# THE DNA JOURNEY

## SPECULATION ABOUT GRIERSON DNA

Our family, like, it seems, many others around the world, were conditioned to believe that Griersons were MacGregors. I had earlier (1994) surmised that the family legend of descent from Rob Roy MacGregor (or a brother) might be wishful thinking. I took that line at the time because I was unable to establish any connection with the Glengyle branch of the MacGregors despite the fairly good knowledge then available from the extensive research of Dr Ward, or from other sources. I also observed that a seemingly huge number of Scots claimed descent from Rob Roy, far more than seemed reasonable.

However, there was nowhere to go in the search for alternative theory, church/civil records for our family not being available prior to 1714, and apart from a few legal references there were no other clues. But, at that point, I still had no doubt about the relationship between Grierson and MacGregor in Clan terms. There was the obvious similar derivation of the names, a strong indicator of a blood relationship, together with the established usage patterns in legal documentation of "Grierson alias MacGregor", or the reverse, predominantly as a consequence of the era of proscription. I wore my "Ancient MacGregor" tartan proudly, and clung to the romance of the legend. Of course, nothing changes for me there, whatever we find, because there is no doubt that through Mary Burgess our immediate family remains MacGregor in clan terms.

I therefore thought it likely that the rumoured ancestor who had become unhappy with the incessant warfare (as dictated by John(2) in 1900) might well have been a MacGregor clansman without necessarily being a descendant of a chieftain's line. I also gave some credence to the notion that our MacGregor descent may have become confused in the mind(s) of family historians of a century or more ago, and that it was the MacGregor (McGrigor) ancestry of Mary Burgess in the Perthshire area (Parish of Auchtergaven) that was from a Glengyle family. Her grandfather, John McGrigor would have been born about 1730. The "settled on the banks of the Dee" recollection from John(2) could also be applied to the northern River Dee (as distinct from the Galloway Dee, although it is not in Perthshire), and it was notionally possible in terms of a timeline for Mary's family to have descended from Glengyle - there are many John MacGregors documented in Perthshire whose descendants (if any) are not known. Finally, I speculated that if the confusion above noted had existed, there might be a connection with the extensive Grierson family of Dumfriesshire and Galloway - the family of Lag(g). The next step in my line of thought was that as a good Presbyterian family, and certainly with the Covenanting wars within the folk memory of our migrant ancestors, there might also have been some tendency to want to deny a connection with "Bloody Robert Grierson" (Scott's "Redgauntlet"), and his family, if indeed there was a connection. So, for the moment, there things stood.

## Y CHROMOSOME DNA TESTING IN RELATION TO FAMILY HISTORY

In 2002 or thereabouts, the prospect of YDNA testing became a reality. The significance of YDNA, which in simplistic terms is a portion of the DNA that the male

supplies to the female to become 50% of the forming infant, is that a part of the Y chromosome has been found to remain very nearly constant through succeeding generations. Changes are called mutations, and the rate of mutation of each particular part has been statistically ascertained. Each male in a succeeding generation will pass on to his son(s) an identical, or very close series of component parts of the Y chromosome. The significance of this is that generally, males have also passed their surname on to the next generation, at least for the past 500-700 years in Britain. Therefore, genealogists can associate YDNA and surnames in certain circumstances. There are, of course, potential errors in this methodology, the most obvious being an adoption, where there would probably be no correlation between YDNA and surname in succeeding generations in that family. Assuming a normal course of events, it follows that if a large number of men with the same (or associated) surnames, who also have properly documented family lineages have their YDNA tested, we can arrive at a profile for a given family within a clan with a high degree of certainty. Coming down the line from that family baseline, we can also predict the likely number of mutations with some certainty. Therefore, we can decide on the YDNA evidence whether or not certain people are closely, or distantly, or not related for practical purposes - of course, going back far enough, say several thousands of years, all Celts have similarities in their profile.

I began by having my own YDNA ascertained so that I could compare it with MacGregor lines. I joined the Greer/Grierson project within the Family Tree (FT) organisation in the US in order to find relatives and I also joined the MacGregor project at FT. At that time, only STR testing was available at the kind of cost I was willing to accept. SNP testing then was extremely expensive and mainly done for the advancement of pure science. I began a correspondence with Dr Richard McGregor who managed the MacGregor project.

I soon discovered that my DNA profile had little in common with that of any MacGregor, in spite of the notion that Grierson is a sept of the Clan MacGregor. A sept, of course, may be related by blood or by allegiance, but the more I looked at Grierson history, the less rationale could I see for any association between the MacGregors (Highlanders) and Griersons (Lowlanders), other than the earlier mentioned “MacGregor alias Grierson” seen in a few legal documents. As the science developed, it became clear that in the male line, Griersons and MacGregors diverged some thousands of years ago. So what of the William MacGregor in our family legend (the one who allegedly changed his name to Grierson)? If he existed at all, he must have descended from distant relatives of the MacGregors. For reasons that will become clear, I have come to believe that the alternative explanation is more probable, that is that the Glengyle connection is through our ancestor Jean McGrigor, Mary Burgess’ mother.

**GRIERSON FAMILY OF LAG(G)**

What of the Grierson family of Lag(g)? The earliest certain documentation relating to this family actually predates any MacGregor document. Unfortunately, most of the records of the Lag family were destroyed in a fire two hundred years ago. During the 19th Century, it was fashionable in Scotland for the establishment families to have family trees drawn up; some were extremely fanciful. The general aim was to show descent from major historical figures, and the Grierson (Carrickfergus) tree certainly

reflects this wish, claiming descent from, among many others, Charlemagne, Egbert 1st of England Grandfather of Alfred the Great, Alpin King of Scotland and William the Conqueror. Now this tree is the most widely quoted source of the long repeated claim that Gilbert Greresone was a certain Gilbert Gregorson who had changed his name from MacGregor in compliance with a Charter of 1400 (not known today), and who was the second son of Malcolm, Lord MacGregor. The Carrickfergus tree itself derived in part from an earlier tree, known as the “Gracie” tree, which contains numerous unsourced claims, and is mistrusted by serious genealogists. Nowhere in extant documentation is Gilbert identified as MacGregor. He was also shown as having married Janet Glendoning who descended from the Earls of Douglas. Now the problem with all of this is that the evidence we have today is that firstly, Gilbert Greresone's father was named Duncan, and secondly, that Gilbert married the sister of John Durant, Lord of Betwixt the Waters in Kirkcudbrightshire, and the Grierson (Carrickfergus) tree is discredited as far as the early histories are concerned. I believe Lyon King of Arms has abandoned it. However, it is much used on the internet by people seeking high connections. Conceivably, the alleged Janet Glendoning connection might be a consequence of confusion with a later Gilbert (of Kirkbryde) Grierson's marriage to a Janet Glendoning of Parton, probably in the mid-15th Century. This later Gilbert was the grandson of Gilbert Greresone son of Duncan, according to the Lag tree. It is not known whether he had issue. So the MacGregor and Glendinning ancestries in the
Lag line do not stand up (which removes Alpin, Charlemagne and Egbert from the scene).

**THE AMULIGANE CLAN CONNECTION**

It is also of interest that the local Dumfriesshire historian Alfred Truckell has on more than one occasion stated that the Griersons were descended from the ancient House of Galloway, possibly based upon clues in heraldry, because Gilbert's arms used the lion rampant, which was also used by the Earl of Galloway. Gilbert Greresone purchased the lands of Lag from his kinsman John McRath (as stated in the Charter) who was a direct descendant of Macrath ap Molegan. Molegan was a member of the Amuligane clan, the known history of which goes back to 1210. He was the ancestor of many men known today as Milligan, Milliken, Millican and other similar names. Note also that the Mullikine arms depict three lions demi-rampant, and in heraldry, the use of similar symbols often runs in families. There is no doubt that the Griersons and the Amuliganes (and their descendants) interacted together in the Nith Valley in particular, and in Dumfries and Galloway in general, over succeeding hundreds of years. Indeed, the property of Milliganton is in the same Parish as Lag, about two miles away. There are many documents extant which detail dealings between these two families, and many more in which members of both families together witness signatures, land exchanges and so on.

I have earlier demonstrated the genetic connection between the Grierson and some of the Milligan families, first identified in similar STR structures, and later with commonality in SNP results. This will be discussed in the references to Appendix 2. In the words of Alan Milliken: "That the Amuliganes and Griersons are related in early history isn't in dispute. How they were related is!"

## DNA TEST RESULTS

Firstly, I should explain the way test results in the Greer/Grierson project on FT advanced our knowledge. In that project there are (August 2020) 142 results of which about 42% are related in our family, 25% are of Viking ancestry, 32% are other unrelated members of the broad R1b haplogroup, and there are a few entirely unconnected Greers. This paper only addresses the related members in any detail.

Let us first look at STR testing. These repeats (alleles) occur at numerous places on the chromosome, and the location of each marker is coded in numbers and/or letters. The numbers of repeats would be difficult to usefully work with unless they were made easy to compare, so by convention the markers are presented in charts in a specific order, their coded identification aligned along the top of the chart. If the individual's results are entered in the chart using the same order, they become easy to compare. The collection of his tested STRs is an individual's "haplotype".

As the number of genetic genealogists ready to spend money on the testing of DNA increased, so more funds were available to improve the quality of testing. We saw the number of locations tested in a few years increase from the early 12 STR markers, through 25, then 37, then 67, then 111 to the large numbers now tested in certain companies. These numbers were driven by both the availability of computer chips programmed for the tests, by the geneticist's ideas of what was useful or needed, by cost, and to a large extent by Family Tree who had the best marketing set-up. As SNP testing became more available, the application of STR results changed. Once the sole source of information, they became, in my opinion, most useful to differentiate within families once a haplogroup was known. The 67 marker test is probably the gold standard in this sense, the extra cost of testing 111 rarely serving to add knowledge. But STRs served a great purpose early in the process.

Early in the genetic genealogy revolution, in 2004, David Wilson, a genealogist working with a chart containing the haplotypes of men all thought to be members of the R-L21 haplogroup, which at the time was generally thought to represent the majority of ancient migrants to Western Europe, saw a pattern in the numbers that he thought might indicate a significant divergence of a particular group of people. L21 is many thousands of years old, and was an early established testing program. David theorised that the pattern might represent a younger SNP, and had his DNA tested (expensively) in an effort to identify that unknown. The outcome was that the SNP known as R-M222 was discovered, David was then able to group all those haplotypes with similar features. This ground-breaking result would in time motivate me to seek a similar outcome.

I would like to establish some principles in the reader's mind before going further. The initial one is that we are dealing here in probabilities, not absolutes. But at a certain point, a probability is close to certainty, and without going into the mathematical detail (which I'm not qualified to do), I can say that I am better than 95% certain that what I propose is factual. That means that in the tested group, it may be that a judgement I make about one individual out of the group is wrong. Next, I should point out that in many projects within the FTDNA ambit, it is proposed that even one so called "off-modal" test result that is consistent across a single-name project defines that single-name group. Certainly, it is extremely improbable (ie, it

almost certainly can't happen) that a number of persons of the same name should independently develop the same mutation in one marker within a time scale of several hundred years, ie during the period in which surnames have become established. It may be inferred that if all members of a cluster have the same allele count in a "fast-moving" marker, then that mutation probably occurred more recently than a similar case in a "slow-moving marker.

Appendix 1 shows how the M222 group differs from the earlier data, and why I grouped all these haplotypes together. It also provides the illustration of the meaning of “modal”. The blue highlights are those markers that have mutated from the earlier standard of L21. The chart is a 2020 assembly of all the (de-identified) haplotypes of M222 members of the Greer/Grierson project at Family Tree, where I am co-Administrator. A modal haplotype is essentially an illustration of the most frequently appearing numbers of repeats (alleles) for a given marker. When derived from a large enough group in a related SNP, it can be regarded as near the actual haplotype of the founder, even although we haven’t a copy of the founder’s DNA. A simple example of how this works can be seen at lines 21 and 22. These men are known second cousins, and they have identical haplotypes at 37 markers. Therefore, as their nearest common ancestor is their great-grandfather, we now know his haplotype at 37 markers. This is an interesting example, given that there are six conceptions in this process, but no mutations. The hypothesis is that over hundreds of years there will be random mutations, but any mutation that consistently appears must reflect a line of descent. A modal can show bias, such as when a large group of closely related men participate, but an educated adjustment can be made. The allele count at the sky-blue markers in Appendix 1 leaves me in no doubt that all members on this list with at least 25 markers tested are M222+, that is, they all descend from the first man to carry that SNP. In lines 74 and 76 are the modals for M222 and its ancestor L21, and the identifying mutations are highlighted. It is important to remember that all of these STR mutations must have happened before the M222 SNP mutation occurred, unless there has been a “bottleneck” event such as the line of descent being reduced to one man. In that highly unlikely case, the modal would represent that of the MRCA (Most Recent Common Ancestor).

Appendix 2 is the same chart with different emphasis. The magenta highlights the mutations away from the original M222 modal, and is what attracted me to the idea of testing for younger SNPs within this group, using the same logic as David Wilson had some 10 years earlier. Dr Andrew Grierson (geneticist, of Sheffield University) and I shared the cost of tests by the then leading proponents of “Next Generation Sequencing” (NGS), the Full Genomes Corporation (FGC). Some 20 previously unknown SNPs were discovered in our respective DNAs, several of the same mutation, and a number of different so-called “private” SNPs, being those that had not been found in any other individual. The common ones were, in age descending order, FGC4133, FGC4134, FGC4125 and FGC4119. As more project members undertook NGS testing, usually with FT in the “BigY” series, it was found that everybody in the M222 division of the project who tested carried FGC4125. Under FGC4133 we now find Millikin, Milligan, Milliken, Grierson, Greer, and several other surnames, McMichael who descend from a predominantly Grierson SNP, and Bryant who descend from a predominantly Milligan SNP. Andrew and I are the only two identified with FGC4119 below 4125, but that is because FT doesn’t test for it on the current chip. At about a 23% probability, 4119 is 400 years old, which would put our

common ancestor born about 1540. FGC4125 is estimated to be 920 years old at the same probability, but in my view it is a slightly more recent mutation.

Other information that we can extract from Appendix 2 includes what I choose to call the “Grierson identifier”. At DYS444 almost everyone shows 13 alleles, which is very rare in haplogroup R1b. Significantly, none of our Amuligane relatives have this count. We can therefore say with confidence that the mutation happened after the split in surname between Grierson and Milligan (and close variations). In relevant charters from early in the 15th century, Griersons and Milligans were said to be blood relatives, and one might expect such knowledge to flow through perhaps four generations. My estimate therefore is that the mutation actually occurred with the conception of Duncan or Gilbert(1) Grierson. We can also see in that Appendix how later mutations have happened. If we look at DYS389i, we see the count change from 13 to 14. Many of those with 13 here have documented connections to Scotland, but those with 14 are generally speaking descendants of early American immigrants. We see, too, at DYS576 a progression 18>19>20, most of the latter among Americans. At DYS452 we see 30>31 in the same people generally as that at DYS389i. What we can draw from this information is that all those men descend from the same man, because the probability of the same mutation happening in the recent several hundred years in such a consistent manner is very low, and where there are numbers of matching mutations but few non-matching, we can say the probability is miniscule. The changes at DYS389i and DYS452 also illustrate the way a modal can be distorted by a large number of descendants of one man contributing to a chart.

To summarise, we have established a likely DNA identity for the largest group of Griersons and Greers in the FT project. So if a test returns the R-M222 characteristic DYS markers, and the majority of the markers shown in magenta are there, we say that the man is probably a Grierson or a Milligan. If we see DYS444=13, we have a Grierson descendant. We can confirm that by testing for FGC4125, or preferably having NGS testing performed. As more participants take NGS testing, we will see how families within the “Clan” divide. Finally, in an effort to identify a DNA profile for the Lag family I propose the following: given that certain Grierson and Milligan men were said to be blood relatives in charters 600 years ago, and given that those Griersons were said to be ancestors of the Lag family, when we find modern Griersons and Milligans having a common ancestor, it is a reasonable hypothesis that the ancient blood relationship is proven. Therefore, we have a sound idea of the Lag DNA. As it happens, one of our members has a documented connection that supports the hypothesis, although he unfortunately has yet to discover a direct line of descent.

Ten years ago I analysed STR haplotypes of both Griersons and Amuliganes and concluded there was a relationship. At lines 83 and 84 of Appendix 2 are haplotypes for a Millikin and a Milligan which illustrate my conclusions from that time. The subsequent increase in knowledge derived from SNP analysis, whilst proving the point also makes that work irrelevant. Many “Milligans” have FGC4133 and FGC4134 in their ancestry.

I am indebted to Alan Milliken of Armadale, Scotland, for his work on early Scottish Charters and his insights into the Border Scots. There is some very interesting

material at: http://regarde-bien.com/genetics.html and click on the link(s), particularly *DNA STUDIES*.
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