

Genetic Fingerprint for Flannerys of Munster

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1. Introduction

There are many people around the world who bear the Irish surnames Flannery and Flannelly, and others who bear the variants Flanary, Flanery and Flenley: hereinafter collectively termed Flannerys for ease of reference. Two questions inevitably arise:-

- Whereabouts in Ireland did they originate?
- Are they all genealogically related to each other?

The Flannery Clan Y-DNA Project was initiated in October 2003 to provide scientific answers to these questions in a format that can be used by all genealogists tracing their Flannery roots to specific families and specific locations in Ireland.

The first phase of the project was a review of existing research into the origins of the surnames. The second phase was an analysis of the distribution of the surnames throughout Ireland using available historical databases. The third phase was a comprehensive Y-DNA testing programme of volunteers around the world spanning over a decade, coupled with conventional genealogical research tracing the Flannery roots of the volunteers. The test results have provided genetic fingerprints for four groups of Flannerys in Ireland, as well as subgroups and individual family lines associated with specific geographical locations. This paper provides a general overview of the results, and a detailed review of the Flannerys of Munster.

2. Historical Background

2.1 Surname Origin

Irish genealogy has been blessed by a long succession of historians: from the ancestral bards like Dubhaltach Mac Fhirbhisigh of the seventeenth century who wrote in Irish verse in the manner of his forebears, to Victorian scholars like John O'Donovan who recorded family folklore as he travelled from parish to parish with the Ordnance Survey to standardise the spelling of place names. Although surviving records are sparse, their availability to modern scholars has provided a rich source of information.

Research into the origins of Irish surnames (Woulfe, 1906; MacLysaght, 1957) draws a distinction between the Flannerys of Munster (*An Mhumhain*) and the Flannerys of Connaught (*Connacht*)¹. A further distinction is drawn between the Flannerys and Flannellys within Connaught, whilst conceding that these surnames have been used interchangeably in the past due to the similarity of the names and the close proximity of the bearers. The research is based on a wide range of historical sources and oral traditions, and concludes that there are three ancestral groups. The groups are often simplified as Flannery (Limerick), Flannery (Mayo) and Flannelly (Sligo).

¹ Official placename spellings have been used in accordance with ISO 3166-2:2007

Flannery is an anglicised form of Ó Flannabhra (sometimes simplified to Ó Flannúra) and is a patronymic surname recording descent from an ancestor named Flannabhra. Flannelly is an anglicised form of Ó Flannghaile and is a patronymic surname recording descent from an ancestor named Flannghal.

Transcripts of ancient annals and genealogical manuscripts (O'Donovan, 1843a; CELT, 1997; Ó Muraíle, 2004) identify a significant number of notable persons bearing these names, including the following:-

- ‡ Flannghal, son of Fiachra (of the line of Conn Céadchathach, king of Connaught)
- ‡ Flannghal, son of Ronán (of the line of Niall Noigiallach, king of Connaught)
- ‡ Flannabhra, son of Aonghus (of the line of Oilill Ólom, king of Munster)
- ‡ Flannabhra, son of Aodh (of the line of Mogh Lámha, king of Munster)
- ‡ Flannabhra, son of Cathán (of Clann Chathasaigh)
- ‡ Flannabhra, son of Gamhnán (of Uí Bhriúin Umhail)
- ‡ Flannabhra, son of Loingseach (of Uí Néill an Tuaiscirt)
- ‡ Flannabhra (son of Cumascach), chief of the Umhalls in County Mayo; d.778
- ‡ Flannabhra (son of Seachnasach), chief of the Umhalls; d.950
- ‡ Flannabhra (son of Scannlán), chief of Gabhra in County Limerick; d.876
- ‡ Flannabhra, son of Ciarmhacán (chief of Gabhra; d.901)

It is possible that there are numerous unrelated families which have arisen from different ancient ancestors of the same name. However, the reputed common ancestry of specific families in certain locations indicates that particular individuals are more likely to be founding ancestors than others. For example, in Munster, the families of Flannery and Scanlon were reputedly related and jointly held sway until they were displaced by the families of Collins and Kennelly shortly before the Norman Invasion (MacCotter, 2009). This would suggest that Flannabhra son of Scannlán is a likely common ancestor in this region. Similarly, in Connaught, the O'Malley family claim descent from Máille, who was the grandfather of Flannabhra son of Seachnasach, and also the great-grandson of Flannabhra son of Cumascach (O'Donovan, 1843b). This would seem to indicate that both of these individuals are related to the O'Malleys. In the same vein, the Flannelly family were historically famed as one of the “Pillars of Skreen”, along with the Rafferty, Currin and Tarpey families, although it is not clear if common ancestry was claimed (O'Donovan, 1843b). It will be shown that the genetic relationship of reputedly related families may be used to verify a common ancestor and identify the ancestor in the ancient records.

2.2 Surname Distribution in Ireland

The distribution of families bearing the surnames Flannery and Flannelly in the nineteenth and early twentieth centuries has been mapped by the Flannery Clan using historic land tax records (Tithe Applotment Books and Griffith's Primary Valuation), civil registration records for births, marriages and deaths in the period 1845/64-1935, as well as the 1901 and 1911 census returns (O'Flannery, 2000; 2002; 2004; 2006; 2010; 2011). The distribution of families is concentrated in the western and southwestern counties of Ireland, with two peak concentrations in North Munster and North Connaught (see Figure 1). Whilst this broadly confirms prior research into surname origins, the distribution is too diffuse to identify distinct groups, and does not shed light on reputed ancestral origins and genealogical relationships.

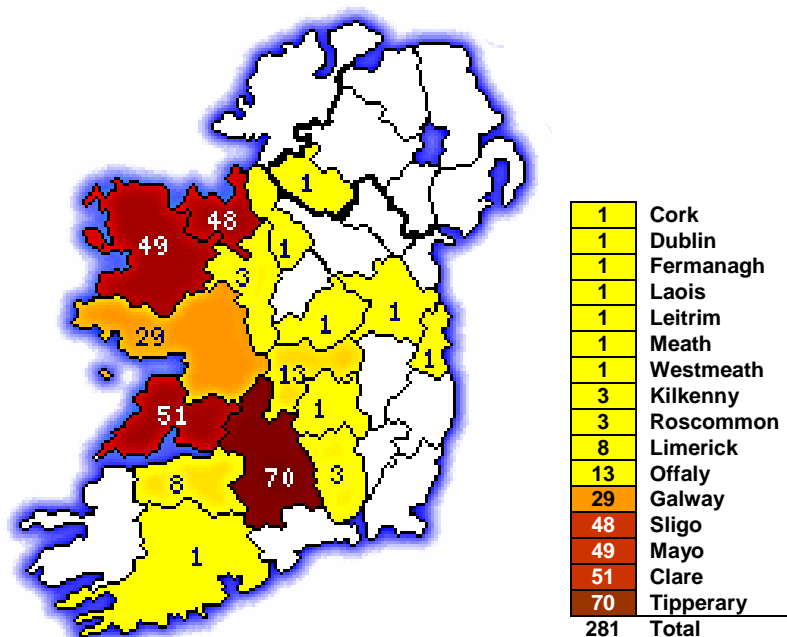


Figure 1: Earliest available distribution by county using Tithe Applotment Books (1824-1848) – based on 281 records (map: O’Flannery, 2006)

2.3 Irish Clan Y-DNA Projects

Genetic fingerprinting uses laboratory tests to check the male Y-chromosome inherited from father to son. The tests yield a sequence of numbers which labels the genetic origins of the participant. Genetic studies on surname groups (Sykes *et al.*, 2000) and European population groups (Helgason *et al.*, 2000; Rootsi *et al.*, 2000) established that standard markers on the male Y-chromosome could be scientifically checked to identify population groups and ascertain genealogical relationships. Trinity College Dublin received funding from Patrick Guinness to undertake genetic studies on Irish Clans (McEvoy B. *et al.*, 2004; Moore L. *et al.*, 2005), and presentations to Clans of Ireland prompted some of the Irish Clans to undertake private genetic projects (Kavanagh Clan; O’Gara Clan) using newly developed commercial tests (FamilyTreeDNA 12-markers, 2000; 25-markers, 2001; 37-markers, 2003). Additional studies on Irish Clans (McEvoy, B. *et al.*, 2006; 2008) shed further light on the ancient common ancestry of individual Irish Clans within larger tribal groups in diverse provincial locations.

In summary, the Y-DNA test is potentially useful in several ways. A person’s individual genealogical research may be advanced by comparing the test result with that of another in order to ascertain the likelihood of a common ancestor. This can be particularly important when the genealogical origin has been established for a matching result. Group studies into ancient lineage may be advanced by comparing the results of one group to that of another to verify if reputedly related families share a common ancient ancestor. Studies into ancient origins and migrations may be advanced by comparing test results to the results typically associated with population groups such as Gaelic Irish, Vikings, Normans and other European Settlers.

3. Genetic Fingerprinting

3.1 Laboratory Test Regime

Cheek swab samples were obtained from a total of 147 males who gave appropriate informed consent. These samples were sent to FamilyTreeDNA (Gene by Gene Ltd.) in Houston, Texas, and tested on the following 37 markers of the Y-chromosome in three sub-tests of 12, 13 and 12 markers respectively:-

DYS 393 / 390 / 394 / 391 / 385a / 385b / 426 / 388 / 439 / 389i / 392 / 389ii

DYS 458 / 459a / 459b / 455 / 454 / 447 / 437 / 448 / 449 / 464a / 464b / 464c / 464d

DYS 460 / GATAH4 / YCAIIa / YCAIIb / 456 / 607 / 576 / 570 / CDYa / CDYb / 442 / 438

3.2 Laboratory Test Results

The test results were initially assessed using a simple spreadsheet to compute the mode and the genetic distance of each individual result from the mode. Where participants included extended family members, a single result for the family group was used in the determination of mode in order to reduce the risk of bias or skew. This method of analysis rapidly identified four distinct groups as well as a number of ungrouped results. The test results were then rechecked using proprietary phylogenetic analysis software (*Network 4.6.1.3* by Fluxus Technology Ltd.) which enabled the groupings to be verified and charted. All of the grouped results match the R1b haplogroup² which is typically identified with the Gaelic Irish population group.

The groups were categorised as follows:-

- 68 results (46% sample) formed the larger major group with their ancestry traced to counties within the province of Munster: the Flannerys of Munster.
- 53 results (36% sample) formed the smaller major group with their ancestry traced to counties within the province of Connaught: the Flannerys of Connaught.
- 9 results (6% sample) formed the larger minor group with their ancestry traced to the Kiltullagh area of County Galway: the Flannerys of Kiltullagh.
- 7 results (5% sample) formed the smaller minor group with their ancestry traced to the Templeboy area of County Sligo: the Flannellys of Templeboy.
- 10 results (7% sample) remained ungrouped at the time of writing but it is likely that 3 of these results will form a new group in due course. 5 of the ungrouped results matched R1b; 3 results matched I2b; 1 result matched E1b; and 1 result matched the J2 haplogroup.

Analysis of marker variance indicated that multiple marker DYS 464(abcd) was relatively uniform within each defined group but varied significantly between groups. On that basis, the multiple marker was included in the charting of each group. Marker DYS 389ii was not used directly, in favour of DYS 389B = DYS 389ii - DYS 389i. However, it was found that the nested marker DYS 389 was relatively stable.

² The haplogroup nomenclature system recommended by the Y Chromosome Consortium (2002) has been used in this report for simplicity. It is acknowledged that nomenclature is subject to change.

3.3 Group Results for the Flannerys of Munster

The 68 participants in this group included 31 extended family members: typically pairs of distant cousins but also grandfathers-sons-grandsons and larger groups of very distant cousins. The mode was computed using the test results for the remaining 37 participants who were presumed to be unrelated on the basis of available historical documentation as follows:-

13 / 24 / 14 / 10 / 11 / 14 / 12 / 12 / 12 / 13 / 13 / 30
 16 / 9 / 10 / 11 / 11 / 26 / 16 / 19 / 29 / 15 / 15 / 17 / 17
 11 / 11 / 19 / 23 / 16 / 15 / 18 / 17 / 38 / 38 / 12 / 12

The mutation rate for the group of 37 unrelated members was tentatively estimated by analysing the spread of marker mutations over the timespan indicated by the most likely ancient common ancestor (Flannabhra son of Scannlán, d.876). A similar exercise was undertaken for the largest subgroup of 19 participants who claimed descent from a reputed common ancestor (Thomas Flanary, 1722-1782), as verified later in this report.

ancestor: Flannabhra son of Scannlán estimated timespan = 1,100 years (44 generations)		ancestor: Thomas Flanary estimated timespan = 200 years (8 generations)	
genetic distance	matches	genetic distance	matches
0	1	0	5
1	4	1	5
2	7	2	5
3	5	3	3
4	8	4	1
5	10	5	0
6	0	6	0
7	0	7	0
8	1	8	0
9	1	9	0
average of 37	3.6	average of 19	1.5

Table 1: Genetic distance from group modal and largest subgroup modal

The group results indicate an average mutation rate of 1 mutation every 300 years, and a maximum mutation rate of 1 mutation every 125 years (5 generations). The subgroup results indicate an average mutation rate of 1 mutation every 133 years, and a maximum mutation rate of 1 mutation every 50 years (2 generations).

Conventional genealogical research traced the ancestry of 31 of the 37 unrelated members of the group to specific townlands (TL) or civil parishes (CP), and the locations were mapped to illustrate the distribution of the group. The general map illustrates that there has been long range migration to Dublin, Belfast, Ballinrobe and Dingle, but the spread clearly shows that these migrations were isolated incidents by individuals rather than general migration patterns (see Figure 2). The localised map shows a distinct concentration in North Munster, particularly in the vicinity of Lough Derg on the River Shannon (see Figure 3).



Figure 2: General map of ancestral locations for Flannerys of Munster – based on 31 unrelated members

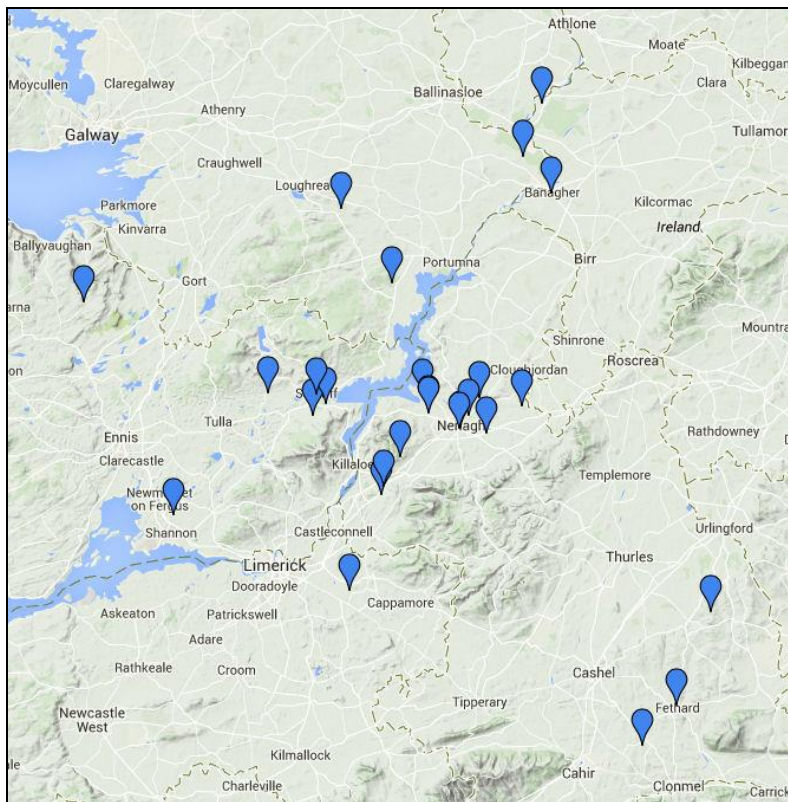


Figure 3: Localised map of ancestral locations around Lough Derg – showing 25 out of 31 locations

The following technical details may be of assistance to genetic genealogists (in due course, these details will be gathered into a technical appendix):-

The mode was matched by 1 result (#13653) traced to Ballyguy TL, Abington / Clonkeen CP, Limerick.

4 results scored a genetic distance of 1 to the mode, traced as follows: #17738 (439=11) of Castlesheela TL, Dromineer CP, Tipperary; #28431 (570=18) of Fethard TL, Fethard CP, Tipperary; #121286 (388=13) of Ballinrobe, Mayo; and #154810 (CDYb=39) of Ballyclerahan TL, Ballyclerahan CP, Tipperary.

7 results scored a genetic distance of 2 to the mode, 5 traced as follows: #15734 (394=15, CDYa=37) of Carrowkeel TL, Dunmore CP, Galway; #15785 (458=17, GATAH4=10) of Belfast, Antrim; #34184 (458=17, 464c=16) of Dingle, Kerry; #171796 (458=15, 607=16) of Earlshill TL, Ballingarry CP, Tipperary; and #186184 (449=28, 464c=16) of Ballinahinch TL, Ballingarry / Kilcomenty CP, Tipperary.

5 results scored a genetic distance of 3 to the mode, 4 traced as follows: #17524 (385b=13, 464c=16, CDYa=37) of Nenagh, Tipperary; #17862 (CDYa=36, CDYb=37) of Rosturra TL, Ballynakill CP, Galway; #53158 (460=13, 576=17) of Murroe TL, Abington CP, Limerick; and #259988 (390=23, 449=30, CDYb=39) of Carran TL, Carran CP, Clare.

8 results scored a genetic distance of 4 to the mode, 6 traced as follows: #82867 (389B=17, 449=31, 576=17) of Raheen TL, Tomgraney CP, Clare; #116988 (GATAH4=12, CDYa=36, CDYb=37) of Ballymalone TL, Tomgraney CP, Clare; #186814 (390=25, 448=18, 464c=16, CDYa=37) of Ardregane TL, Monsea CP, Tipperary; #194409 (458=17, 460=12, CDYa=37, CDYb=37) of Kilruane TL, Kilruane CP, Tipperary; #312581 (GATAH4=12, CDYa=36, CDYb=37) of Dublin; and #318336 (458=18, 460=12, CDYa=37) of Crossagh TL, Drumline CP, Clare.

10 results scored a genetic distance of 5 to the mode, 9 traced as follows: #13940 (390=23, 385a=12, CDYa=36, CDYb=37) of Burgesbeg TL, Burgesbeg CP, Tipperary; #24220 (390=23, 385a=12, 389i=15, 576=19, CDYa=37) of Ardregane TL, Monsea CP, Tipperary; #65366 (458=17, 460=12, CDYa=36, CDYb=37)* of Rathnaleen North TL, Lisbunny CP, Tipperary; #71076 (458=17, 449=28, 460=12, 576=17, CDYa=37) of Woodville TL, Ballymackey CP, Tipperary; #80208 (458=18, 460=12, YCAIIB=14, CDYa=37) of Kilbarron TL, Feakle CP, Clare; #93550 (449=28, 464c=16, 464d=16, CDYa=37, CDYb=37) of Creevagh TL, Clonmacnoise CP, Offaly; #148770 (GATAH4=12, CDYa=35, CDYb=37) of Clonfert, Galway; #195493 (394=15, 458=17, 460=12, CDYa=37, CDYb=37) of Nenagh, Tipperary; and #256960 (458=17, 460=12, CDYa=36, CDYb=37)* of Ballintotty TL, Lisbunny CP, Tipperary.

1 result scored a genetic distance of 8 to the mode: #159176 (389i=15, 449=30, GATAH4=12, CDYa=35, CDYb=37) traced to Banagher TL, Rynagh CP, Offaly.

1 result scored a genetic distance of 9 to the mode: #43757 (389i=15, 389B=17, GATAH4=12, 456=15, 576=17, 570=18, CDYa=36, CDYb=37) traced to Scarriff TL, Tomgraney CP, Clare.

3.5 Genealogical relationships among the Flannerys of Munster

Genetic mutations are believed to occur at random intervals over time, and may be due to the ageing process of the father (Brinkmann *et al.*, 1998) and/or environmental factors such as natural radiation (radon³). If age is a factor, then the least mutations should occur within the most senior line of inheritance (first son of first son etc.) and the most mutations should occur in the most junior line (last son of last son etc.). If the project sample is representative of the Flannery population in general, then the modal result should reflect the original ancestral result and most senior line, and results of increasing genetic distance should indicate common ancestry further back in time along the more junior lines. In addition to mutations which may occur within the space of one generation between the first son and the last, as illustrated in the simplistic drop-line chart in Figure 4, it is also possible that the first son may show a mutation if his father was elderly at the time of his birth.

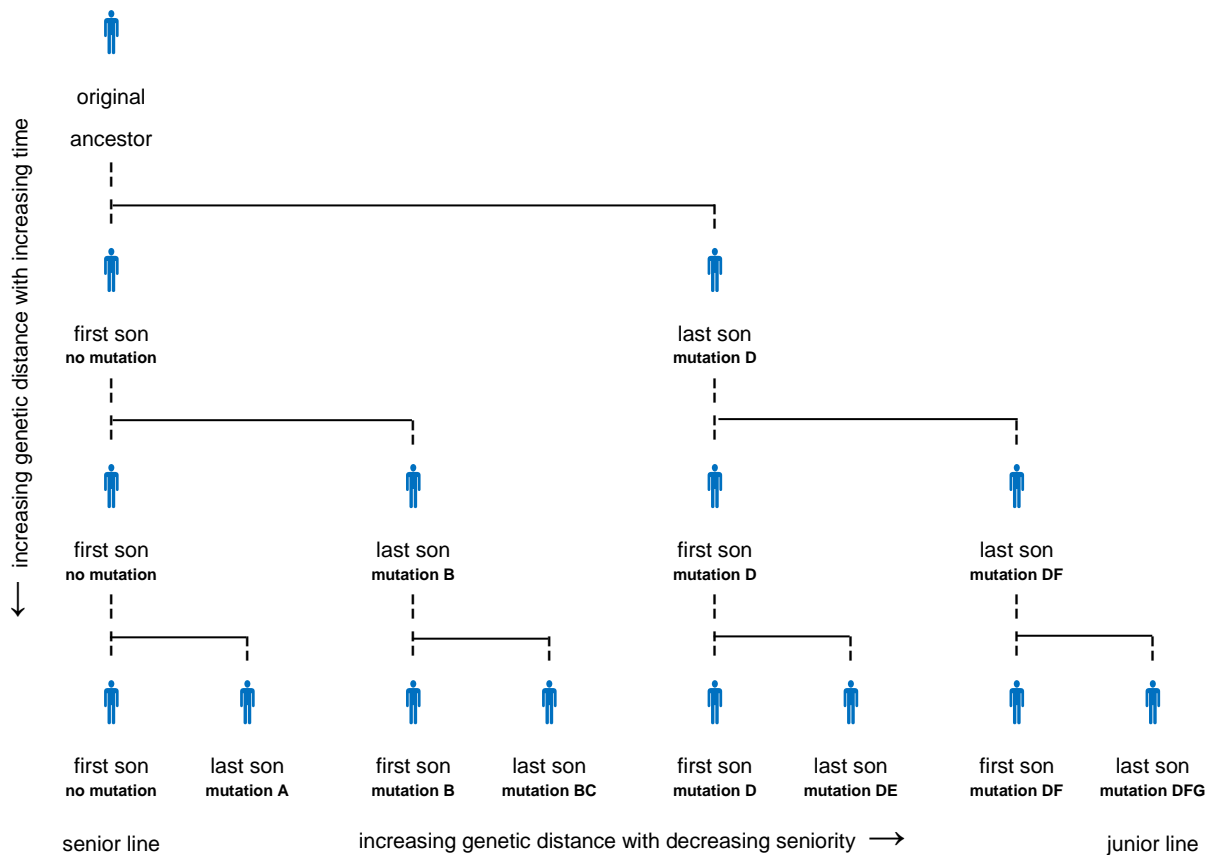


Figure 4: Drop-line chart of four generations clarifying the potential significance of genetic distance

The principles of this drop-line chart make it easier to interpret the network charts...

³ Radon is a naturally occurring radioactive gas which is found in all soils and rocks in Ireland to some degree. Radon prediction maps published by the Radiological Protection Institute of Ireland (now merged with the Environmental Protection Agency; www.epa.ie) appear to indicate that the areas of greater risk of high concentrations of radon correspond closely with the areas where higher rates of genetic mutation have been observed. It is possible that the apparent correlation is just a coincidence.

The largest subgroup in the group was charted to verify the claim to common ancestry. 1 result did not match the others and remained ungrouped at the time of writing, but the remaining 19 results were clearly shown to be closely related (see Figure 5). As per the drop-line chart, the short branches indicate recent ancestral connections to the senior line, and the long branches indicate historical ancestral connections through the junior lines. The closest matching unrelated group result (#17862) is shown on the subgroup chart, and the very short genetic distance (= 1) indicates a close ancestral connection. The degree of mutation (≤ 4) within the subgroup over a period of 200 years is broadly similar to the genetic distance (= 4) of the subgroup modal (#15334) from the group modal (#13653). This may indicate that the subgroup split from the senior line approximately 200 years prior to the birth of the subgroup's ancestor (that is, circa 1522), or the subgroup may have split from a junior line at an earlier date.

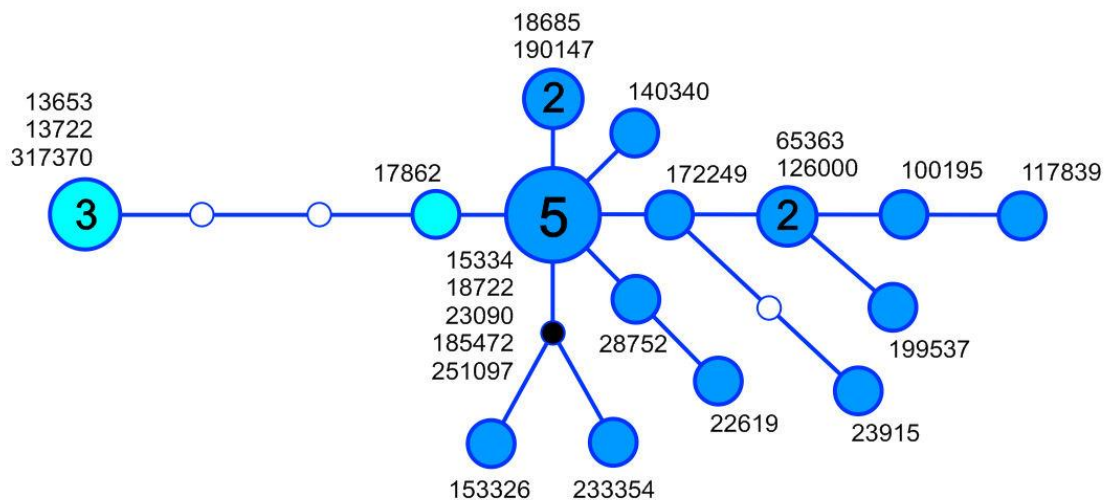


Figure 5: Network chart of subgroup claiming descent from Thomas Flanary (1722-1782); the defining sample number is shown for each colour-coded circle, which is proportional to the number of matches numerically indicated, medium blue for the subgroup and light blue for the group; inferred intermediate results are denoted by black nodes when branched, and white nodes when unbranched.

The group was examined using a series of charts to examine the likely genealogical relationship of the members. The core cluster of results with short genetic distance (≤ 2) from the group modal (#13653) was charted, and formed a classic star-like pattern (see Figure 6). Results with medium genetic distance (≤ 4) were added to the core cluster, and developed branches denoting distant ancestral connections (see Figure 7). As per the drop-line chart, the short branches indicate recent ancestral connections to the senior line, and the long branches indicate historical ancestral connections through the junior lines. Finally, the remaining results with long genetic distance (> 4) were added to complete the network (see Figure 8).

It is not possible to draft a speculative drop-line chart for the group using the results because any individual marker mutation may be recent or historic if it is purely random. However, the sequence of cumulative mutations may be used to estimate the relative antiquity of specific branches. In due course, as more results are added and analysed, the frequency of specific marker mutations may provide insights into their historic occurrence and enable a drop-line chart to be drawn.

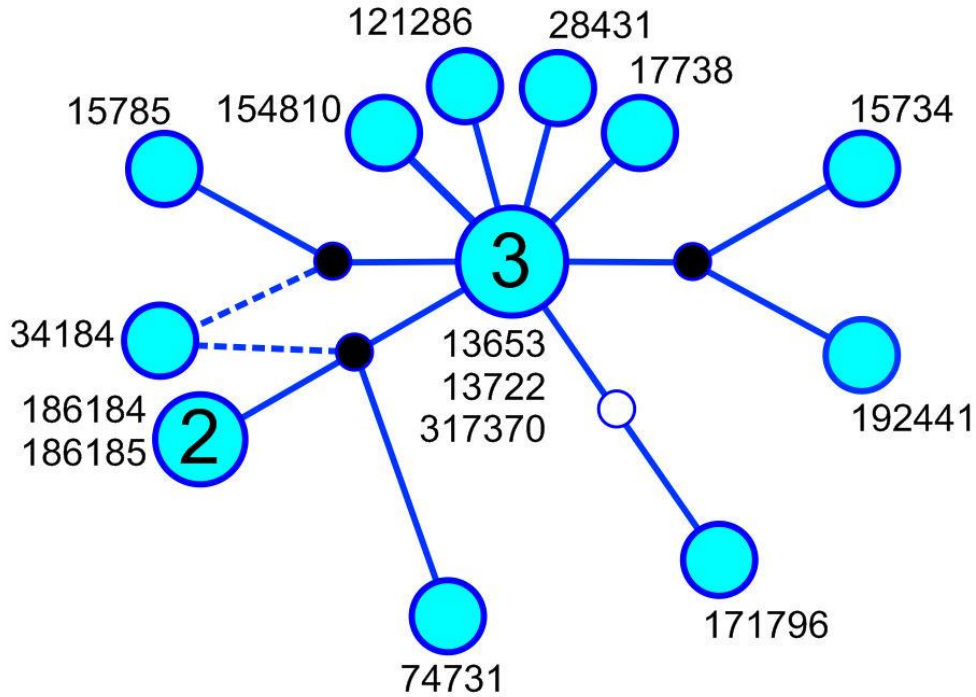


Figure 6: Network chart of Flannerys of Munster (results with short genetic distance ≤ 2); the dashed lines indicate multiple alternative relationships which are arbitrarily simplified in larger network charts.

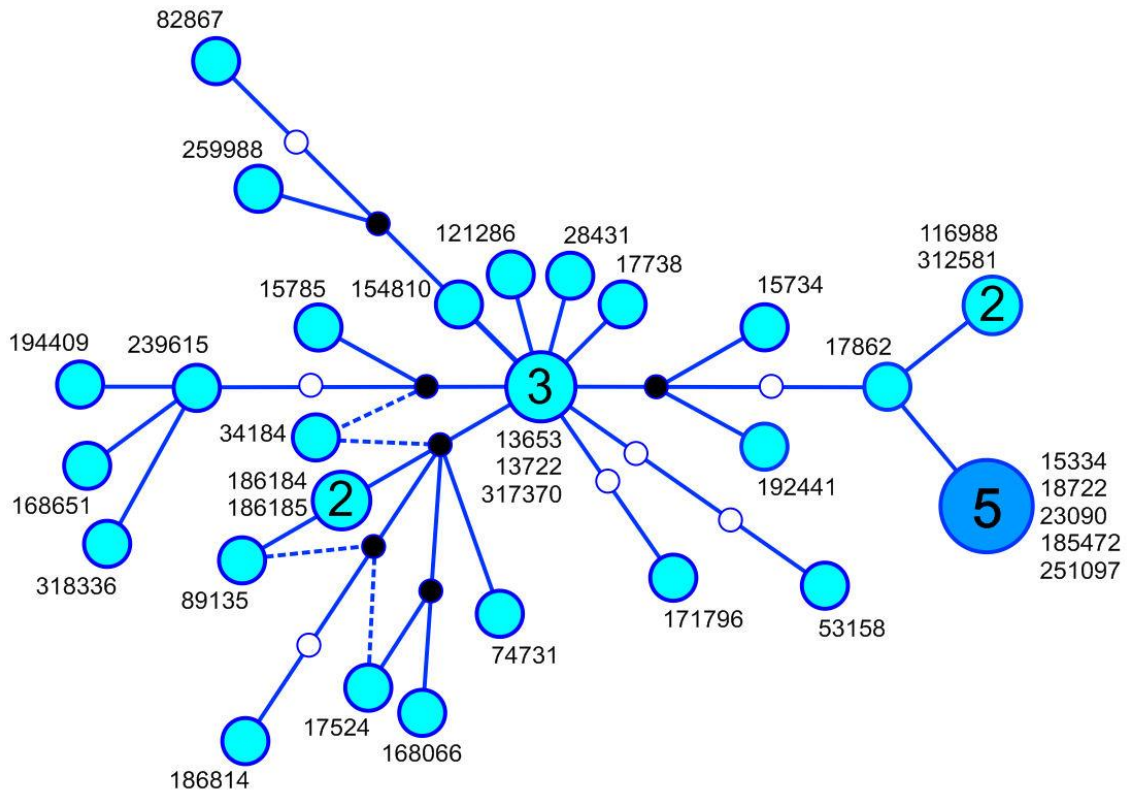


Figure 7: Network chart of Flannerys of Munster (results with medium genetic distance ≤ 4)

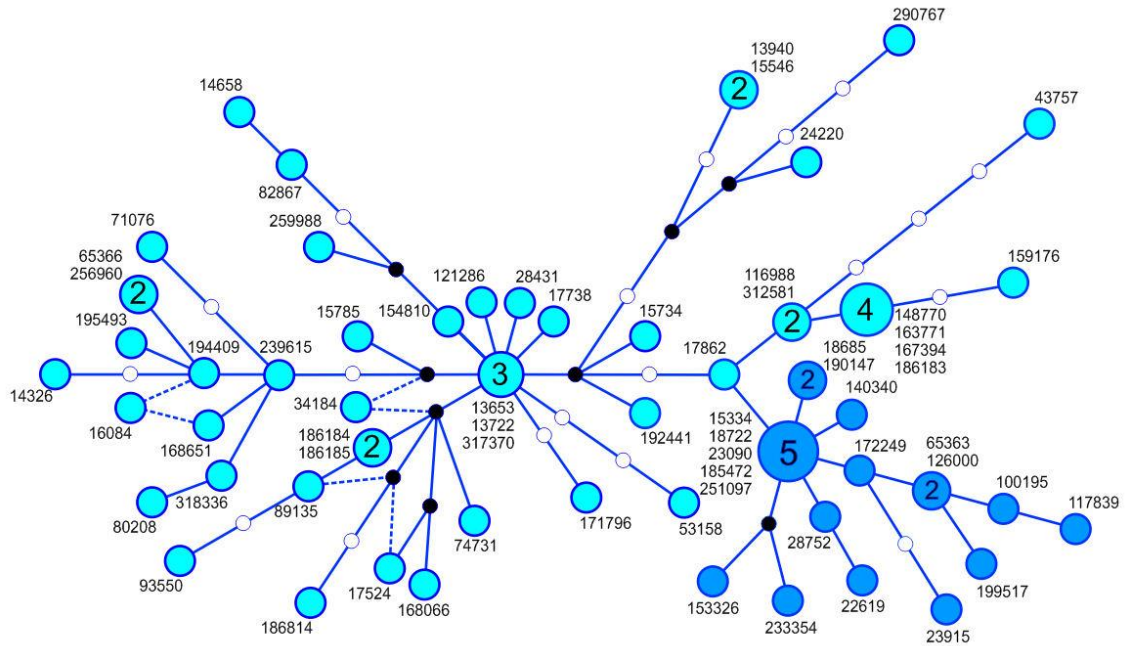


Figure 8: Network chart of Flannerys of Munster (all results)

3.6 Deep Ancestral Matches for the Flannerys of Munster

The database of FamilyTreeDNA results was searched for matches to the modal result (#13653) in the manner described by Irish Origenes (Bowes, 2012). The search returned 829 matches at 12 markers level, 86 matches at 25 markers level, and 55 matches at 37 markers level. The matches at 12 markers were disregarded, as were the matches at low frequency (see Table 2).

Test subject	37 Marker Y-DNA test							
	37 marker level				25 marker level			
	exact	-1	-2	-3	-4	exact	-1	-2
Flannery (modal)	Flannery(x1)	Flannery(x2)	Flannery(x9)	Flannery(x20)	Flannery(x14) var.(x1-2)	Flannery(x11)	Flannery(x13) Kiely(x5)	Flannery(x25) var.(x1-2)

Table 2: Genetic matches in FTDNA database

The scope of the analysis was limited by the size of the database but indicated a possible ancient association with the surname Ó Cadhla (anglicised as Kiely). According to Woulfe, one of the two ancestral groups of Kielys was “a Thomond family who were chiefs of Tuath Luimnigh in the neighbourhood of the city of Limerick”, and this would appear to be supported by the result. A previous study of a Kiely result (Bowes, 2012) indicated a similar ancient link between Kiely and the now rare surname of Ó Donndubhartaigh (often disguised as its anglicised form Davenport) which, according to Woulfe, appears to have originated in the neighbourhood of Clonmel, County Tipperary. It is important to note that my analysis was conducted with respect to the modal result, as opposed to any of the distant matches at the fringe of the group, in order to minimise the risk of erroneous matches due to long-branch attraction (LBA). Past research (Bergsten, 2005) has shown that erroneous matching of unrelated sources can occur due to random mutations of long-branch taxa. This is a potential flaw in the Irish Origenes method of analysis, and it is important to exercise great care.

4. Conclusion

Past research by Woulfe and MacLysaght anticipated three distinct groups: Flannery (Limerick), Flannery (Mayo) and Flannelly (Sligo). Y-DNA tests on 147 males have identified four distinct groups: the larger major group is in Munster, the smaller major group is in Connaught, the larger minor group is in Kiltullagh, County Galway, and the smaller minor group is in Templeboy, County Sligo. All four groups match the R1b haplogroup which is typically identified with the Gaelic Irish population group, as opposed to the distinctive profile of foreign population groups such as Vikings, Normans and other European Settlers.

The Flannerys of Munster share a single common ancient ancestor, identified using a standard commercial test on 37 markers of the Y-chromosome, as follows:

DYS#	393	390	394	391	385a	385b	426	388	439	389i	392	389ii
repeats	13	24	14	10	11	14	12	12	12	14	13	30
458	459a	459b	455	454	447	437	448	449	464a	464b	464c	464d
16	9	10	11	11	26	16	19	29	15	15	17	17
460	GATAH4	YCAIIa	YCAIIb	456	607	576	570	CDYa	CDYb	442	438	
11	11	19	23	16	15	18	17	38	38	12	12	

The group results indicate an average mutation rate of 1 mutation every 300 years, and a maximum mutation rate of 1 mutation every 125 years (5 generations).

It is likely that the ancestor was Flannabhra son of Scannlán, as noted in the annals, but further research is needed to be certain. Flannabhra was chief of Uí Fidhghente in Gabhra (Askeaton / Rathkeale), County Limerick, and was killed in battle in 876. His sons and grandsons are later mentioned in the annals, so it is likely that his descendants flourished and his name may have been adopted as a surname. The senior (least mutated) line has been genetically traced to the townland of Ballyguy in County Limerick, with closely related branches in neighbouring County Tipperary. The junior lines had migrated prior to the Great Famine as far afield in Ireland as Dublin, Belfast, Ballinrobe and Dingle, but there was a dense concentration in the vicinity of Lough Derg on the River Shannon. This would appear to have been the ancestral homeland which was established after the Flannerys were displaced from Gabhra by the families of Collins and Kennelly shortly before the Norman Invasion .

Flannerys with ancestry traced to specific townlands and civil parishes in Munster have been genetically fingerprinted so that any genealogist may take a simple cheek swab test and find a match to establish common ancestry and genealogical origin. The database will be further developed, and it is hoped that future research may be undertaken in collaboration with other families of reputed common ancestry (Kiely, Scanlon etc.).

5. References

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