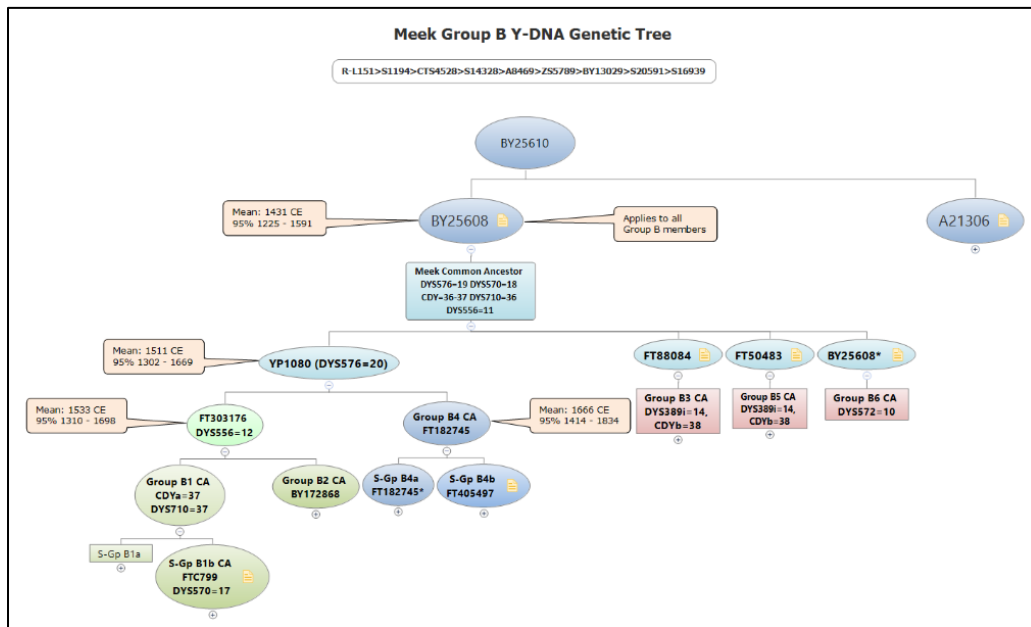


Meek DNA Project

Y-DNA Haplogroup/SNP Structure of Meek Group B

The purpose of this paper is to explain the genetic structure of Meek Project Group B. The Meek project started in November 2004 and Group B is the earliest group of members identified. Additionally, it has consistently been the largest group of members within the Meek Project. Today it consists of over 70 members. One reason Group B is the largest is that it appears to be collection of smaller groups who are distantly related possibly before any of the early ancestors immigrated to America. The genetic tree presented here is based on Y-DNA SNP¹ markers (Big Y 700), STR² markers and genealogy. For more information on STR markers see “Group B Y-DNA Ancestral STR Signature”, APR 2023, Christopher A. Meek. SNP markers will always override any hypothesis made using STR markers.

Group B has 14 defining STR markers whose values deviate from the L151 modal values with varying degrees of importance. This allows for the determination of a man, who matches most of these marker values, belonging to Group B. That man will share a common ancestor with other men who also match these values with a high degree of confidence. This is important because, for many, the cost of a Big Y test can be prohibitive. STR markers have been important for the Meek project. However, STR markers can take the project only so far. Advance SNP testing has been required to fully understand the structure of Meek Project Group B ancestors.



Family Tree DNA (FTDNA)³ predicts the haplogroup⁴ for each Y-DNA STR tester. This is represented by a specific SNP marker. However, they only predict at a very high level (older). A SNP test is required to confirm this prediction and provide refinement to more recent haplogroups/SNPs. The terminal SNP is the most recent SNP, confirmed by two Big Y tests, that does not have any descendant SNPs that are confirmed by two Big Y tests according to FTDNA. There may be more recent SNP which have not met this standard.

¹ SNP=Single nucleotide polymorphism, a type of DNA marker.

² STR=Short tandem repeat, a type of DNA marker.

³ FTDNA is the testing company, Family Tree DNA.

⁴ Haplogroup: A group of similar haplotypes that share a common ancestor with a SNP mutation. (ISOGG glossary)

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Group B has 13 members who have taken the Big Y test, at least one in each of five of the six major subgroups thus far tested. Subgroup B6 has not been SNP tested but clearly falls within Group B based on STR markers. The results indicate all six subgroups descend from the first man to carry the **R-BY25608** mutation of the Y-DNA Haplotree. The path is R-P310>L151>S1194>CTS4528>S14328>A8469>ZS5789>BY13029>S20591>S16939>BY25610>**BY25608**. The first man to carry the BY25608 mutation was the direct paternal ancestor of all Group B members. This is in the S1194 branch of R-L151. Half of the subgroups descend through two previously unknown genetic branches.

The above chart represents that portion of the Y-DNA Haplotree⁵ that applies to Group B down to the major subgroup level. Each oval represents a SNP marker which has mutated from its previous state. Each SNP on the tree represents a descendant of the previous SNP (top to bottom). In other words, each SNP is more recent in time than the previous SNP. An unknown number of generations separates each SNP.

Also displayed is A21306, a branch of BY25610, which is populated by a family with the surname of Smith. Their STR signature is similar to that of BY25608. It is not clear what surname was used prior to the common ancestor or the first man to carry the BY25608 mutation. Never-the-less, the Smith group is the closest genetic ancestor to descendants of BY25608. In addition, they are the only other men, thus far tested, who descended from BY25610 with one exception.

On the charts an eclipse represents a proven SNP mutation. A rectangle represents a genealogical node deduced by STR markers or genealogy. The rectangle below BY25608 in the chart represents the common ancestor⁶ of Group B, a man who was positive for the SNP BY25608 but not necessarily the first man to carry the BY25608 mutation. The common ancestor's node is associated with four STR mutations. These mutations occurred prior to the common ancestor. When each STR marker actually mutated is not possible to determine at this time. The common ancestor's Y-DNA STR signature is deduced from those of the various subgroups and members. Placement of STR mutations within the haplogroup chart is speculative.

Another major part of the Big Y results is a list of "private variants" (PV). It is from the private variants that new and more recent branches are discovered. The word "private" means they do not match any other current customer of FTDNA and have not been placed on the haplotree. Each of the current members who has been SNP tested has at least one suitable private variant not found in any of the other member's results. These markers need to be confirmed by an additional Big Y test positive for the same marker before its position on the tree is recognized by FTDNA.

While STR markers initially identified four separate subgroups, SNP testing offered some surprises. Notably, new insight revealed how they were connected to each other. However, the big surprise was the grouping of three subgroups below a branch, YP1080. This finding clearly sets subgroup B3 apart from the other three. Not so surprising is a subsequent SNP test for a subgroup B3 member reveals a new genetic branch, FT50483, that also descends directly from BY25608. It is now referred to as subgroup B5. The member's STR signature matches the former subgroup B3b signature except for DYS449=28 and CDYb=38. Thus, the current chart shows YP1080,

⁵ Haplotree: A haplogroup tree. A diagram or chart showing the different lineages within a haplogroup. (ISOGG glossary)

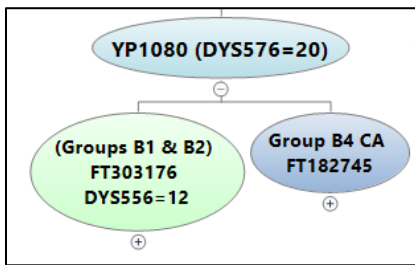
⁶ Common ancestor: The unknown ancestor responsible for two or more genetic branches.

Y-DNA Haplogroup/SNP structure of Meek Group B

FT50483, FT88084 and one yet to be defined branch that includes the former B3a subgroups. Subgroup B3a never matched subgroup B3b STR signature. They match the Group B ancestral STR signature, except for $DYS572=10$. For the sake of clarity, they will now be referred to as subgroup B6. It is shown as a separate undefined descendant of BY25608 based on STR markers. This is subject to change.

FTDNA provides a date for the Group B common ancestor of between 1225 – 1591 (95% confidence) with a mean date of 1431⁷. These are the FTDNA statistics for R-BY25608, the common genetic ancestor of Group B. Few Meek(s) genealogists has extended their genealogies back to 1431. The margin of error provides a great deal of flexibility if and when the times comes.

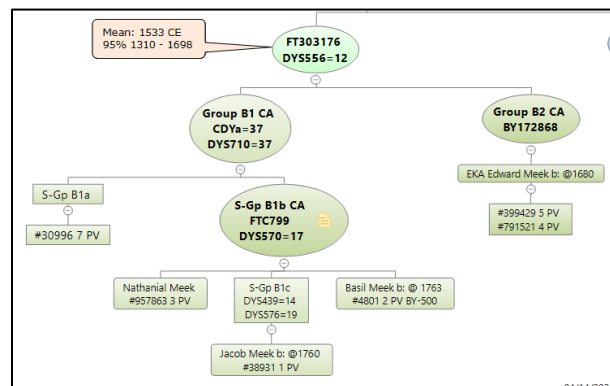
YP1080 is an important node that was previously unknown. There are no equivalent SNPs. There



is no genealogical data connecting the different subgroups. There is not even a legend that suggests a connection. However, SNP testing clearly shows that there was a common ancestor for subgroups B1, B2, and B4. In addition, subgroups B1 and B2 share a common ancestor, who was positive for FT303176, that excludes subgroup B4. Descendants of YP1080 will generally have STR marker $DYS576=20$ rather than 19, which is thought to be the ancestral value for Group

B. Branches identified by YP1080 and FT303176 do not have any equivalent SNPs. This precludes any additional unknown branches at this level of the tree with the possible exception of subgroup B4 (FT182745) which has two equivalents. There are likely more branches identified by private variants below this level. FTDNA provides a date for YP1080 of between 1302 – 1699 (95% confidence) with a mean date of 1511.

FT303176 is another previously unknown node that also has no equivalent SNPs. All members who are positive for this SNP (6) also have the STR mutation $DYS556=12$. It is not surprising that subgroups B1 and B2 are combined under FT303176. Subgroup B2 is based on two Big Y tests. Originally based on STR markers, it could have been placed within subgroup B1. FTDNA provides a date for the branch FT303176 of between 1310 – 1698 (95% confidence) with a mean date of 1533.



Subgroup B1 has over 40 Y-DNA STR tests representing multiple earliest known ancestors, largely born in the 1700's. Subgroup B1 has a distinctive Y-STR signature. Of the 44 members of Subgroup B1 38 have the STR mutation $CDYa=37$. Eight of nine members have the STR mutation $DYS710=37$. Subgroup B1 appears to have split into two branches. Subgroup B1a is only different

⁷ This author cautions reader that all dating methods are problematic, IMHO. There are numerous variables which are difficult to quantify. At best one will not get reliable answers using a very small number of tests. Group B, the projects largest group will likely never have the number of tests needed. Finally, these are statistics. Statistics apply to groups, not individuals. All date information from FTDNA.

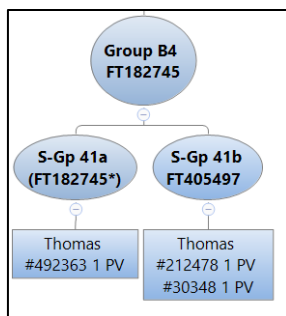
Y-DNA Haplogroup/SNP structure of Meek Group B

by DYS570=18 versus 17. Initially, they were grouped separately based primarily on genealogy. Now one subgroup B1a member has a Big Y test which includes seven private variants none of which matches one Big Y test from subgroup B1b, excluding two tests for FTC799 (subgroup B1c). The member is negative for FTC799. That B1b test is a Big Y 500 test which limits its usefulness. In the absence of other information Subgroup B1 appears to have two branches, B1a and B1b.

There also appears to be a subgroup, B1c (DYS439=14 and DYS576=19) below B1b with nine members. The latter STR value is a back mutation. All of this could probably be officialized if more Big Y testers were available. Based on Y-DNA STR marker tests from descendants of multiple sons these mutations can be dated as far back as Jacob Meek born about 1760 and who died 10 Aug 1824 in Henry Co., TN.

FTC799: One member from subgroup B1b and one from subgroup B1c are positive for the SNP branch FTC799. Of the members of subgroup B1b and subgroup B1c thirty-six of forty-two are positive for DYS570=17. As mentioned earlier, the two members of subgroup B1a have the ancestral value of eighteen for this marker. Subgroup B1a is also negative for FTC799.

Subgroup B2 is based on two Y-DNA tests. Both have the Big Y tests and are positive for BY172868. Based on STR markers, they could have been placed within subgroup B1. Based on STR markers (DYS570=18 and CDYa=36), geography (New York VS Maryland) and the date of the earliest known ancestors (1600's VS 1700's) it was placed in a separate subgroup. This decision would seem to have been justified once the second Big Y test results became available. The two members have five and four private variants.

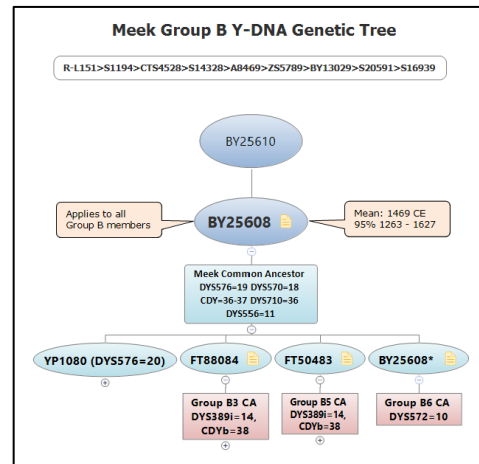


Subgroup B4 is comprised of men named Thomas who came out of North Carolina in the 1700's. Most descend from Benjamin Thomas born 18 Jul 1756 and who lived in Anson Co., NC. The ancestral STR signature matches the larger Group B ancestral STR signature except for DYS576=20. The lack of STR mutations is not necessarily helpful. However, the three Big Y tests made up for that. Not only was there a clear separation from other subgroups (FT182745) but it split with two of the three tests positive for FT405497. Subgroup B4 split from subgroups B1 and B2 after the first man who carried the YP1080 mutation. The common ancestor for FT182745 descendants was born between 1526 – 1851 (95%) with a mean date of 1719. FT405497 was born between 1594 - 1901 (95%) with a mean date of 1779. All dates provided by Family Tree DNA. These dates should be considered very approximate due to the small number of tests involved.

All three men have one private variant. Therefore, it is possible additional branches will be identified. The question remains as to who the common ancestor was and when he lived. There is an apparent name change from Meek(s) to Thomas based on the fact that there are multiple descendant groups with the Meek(s) surname within Group B.

Not YP1080

In the early days of the Meek Project with only a small number of members it was confirmed by FTDNA that there was a difference between subgroups B1 and B3. The other subgroups came later. It is now known that subgroups B1, B2, and B4 are grouped together under SNP YP1080 which sets subgroup B3 (FT88084) apart from the YP1080 group but still under the Group B common ancestor and SNP BY25608. The most recent Y-DNA SNP results show that three former members of subgroup B3 actually belong to a new branch directly under BY25608 which is now known as subgroup B5 (FT50483). The project administrator has moved two other members to a new subgroup now known as B6. They should not have been grouped in subgroup B3 based on STR markers. Unfortunately, neither of them has been SNP tested. At the same time, they lack the STR mutations that identify the groups under YP1080 or subgroup B3.



Subgroup B3 is branch of BY25608 with the name of FT88084. There are two members of this group with the Big Y test. One has two private variants and the other has one. These are primarily descendants of John Meeks born about 1710 and who lived in Pitt Co., NC. There is no known genealogical connection to other subgroups in Group B or any other group of Meek families. There are 16 members of subgroup B3. The ancestral STR signature is unique from other subgroups within the larger Group B except subgroup B5. All of them have DYS389i=14. Thirteen members of subgroup B3 have DYS576=19 while most members who fall under YP1080 have the value of 20. Finally, 12 members have CDYb=38 while YP1080 members have the value of 37. More than half of the members of subgroup B3 have DYS570=17. The men in subgroup B3 with this value all descend from Charles C. Meeks born about 1797. This dates the mutation to about 1797 and removes it from consideration as the ancestral value for the subgroup which is 18.

Subgroup B5 is identified by the haplogroup FT50483. This group has two members named Meeks who descend from Thomas Meeks born about 1768 and who lived in modern-day West Virginia. Also, one member named Lee with an unknown genealogical connection. Mr. Lee has one of the two Big Y tests. Their two Big Y tests separate them from subgroup B3 where they had previously been placed based on the similarity of their STR markers. There is no known genealogical connection to men in subgroup B3. Geographically, they came from different regions. Two of the three members have DYS389i=14 and CDYb=38 which are the primary STR marker that identifies subgroup B3. The common ancestor of men positive for FT50483 was born between 1347 – 1834 (95%) with a mean age of 1642. Use caution with these dates. See footnote 8.

Subgroup B6 involves two men whose genealogy date to 1785 and 1810 in Maryland. The genealogical connection is unknown. The DOB and geographical information suggest a connection to the B1a subgroup. But they do not have the STR mutations defining that subgroup. In addition, they are the only members of Group B who have DYS572=10. Otherwise, they match the key STR marker values defining Group B and lack the STR marker values defining YP1080.

Summary

From the first handful of test results involving 37 STR markers it was determined that Group B results showed a unique STR signature that would make it easy to identify future members for Group B by either genealogy, STRs or SNPs. In addition, it was clear there were two major genetic branches who also had no known genealogical connection. From that time the data grew as new members were added which allowed additional insights into the structure of Group B. It was not until advanced SNP testing became affordable that there was a clear picture of the structure of Group B. Nor all the questions have been answered and new ones keep popping up. However, our understanding of Group B has evolved and will continue to be refined as new members join the project or current members upgrade to the Big Y test. Y-DNA STR markers have been useful but have limitations. Y-DNA SNP markers can provide more certainty. STRs will remain important because many members are not available for additional DNA testing. Any tester who matches the Group B STR signature will likely also test positive for BY25608.

The original four subgroups deduced from STR markers and genealogy have largely been confirmed by SNP testing. If they are not outright confirmed by SNPs, then there is a single tester who has private variants which should identify a new genetic branch when additional members have been SNP tested. After several Big Y tests, the relationship between the subgroups is now better understood. As suspected previously subgroups B1 and B3 are distantly related with a date for the common ancestor between 1263 – 1627 (95% confidence) with a mean date of 1469⁸. These are the FTDNA statistics for R-BY25608, the common genetic ancestor of Group B. The common genealogical ancestor probably lived before the family migrated to America.

The members, representing various earliest known ancestors, are a “sample” data set of the Ultimate Progenitor’s descendants. Since we do not know who that man was, we cannot know if the sample completely covers all branches of the Progenitor’s descendant chart. BY25608 has four equivalent SNPs which may indicate possible yet to be discovered branches. All current Big Y testers in Group B are positive for all four equivalent SNPs.

It is now known that genealogical subgroups B1 & B2 are more closely related than other subgroups with a common ancestor positive for FT303176. They join subgroup B4 (FT182745) in a previously unknown subgroup with an unknown ancestor positive for YP1080. Subgroup B4 is split with some men testing positive for FT405497.

One can see from the chart below that some genetic lines have more structure than others. YP1080 has more branches than non-YP1080 subgroups. This is partly a function of the number of tests involved but is also a function of the random nature of Y-DNA mutations. One can also see that the number of existing tests in subgroup B1 and B2 suggests that genetic branches will extend into known genealogies when more men order the Big Y test. Subgroup B4 may already be near that point. Nine members under FT303176 who have different earliest known ancestors and have a Big Y test. Given its size, Group B is undertested, especially subgroup B1b.

⁸ This author cautions reader that all dating methods are problematic, IMHO. There are numerous variables which are difficult to quantify. At best one will not get reliable answers using a very small number of tests. Group B, the projects largest group will likely never have the number of tests needed. Finally, these are statistics. Statistics apply to groups, not individuals. All date information from FTDNA.

Y-DNA Haplogroup/SNP structure of Meek Group B

There may well be other subgroup involving men who are not in the Meek Project. These men may not have been Y-DNA tested. Other lines may have daughtered out. The Meek project is nearly 19 years old, so it is not likely there are too many men who have tested at least 37 Y-DNA markers that are unknown to the project. At the same time the project is knowledgeable of Meek genealogies going back for over a hundred years and has had communication with many genealogists even before Y-DNA testing was available. See the companion article “Group B Introduction” summary of genealogies list of earliest known ancestors generally born before 1800.

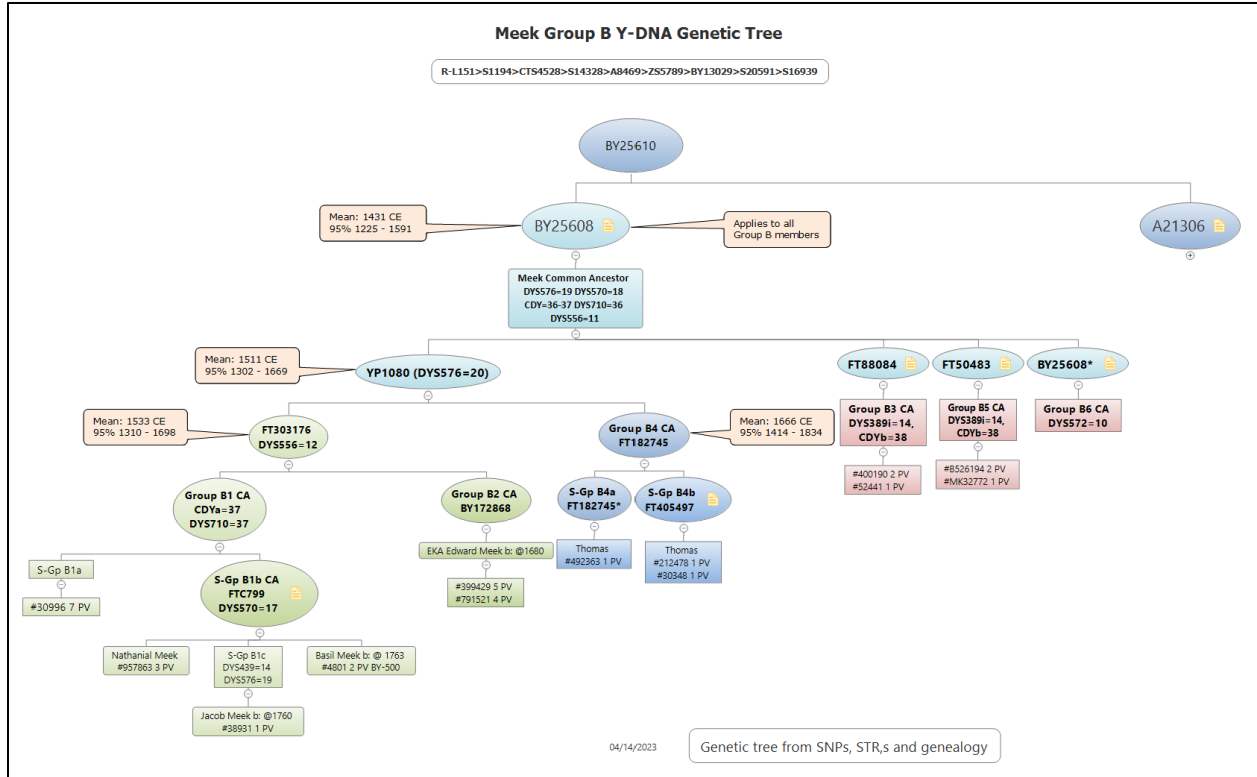
In summary, Group B (R-BY25608) has four known genetic branches but not the original four subgroups. YP1080 includes the previous subgroups B1, B2, and B4. FT88084 includes the primary portion of subgroup B3 from Pitt Co., NC. FT50483 includes a small group, previously part of subgroup B3 but out of Maryland now known as Subgroup B5. Finally, two men out of Maryland whose STR marker suggest they will form a separate genetic subgroup of BY25608.

Clearly subgroup B1 has more “earliest known ancestors” and has potential for the discovery of more genetic branches. However, more members will need to purchase the Big Y test.

Group B defining markers

| Table 2 | DYS439 | DYS389 | DYS392 | DYS458 | DYS447 | DYS464a | DYS464b | GATA H4 | DYS576 | DYS570 | CDY | DYS442 | DYS438 |
|----------------|--------|--------|--------|--------|--------|---------|---------|---------|--------|--------|-------|--------|--------|
| L151 | 12 | 13-29 | 13 | 17 | 25 | 15 | 15 | 11 | 18 | 17 | 37-38 | 12 | 12 |
| Group B | 13 | 13-28 | 12 | 15 | 26 | 14 | 14 | 12 | 19 | 18 | 36-37 | 10 | 13 |
| Con't | DYS534 | DYS710 | DYS556 | DYS533 | DYS575 | DYS461 | | DYS572 | | | | | |
| L151 | 15 | 36 | 11 | 12 | 10 | 12 | | 11 | | | | | |
| Group B | 16 | 36 | 11 | 11 | 11 | 13 | | 11 | | | | | |

Y-DNA Haplogroup/SNP structure of Meek Group B



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 Rev2/13/2018/Rev 4/2/2018/Rev 8/23/2018/Rev 9/2/2018/Rev 10/16/2018/Rev 12/6/2018/Rev 7/25/2021/Rev
 1/16/2022/Rev Mar 2022/Rev Nov 2022/Rev Apr 2023/Rev Jul 2023