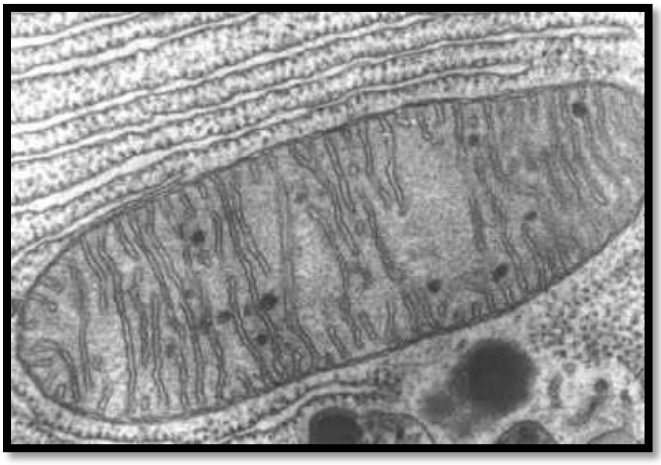
YOUNG FAMILY MITOCHONDRIAL DNA TESTING

ELIZABETH (YOUNG) YOUNG (1827-1897)

Mitochondrial DNA (mtDNA): The Y - Chromosome is inherited only by males (from their biological fathers). Therefore studies of this nature are in essence exploring the paternal lineage only. In order to study a maternal lineage, it is necessary to turn to a form of DNA which can only be passed to the next generation by females, to all of their children (male or female). This type of DNA provides an indication of the deep (anthropological) ancestry of a person in the female line (mother, maternal grandmother and so on back to the "Mitochondrial Eve" who resided in East Africa about 140,000 years ago), and could answer a question as to whether any two people are related in the direct female line.

According to a simplistic categorization, there are 7 "Daughter's of Eve" who are the ancestors of virtually everyone of maternal European descent. While it is commonly known that the Y - Chromosome is one of the 46 chromosomes found in the nucleus of most cells in the body. Mitochondrial DNA is entirely different. Mitochondria are cell inclusions located in the cytoplasm outside the nucleus, whose role is as mini energy packets that helps to power the sundry functions of the cell.

There are thousands or these bacteria - like organelles in each cell (again, each one coming from the mother). However, it is also possible to use this form of DNA testing to determine the maternal ancestry of some of the early YOUNGs. The data comes in the form of a "signature" from a region of the mitochondria - basically a list of mutations known as HVR (hypervariable region) 1 and 2 in the "control region". In addition, "deeper" mutations in the other regions, the "coding regions", of the circular DNA sequence can be detected and categorized on a phylogenetic tree. It is now possible to do whole genome sequencing of the mtDNA molecule which will provide the haplotype or "signature" as shown above, as well as the haplogroup given "names" such as A, D, H, J, K etc.



Microscopic view of a single mitochondrion, of which there are thousands in each cell of the body (e.g., the skin cells obtained by mouth swab for DNA analysis) - each one coming from the mother, who inherited it from her mother and so on back to the "Mitochondrial Eve".

MtDNA (Mitochondrial DNA Haplotype and Haplogroup) of Elizabeth YOUNG (1827-1897: If the goal is to obtain the mtDNA "signature" of the sons of Adam YOUNG, we would need to find an individual in the direct female to female line back to Adam's wife Catharine Elizabeth SCHREMLING. While this couple did have a daughter Elizabeth who married Joseph HOUSE the descendants of this couple are largely unknown in the male or female lines. This is a serious problem in doing mtDNA research - finding a suitable candidate to test. Since the surname of females change with marriage, the genealogical challenges can be prodigious. Note that all of the children, sons and daughters, of a woman will have her mtDNA, but only her daughters can pass this DNA "signature" on to the next generation.

While the mtDNA "signature" of all the children of Adam YOUNG and Catharine Elizabeth SCHREMLING is out of reach, more recent generations offer more hope in finding mtDNA lineages. The author's 3rd great grandmother Elizabeth (YOUNG) YOUNG (1827 near Caledonia, Seneca Township, Haldimand County, ON -1897 Barton Township, Wentworth County, ON) was born on a River Lot 25 across the Grand River just a mile downstream from the residence of the author. The author frequently hikes by her birthplace, on land given to her father George YOUNG (a grandson of Adam YOUNG and Catharine Elizabeth SCHREMLING) by her grandfather William TERRYBERRY. The author feels a special connection with his ancestor Elizabeth, in part due to the geographical proximity of our residences, and in part due to the high percentage of autosomal DNA inherited from her by the author.

Maternal Genealogy: Elizabeth YOUNG (1827-1897) was the wife of Henry YOUNG Jr. (1825-1901) who was her first cousin. Genealogical research has shown that the mother of Elizabeth (YOUNG) YOUNG (1827-1897) was Mary TERRYBERRY (1809 Schooley's Mountain, NJ – c.1870 Barton Township, Wentworth County, ON). Mary's mother was Hannah (Annie) YOUNG (1782 Schooley's Mountain, NJ -1869 Barton Township, Wentworth County, ON). Hannah (Annie's) mother was Sophia YOUNG (1757 Amwell Township, Hunterdon County, NJ – aft. 1820, Ancaster Township, Wentworth County, ON). It is important to note that neither of these two women with the surname YOUNG (originally JUNG) were related to the YOUNG (JUNG) family of the Mohawk River, but were born either in New Jersey or Germany – and of German descent. Continuing on, Sophia's mother was Anna TRIMMER (1732 likely Neuweid, Germany – 1787 likely Amwell Township, Hunterdon County, NJ), whose mother was Elsie Catharina ENGEL (1713 Neuweid, Germany – 1748 Amwell Township, Hunterdon County, NJ), whose mother was Juditha WEIN (of Neuweid, Germany who emigrated to New Jersey).

MtDNA Haplogroup and Haplotype: To assess the mitochondrial DNA of all these women, two individuals who are descendants in the direct female line were recruited for testing. One is a descendant of Elizabeth YOUNG's daughter's daughter's son (Robert Nelson), as well as his grand-nephew (Gerry Kenney). Both were both found to have Haplogroup J*, now known as **J1c**.

The haplogroup is not common, and the specific haplotype (series of mutations away from the arbitrary Cambridge Reference Standard) even more rare. The HVR1 (Hyper Variable Region 1) mutations are 16069T - 16126C - 16224C. The HVR2 mutations are 00073G, 00185A, 00228A, 00263G, 00295T, 00315.1C, 00462T, and 00489C. While the 69 and 126 numbers are the defining part of haplogroup J, the 224 mutation is what gives this "signature" its power to link up with both recent kin, and with ancient ancestors (since the mutation rate of the mtDNA markers is much slower that what is seen with the Y - Chromosome). Haplogroup J is relatively common in the Middle East and Northern Africa (e.g., 66% in Bedouins from the latter region) and, although widely dispersed, quite rare in much of Europe (e.g., 7% in Germany where, presumably, the ancestors of Elizabeth YOUNG originated).

Considering the basic J haplotype (69 + 126), it is interesting to note that the J with a 224 mutation has only been observed to date in the Caucasus (e.g., Cossacks, Georgians, Azerbaijanis, and Armenians). Clearly Elizabeth YOUNG had a rare and somewhat exotic mitochondrial DNA profile. A search of the largest public mtDNA database is found at www.mitosearch.org. In exploring this database it was observed that in addition to 2H5NR and E47ZU (RN and GK respectively), there are two other exact matches to their (above) profile.

As luck would have it, a search for a suitable candidate to test from earlier generations was unnecessary. One of the two Mitosearch (www.mitosearch.org) database matches (8AEW6) traces his maternal lineage to Sophia (YOUNG) YOUNG's sister Elizabeth (YOUNG) HUFFMAN. His mtDNA "signature" is identical to that of RN and GK. Both Sophia and Elizabeth were daughters of Anna (TRIMMER) YOUNG, the wife of Peter YOUNG of New Jersey.

Conclusion: Thus we now know the mtDNA signature of Elizabeth YOUNG (1827-1897) and her children; and this finding shows that Celestia and the other children such as Hannah Adelia (YOUNG) DAWSON (ancestor of the present author) and since they have the same mother, the above Elizabeth (YOUNG) YOUNG (1827-1897), they therefore have the same mtDNA "signature". The author has a 5 - generation picture of the above Hannah Adelia (YOUNG), her daughter, grand daughter, great grand daughter, and great great grand daughter. All would have the same mtDNA "signature" as their ancestor, Elizabeth (YOUNG) YOUNG (1827-1897).

Hannah A. (YOUNG) DAWSON – 5 Generations all mtDNA Haplogroup J1c

This finding is of course only “the thin edge of the wedge” in that separate analyses would need to be done in relation to each of the many other branches of the YOUNG family of Wentworth and Haldimand Counties. However, it is a start.

Dr. David K. Faux

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