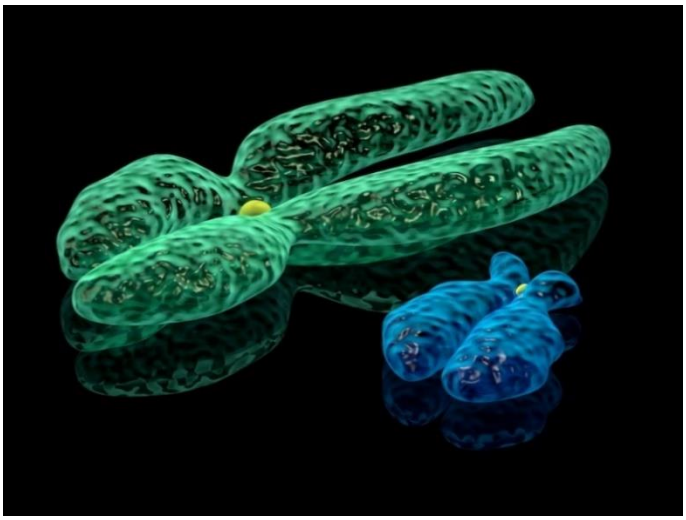
YOUNG Y-DNA TESTING

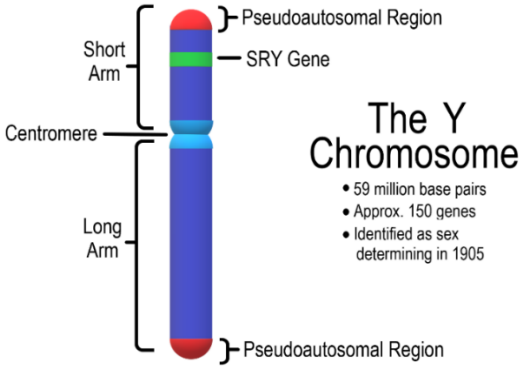
The Y Chromosome

In addition to 22 pairs of autosomes (which include most of the human DNA and coding genes), there are two sex chromosomes – the X and the Y. In general females of the species have two X chromosomes, and males have an X and a Y chromosome – the Y being inherited from the father and his father and so on in the direct paternal line back to the beginnings of the species.

The Y is among the smallest chromosome and includes about 63 genes along the 57,227,415 base pairs of the building blocks of DNA, adenine, guanine, cytosine, and thymine (AGCT) along the double helical shaped strands. One gene, the SRY, codes for "maleness". If born with this gene then generally one becomes a biological male (e.g., development of testis), otherwise an individual is born who is typically female (always a few exceptions – which are not germane to the discussion here).



X chromosome on upper left, Y chromosome on right



A good review paper on the structure and function of the Y can be found here.

Y-STRs and Haplotype Testing for Genealogical Purposes

In the early years of commercial genetic genealogy testing, when the goal was typically to determine whether two men were biologically related in the Y-chromosome paternal line, what was measured in Y-chromosome testing is a series of 12 to 67 markers (111 marker plus tests are now available), called short tandem repeats (STRs), situated along the length of the chromosome providing a haplotype (genetic signature) for the person which should be almost identical to those who are related within a genealogical timeframe (e.g., past 500 to 1000 years). This DNA is essentially "junk DNA" in that it serves no known purpose, but is very useful for detecting similarities and differences between males. Basically the scores at all say 25 markers should be identical between a father and his biological son; and between individuals who are descended from a common ancestor in the last few hundred years (with occasionally up to three mutations in 25 markers). Most people are interested in the period since surnames were adopted - about 1200 AD. In that time frame of 800 or so years, if two individuals have the same surname but a very different patterns of scores (e.g., only 15 of the 25 STR markers match) they are not likely related through the male line. If, however, there are only four differences in the scores between two men with the same surname, it is probable that they had a common ancestor – IF it can be shown that they belong to the same haplogroup (more on this later).

As noted above, and to repeat, in addition to its key role in human development, the Y also includes factors which can tell the story of a person's regional and ethnic ancestry, and their relationship to other males who may be related (e.g., whether they are likely say a third cousin, sharing the same great great grandparents). Commercial testing of STR (short tandem repeat) markers (e.g., a male has 25 ACCCTGGAT repeats at a marker named say DYS270) allow the comparison of the results for two males on for example 37 such markers. A 36/37 match would suggest a relatively close relationship, somewhere between first degree and say 8th degree relatives in the direct male line. While this testing can be informative within a genealogical time frame (e.g., since parish registers were first begun – typically in the 16th Century), it will falter in the attempt to explore distant ethnic ancestry (e.g., whether geographical origins are to be found in Switzerland or Ireland). This is where SNP (single nucleotide polymorphism) haplogroup testing can offer potential answers.

One of the earliest DNA projects by the present author was to discover the Y chromosomal signature of Adam YOUNG (1717-1790), the patriarch of the YOUNG family of Wentworth County and the Grand River, Ontario. Adam was born as Johann Adam JUNG at Foxtown (Fuchsendorf), Schoharie, New York on 7 May 1717 and died in January 1790 in Seneca Township, Haldimand County, Ontario. Adam was of "Palatine German" descent, his father being Johann Theobald JUNG / David YOUNG (1691-1763) born in Germany, died at Canajoharie District, Mohawk Valley, New York. Theobald arrived in America with the Palatines in 1709. Adam's grandfather was Johann Andreas JUNG (1645-circa 1696), and his great grandfather was Johannes JUNG – all of Dunzweiler, Kusel District, Zweibrucken, Rhineland - Palatinate, Germany.

Adam was an adamant "King's man" and went to jail in Norwich, Connecticut for this loyalty to the established order. He was an owner of thousands of acres of land in the Mohawk and Susquehanna Valleys. Upon returning home and failing to, in the eyes of the Rebels (Patriots), mend his ways, he was eventually burned out of his home in 1778 and with his two youngest sons left to join the Loyalist cause. All three joined Butler's Rangers at Niagara. His middle son Sgt. Daniel YOUNG was already serving with the Rangers; and his eldest son John YOUNG was a Lieutenant in the Six Nations Indian Department.

1) **Close Relatives**:

There is a danger in testing only one descendant of Adam since there could have been an unrecorded event at some point in the past which would break the biological link between the present generation, and the generation of Adam and his brothers. The way around this problem is to test males with the YOUNG surname who are genealogically proven to be descendants of two (or more) of Adam's sons.

The goal was achieved by testing Larry YOUNG (descendant of Lt. John YOUNG and 4th great grandson of Adam YOUNG) and Ken YOUNG (descendant of Captain Daniel Young and 6th great grandson of Adam YOUNG). John and Daniel were sons of Adam, so if the descendants in each line match on Y-DNA testing, we have the exact Y-chromosome signature of Adam. Although the author is a descendant of two sons of Capt. Daniel Young and a son of Lt. John YOUNG, his Y-DNA signature is useless in this quest – only descendants in the direct male line will carry the Y chromosome inherited from Adam YOUNG.

The method that would provide an answer to the quest was to test both Larry and Ken with 37 Y-STR (short tandem repeat) markers. These Y-DNA markers are useful in genealogical research since with each passing generation the possibility of one or more mutations in the number of repeats increases. A 37/37 match would be ideal, but since the most recent common ancestor for Larry and Ken was Adam, born 1717, one or more mutations would be expected. Although 8th cousins could match at 37/37 markers, this would be a low probability event. The author's father and his second cousin "match" at only 34/37 markers (although autosomal DNA matches of the 22 paternal non – sex chromosomes are at expected levels within all branches of the family). Therefore, in the case of testing Larry and Ken, a finding of a match will be defined as a matching profile of 33/37 markers. This will be the definition providing evidence for a common Y chromosome signature.

The results showed that Larry and Ken match on 36/37 markers, and one can surmise that their ancestor Adam YOUNG had precisely the same repeat values at these 36 positions. The only difference was that Larry has 29 repeats at marker DYS449, and Ken has 28 repeats at this loci along the Y-chromosome. Thus, the only unknown re the 37 marker Y-DNA signature of Adam YOUNG is at this single loci. The allele (repeat) values of each of these markers are shown in the accompanying certificates for Larry and Ken below.

FamilyTreeDNA

Certificate – Y-DNA

This Certificate confirms that you have had your DNA analyzed by Family Tree DNA. The outcome from each of the thirty-seven Loci examined is reported in the table below.

For your benefit we have listed the Locus designation for all thirty-seven Loci utilized by the geneticists supporting our company. If your alleles for the thirty-seven Loci match another person exactly, then you share the same Haplotype.

Family Tree DNA 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.

Mr. Lawrence John Young

Your Kit # **17123**

	DYS393	DYS390	DYS19	DYS391	DYS385	DYS426	DYS388	DYS439	DYS389-I	DYS392	DYS389-II
Allele	13	25	14	12	11-14	12	12	12	13	13	29
	DYS458	DYS459	DYS455	DYS454	DYS447	DYS437	DYS448	DYS449		DYS464	
Allele	17	9-9	11	11	24	15	20	29		15-16-17-17	
	DYS460	GATA-H4	YCAII	DYS456	DYS607	DYS576	DYS570	CDY	DYS442	DYS438	
Allele	11	10	19-23	16	14	15	17	37-38	12	12	

January 27, 2015

Concetta A. Bormans

FamilyTreeDNA

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This Certificate confirms that you have had your DNA analyzed by Family Tree DNA. The outcome from each of the thirty-seven Loci examined is reported in the table below.

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Family Tree DNA 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.

Kenneth Young

Your Kit # **7552**

	DYS393	DYS390	DYS19	DYS391	DYS385	DYS426	DYS388	DYS439	DYS389-I	DYS392	DYS389-II
Allele	13	25	14	12	11-14	12	12	12	13	13	29
	DYS458	DYS459	DYS455	DYS454	DYS447	DYS437	DYS448	DYS449		DYS464	
Allele	17	9-9	11	11	24	15	20	28		15-16-17-17	
	DYS460	GATA-H4	YCAII	DYS456	DYS607	DYS576	DYS570	CDY	DYS442	DYS438	
Allele	11	10	19-23	16	14	15	17	37-38	12	12	

January 27, 2015

Concetta A. Bormans

1) **Distant Relatives**:

In doing recent haplogroup testing of Ken Young, new Y-STR (haplotype) results were included including an upgrade of up to 700 markers. Ken had 3 matches at this level (I have zero to anyone, for example) as follows:

a) The highest match was to a person from the USA with the surname **YOUNG**, whose ancestor Norman YOUNG was born about 1836 in Camden Township, Lennox and Addington County, Ontario via son Frank YOUNG born 18 May 1867 in Tamworth, same county. The match with Ken was 670/674 which is extremely high – with an estimated time to most recent common ancestor (TMRCA) via FTDNATiP = 1500 – 1850 AD. Further genealogical work shows that the above family can be traced to Johannes Heinrich JUNG born 24 January 1716 Schoharie, NY and died 23 August 1789 Canajoharie, NY. He was the son of the "mysterious" Hendrick JUNG who is closely associated with the father of Adam YOUNG, Johann Theobald JUNG born 12 August 1691 Dunzweiler, Kusel, Zweibrucken, Rhineland – Palatinate, Germany and died 1763 Canajoharie, NY. This association is seen in the Hunter Ration Lists as well as the residences in the Mohawk Valley. The eminent Palatine researcher Hank (Henry Z.) Jones has looked diligently for any paper trail connection between the above Hendrick JUNG and his apparent close relative Theobald JUNG but without success. Clearly, they are related based on the genealogy, and the DNA evidence shows that Hendrick and Theobald were likely brothers or perhaps the former was an uncle of the latter – but the specifics remain elusive.

b) A second and third match were close relatives to each other, one with the surname **KLEIN** (607/674 matching markers with Ken – TMRCA 950 to 1650 AD) and the other **ROBERTSON** (653/665 markers with Ken – TMRCA 950 to 1650 AD) – again, very high matching. Both were descendants of Johann Daniel KLEIN / LITTLE born 17 December 1731 in Kusel, Zweibrucken, Rhineland – Palatinate, Germany, and died 10 December 1775 in Salisbury, North Carolina, USA, son of Johann Heinrich KLEIN. Many of the ancestors and close kin of the YOUNGs of the Grand River, Ontario were baptized or married at Kusel or Zweibrucken, the closest large towns to Dunzweiler, the home village of the YOUNGs. Hence there is significant geographical proximity between the YOUNG and KLEIN families in Germany. However, the KLEIN genealogy (as seen via Public Member Trees on Ancestry dot com) show earlier locations for that family. If the data can be validated, then the family were found in the nearby Saarbrucken area e.g., Daniel KLEIN born 1633 Bornheim, who was the son of Martin KLEIN born at Fort, Bas – Rhin, Alsace, France (not far from Saarbrucken). The above Y-STR matches support the matching Y-SNP haplogroups as seen below.

Y-SNPs and Haplogroup Testing

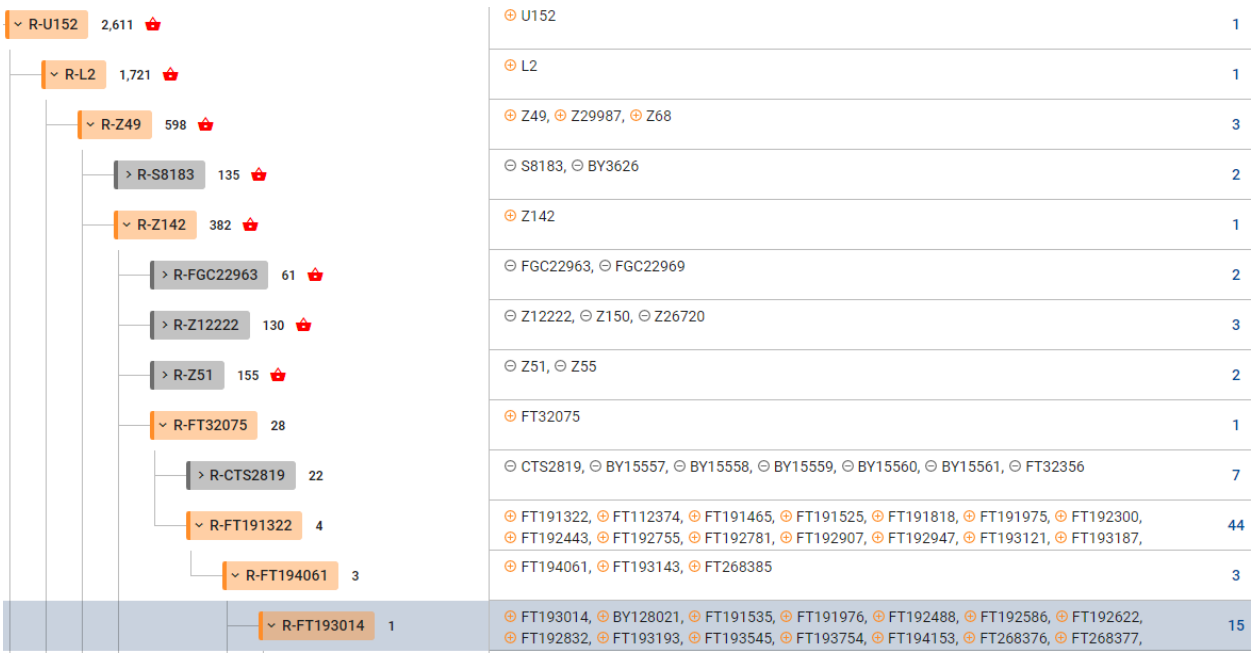
In order to determine the more anthropologically significant Y-chromosome result, the author requested that Larry's DNA sample be subjected to detailed haplogroup testing to determine the

"terminal SNP" (single nucleotide polymorphism) which would suggest the distant origins of the YOUNG family Y-chromosome.

The early testing revealed that Larry (and therefore all descendants and antecedents in the direct male line) belonged to haplogroup **R-U152 > L2,** known as the "Alpine – Celtic" or "Celtic – Italic" haplogroup. This grouping is very common in the western regions of Central and Southern Germany, and is probably a legacy from the early (Bronze Age) proto - Celtic peoples of the area, and / or more recent Hallstatt or La Tene Celtic tribes.

Since the initial testing in 2005, the field of genetic genealogy and the phylogenetic tree has expanded almost exponentially. Therefore, it is highly likely that the Adam YOUNG Y-DNA descendants would have other informative SNPs below the above R-L2. Hence, the author recently ordered a Big Y 700 test for Larry YOUNG from Family Tree DNA in order to have a more precise specification of the haplogroup of Adam YOUNG. Unfortunately Larry's DNA had degraded so that it could not be used in this testing. Therefore, the author requested that the DNA of Ken YOUNG be used instead. The data are now available and the results are as follows. With this more "in depth" probing, it may ultimately be possible to make good probability statements about the early / ancient (post Bronze Age) origins of the JUNG family.

1) **<u>Terminal Haplogroup</u>**:



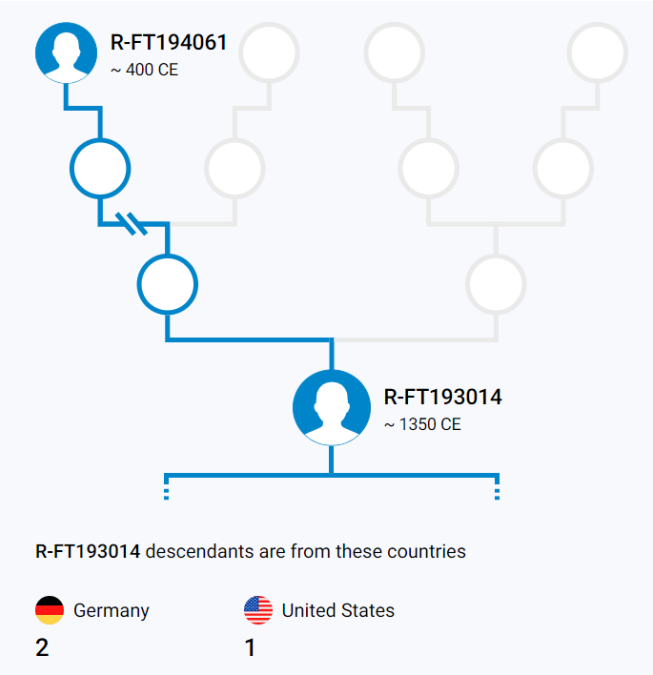
The above chart shows the Y- SNPs from the common R-U152, which can be diagramed as follows:

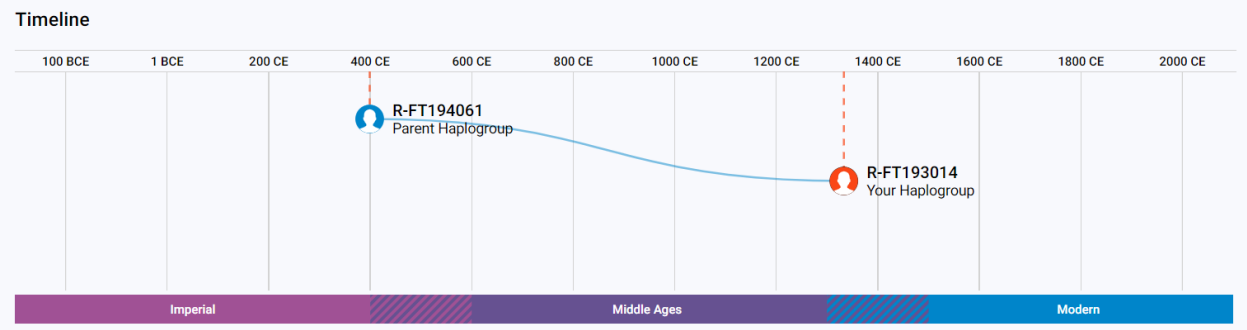
R-U152 > R-L2 > R-Z49 > R-Z142 > R-FT32075 > R-FT191322 > R-FT194061 > R-FT193014

R-FT193014 is the "terminal SNP" for this branch of the YOUNG family, including the YOUNG from Eastern Ontario noted above. All have the same 15 SNPs noted in the box above. The two KLEIN descendants have this SNP as well as a downstream one, FT193547, shared by only the above KLEIN and ROBERTSON who are clearly close cousins.

Algorithms have been developed to estimate the time between various SNPs – the time to the most recent ancestor in common. Based on this data from FTDNA:

a) R-FT193014 emerged about 1350 AD (963 – 1597 @ the 95% Confidence Interval) and, in addition to Ken YOUNG, is found in two Germans (KLEIN / LITTLE) and one individual from the USA with Canadian ancestors (as seen above) with the surname YOUNG. It is not 3 Germans since the LITTLE customer did not include the most recent known ancestor in the direct male line's place of birth (that was done by Mr. ROBERTSON).
b) R-FT194061 came into being on a male Y – chromosome circa 400 AD. The same three persons have this SNP, but there is now someone from Switzerland who shares this marker.





c) R-FT191322 appeared about 200 AD. In addition to the above we now see someone from Croatia who tests positive for this SNP with the same 4 individuals above.
d) At this point we have to go back to about 2250 BC to find the first R-FT32075 – yet it is the 4 above who are the only ones to possess this SNP. The earlier SNPs came in quick succession back to 2550 BC for R-L2. Starting with R-Z142 this SNP has spread far and wide from 126 England, 67 France, 46 Germany, 19 Ireland, 17 United Kingdom, 17 Finland, 15 Scotland, 13 Italy, and 9 Northern Ireland. These numbers reflect the testing bias where people from Britain are much more likely to take DNA tests than those for example from the Balkan countries.

2) **Interpreting the Results**:

Clearly the first three (most recent) SNPs are going to be the most informative in pointing to ancestral origins. There is no doubt, thanks to the genealogy work of Hank Jones on this family, that they came from the Rhineland – Palatinate near Zweibrucken at least back as far as 1645 AD with the baptism of Adam YOUNG's grandfather, Johann Andreas JUNG, in that year.

To date the closest ancient DNA sample is haplogroup R-Z142. Those from the time of Christ down to Medieval times include samples from Mitrovice, Serbia (993 – 1149 AD), Galgadil, Funen, Denmark (800 – 1100 AD), Skara, Sweden (900 – 1200 AD), Ibrany, Hungary (950 – 100 AD), Zadar, Croatia (127 – 227 AD). It is interesting to note the Croatia sample since circa 200 AD the ancestor of a modern - day person from this country is found with the downstream SNP R-FT191322 (also possessed by the three individuals of German descent). In addition, there is an ancient DNA sample from Bratislava, Slovakia "La Tene cultural group" (180 – 1 BC), and three Iron Age cultural group individuals from Velaux, France; Yarnton, Oxfordshire; and Kent, England (400 – 200 BC). The English samples likely originated in Gaul (what is now France).

The above ancient DNA data might suggest that an early YOUNG ancestor was a member of the large Boii Celtic Tribe of Bohemia (Czech Republic and Slovakia), or perhaps one of the Celtic Tribes from Illyria in the Balkans (e.g., Croatia, Serbia). Over time there will be vastly more ancient DNA samples available for comparison purposes – so we await new data including that from Central Germany during for example the Hallstatt Era (circa 800 BC to circa 450 BC) where there are many rich "princely graves" just north of the Danube River. It appears that testing of some of these samples is already underway by staff associated with the David Reich Lab at Harvard University. This manuscript will be updated as new data comes to the fore.

Dr. David K. Faux
Los Alamitos, California; Caledonia, Ontario
28 January 2015; 23 December 2022; 28 March 2023