

FGC4077

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FGC4077 is a SNP or Single Nucleotide Polymorphism on the Y chromosome. The position of the variant is 4083940 (hg19) putting it outside any gene and it was formed when a base G changed or mutated to a base T. The prefix FGC is reserved for variants discovered by Dr. Greg Magoon of [Full Genomes Inc.](#) of the United States. This particular one was discovered in late 2013 and announced by the author [here](#) after confirming the branch by single SNP testing another person. The discovery completed our knowledge of the level 2 branches of M222 as S658 and S568 had only just been revealed by Dr. James Wilson of Edinburgh University. S658 makes up the bulk (> 80%) of M222, FGC4077 in the region of 15% and S568 most of the remainder.

SNPs are discovered by sequencing the Y chromosomes of men and comparing the results with the human reference sequence to see where they differ. In order to form a new branch of the Y chromosome tree normally we require two samples to both share a new variant.

FGC4077 does not uniquely define a branch of the tree. Two other variants are at the same position in the tree to date, namely FGC4078 and FGC4087. At the time of writing everyone who is positive for one of this trio has been positive for the other two when tested ('phylogenetic equivalence'). They form a significant branch of the well-known [M222 haplogroup](#) which has been known and studied for well over a decade.

In 2014 the early members of the FGC4077 haplogroup formed a discussion group for men who have tested positive. The group is run by Gerry Hoy and myself and known affectionately (if a little inaccurately now!) as 'North Channel'. If you are reading this and are FGC4077+ (or FGC4078+ or FGC4087+) please [get in touch](#) about joining our discussions.

Currently four branches under FGC4077 have been found. Two were found by Full Genomes. The first was the Kennedy group FGC5856 which has strong links to the Scottish counties of Perthshire and Angus (Forfarshire). The Kennedys have been joined by some other Perthshire families and an group of American Davidsons. The other three groups - FGC12948, A725 and M4491 - have less clearly defined geographic origins having been discovered amongst American samples. Of these three A725 appears so far to be the dominant one and based on member surnames both it and FGC12948 probably have a mix of Irish and Scottish. M4491 is less clear

(Freemans).

Overall it is not surprising that FGC4077 has a similar geographical distribution as M222 itself and covers wide areas of Scotland and Ireland. Given that its age is likely to be only slightly less, probing its historical roots is challenging - it probably dates to around the time of Roman Britain and Ogham stones in Ireland for example.

SNP discovery continues within the FGC4077 tree, naturally A725 has the most sub-branches due to its dominance.

The data analysis group Yfull maintain a tree based purely on sequencing data and have a [display for FGC4077](#) (which they label Y3455) – they have picked FGC4087 aka Y3454 as their lead SNP for the trio.

How do you find out if you are positive for this group? Full Genomes products are all sequencing. If starting from scratch and you want to do a complete paternal test then their products are the only test you need ever take because once your Y chromosome has been sequenced there is no further variant discovery possible. At the other end of the budgetary scale it is possible although not necessarily sound to test FGC4077 on its own at the [YSEQ lab](#) for just USD17.50/e13.92. However unless you have a close relative already confirmed, testing FGC4077 on the off chance isn't a good idea. A better tactic is to traverse the Y tree until your lowest level (ie. most recent) variant is found. For example FGC4077 is included in the YSEQ [L21](#) and [M222 group tests](#) (the latter is actually called the DF49 test). If you want advice on how to do this contact me.

If you have previously done a paternal line test using STRs, generally M222 is quite easy to predict but the level 2 branch is very hard.

If you are a Kennedy bear in mind that there are Kennedys in many branches of M222 and FGC4077/FGC5856 is not the biggest Kennedy group. If you are lowland Scot or Ulster Kennedy it is not the best bet.

For those of whatever surname with paternal ancestry in Perthshire or Angus (and maybe slightly beyond that) FGC4077 is a distinct possibility. There are however other branches of M222 present in these areas as well as non-M222 groups.

A PDF tree of SNP structure and tester surnames in FGC4077 is incorporated into an [overall M222 tree](#) here.