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Case Study

Pinpointing the McGinnis Irish Paternal Ancestral Genetic Homeland

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A handwritten signature in black ink, appearing to read 'Tyrone Bowes'.

Dr Tyrone Bowes
Updated 23rd May 2020

INTRODUCTION

A simple painless commercial ancestral Y chromosome DNA test will potentially provide one with the names of many hundreds of individuals with whom one shares a common male ancestor, but what often perplexes people is how one can match lots of individuals with many different surnames? The answer is quite simple. Roughly 1,000 years ago one's direct medieval male ancestor, the first for example to call himself 'McGinnis' was living in close proximity to others with whom he was related but who inherited other surnames like O'Donnell, McGonigle and Duffy. Given that 1,000 years have passed since paternally inherited surnames were first adopted, there will be many descendants of those individuals some of whom will today undergo commercial ancestral Y-DNA testing. Hence the surnames of one's medieval ancestor's neighbours will be revealed in today's Y-DNA test results.

Surnames in Ireland can still be found concentrated in the areas where they first appeared, or in the area where ones ancestors first settled. One can therefore use census data to determine the origin of the surnames that appear in one's Y-DNA results, identifying an area common to all, and reveal one's '**Paternal Ancestral Genetic Homeland.**' The paternal ancestral genetic homeland is the small area (usually within a 5 mile radius) where one's ancestors lived for hundreds if not thousands of years. It is the area where one's ancestor first inherited his surname, surrounded by relatives who inherited others. It is the area where ones ancestors left their mark in its placenames, its history, and in the DNA of its current inhabitants. Since modern science can pinpoint a paternal ancestral genetic homeland it can also be used to confirm it by DNA testing individuals from the pinpointed area.

Notes of caution!

1. In Ireland each of the estimated 1,500 distinct surnames had a single founding ancestor, that's an estimated 1,500 Adams from whom anyone with Irish ancestry can trace direct descent. But science has demonstrated that only 50% of individuals with a particular Irish surname will be related to the surnames founding ancestor, the other 50% of males will have an association that has arisen as a result of what are called 'non-paternal events,' usually a result of adoption or maternal transfer of the surname.
2. Often people are looking for their DNA results to trace back to a specific area. One must remember that the results reflect one's ancestor's neighbours from around 1,000 years ago. As a result if your recent Irish ancestors were descended from 9th Century Viking raiders, 12th Century conquering Normans, or 16th Century Planters, your DNA results will reflect earlier English, Norman, Welsh, and possibly Scandinavian origin. I have estimated that only 60% of those with Irish ancestry are related to the pre-Christian Celtic tribes of Ireland. One must approach this process with an open mind!

Interpreting the Y-DNA results

To pinpoint a paternal ancestral genetic homeland one must first identify the surnames that appear as one's closest genetic matches upon commercial ancestral Y-DNA testing, see **Figures 1, 2** and **3**. Those surnames, particularly one's that recur throughout one's Y-DNA results will typically reflect the surnames of one's medieval paternal ancestral neighbours. Mr 'McGinnis's' closest genetically recurring surname matches as revealed upon Y-DNA STR testing are detailed in **Figure 2**.

111 Marker Matches							
Genetic Distance	Last Name	Earliest Known Ancestor	Y-DNA Haplogroup	Terminal SNP	Match Date	Big Y STR Differences	Big Y STRs Compared
1	McGinnis		R-BY117342	BY117342	1/30/2019	1	405
2	McGinnis	James McGinnis, b ca 1749 Londonderry	R-BY38584	BY38584	1/28/2018	3	410
3	McGinnis	James Magennis	R-BY38584	BY38584	1/28/2018	2	410
4	McGinnis	Samuel McGinness, Ireland	R-BY38581	BY38581	1/28/2018	3	396
4	McGinness	James McGinnis, 1715 (Londonderry)	R-BY38581	BY38581	1/28/2018	3	392
4	O'Donnell	Martin Donnell (1725-1792) Knockgrafton, Tipperary	R-BY21154	BY21154	1/28/2018	4	403
5	Leach	Zadock Leach b.1753 Maryland d. 1844North Carolina	R-BY38583	BY38583	1/28/2018	1	397
5	Duffee	John Patrick Duffy b. 1755 and d. 1832	R-BY38577	BY38577	1/28/2018	2	403
5	Healy	Michael Savage b. 1820	R-FT50589	FT50589	2/28/2019	2	400
5	Mc Ginnis		R-BY38581	BY38581	2/25/2019	3	401
5	houtrouw		R-BY38582	BY38582	6/5/2018	3	380
5	Mc Ginnis	James Magennis, b. 1750	R-M269		9/20/2018		
5	McGinnis		R-M269		1/28/2018		
5	H		R-Z29319	Z29319	6/15/2018		
6	Leach	Zadock Leach, 1743 -1843	R-BY38583	BY38583	5/15/2019	3	420
6	Ashley	Bowlan	R-M269		6/28/2019		
6	Pryor		R-M269		1/28/2018		
6	Pryor		R-M269		1/28/2018		
6	Plotner		R-M269		1/28/2018		
7	Graham	John W. Graham, 1803-1860	R-FT50589	FT50589	12/15/2019	1	411
7	Sweeney	Charles Sweeney b. 1728	R-BY35773	BY35773	6/14/2019	3	409
7	Carnahan	George Washington Gideon Lyons b. 1859 and d. 1934	R-BY113174	BY113174	7/6/2018	7	420
7	McAmis		R-FGC8739	FGC8739	12/17/2018		
7	Fee	Thomas Fee 1755 Templeport, Cavan	R-FGC8739	FGC8739	1/28/2018		
7	Thompson	James Thompson, b. 1796, NC	R-M222	M222	1/28/2018		
8	Boyle	James Boyle,	R-BY35772	BY35772	1/28/2018	3	415
8	Brimer	John Brymer and Elizabeth Bruce	R-FGC65264	FGC65264	1/28/2018	3	390
8	Noonan	Thomas Noonan 1795	R-FT50133	FT50133	1/28/2018	4	416

Figure 1: Snapshot of test subject McGinnis's closest genetic surname matches at the 111 marker level as revealed in the FTDNA Y-DNA STR database. The more Y-DNA markers two people share the more recent their shared paternal ancestor once lived. The test subject's genetic surname matches are **NOT RANDOM**; he matches many others named McGinnis (red arrows). McGinnis is a surname associated with both Ireland and Scotland, and his closest Y-DNA results are dominated by individuals with Irish, Scottish or Irish/Scottish surnames, together with individuals with earliest recorded ancestral links within Ireland. The test subject also carries the M222 Y-DNA genetic marker which first appeared in Ireland before spreading into Scotland.

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Test Subject	Haplogroup	Y-DNA Test Results									
		111 Marker Matches					67 Marker Matches				
		Genetic Distance					Genetic Distance				
	1	4	6	7	3	4	5	6	7		
McGinnis	R-M222				Boyle(x11)						
					McAllister(x11)						
					Alexander(x10)						
					Frew(x10)						
					Cannon(x9)						
					McAdam(x9)						
					McDonald(x8)						
					McGonigle(x8)						
					Clark(x6)					Cowan(x14)	
					Collins(x6)		Glenn			Doherty(x13)	
				McGinnis(x13)	O'Donnell(x24)	Pryor(x6)	Patterson	Wilson(x11)	Kennedy(x5)	Gwin(x5)	
							Logan(x8)	Rose(x5)	McHarg(x6)	McHarg(x6)	Gillmore
								Templeton(x5)		Milligan(x6)	
										Shannon(x6)	

Figure 2: The test subject's closest recurring Y-DNA STR genetic surname matches reveal a paternal ancestral link with Ireland. Surnames are shown at the point at which they first occur as a genetic match, for example the first match to an individual named McGinnis occurs at 110/111 markers, but not all McGinnis will match at that level. In brackets are the numbers of individuals with a particular surname that appear as a genetic match. The test subject's closest genetically recurring surname matches are dominated by common **Gaelic Irish** surnames; indicating a most recent paternal ancestral link with Ireland. The mix of **Irish**, **Scottish**, or **Irish/Scottish** surnames is not uncommon and merely reflects the close shared ancestry between both nations; the result of many population movements back and forth over millennia. The **O'Donnell**, **McGonigle** and **Doherty** surnames (**bold**) are notable among the closest but **MOST FREQUENT** exclusively Gaelic Irish surname matches.

Upon Y-DNA testing the test subject matched other individuals named 'McGinnis' who tested independently, see **Figures 1, 2 and 3**. This indicates that the test subject is directly descended from a McGinnis-Adam; literally the first male (Adam) to take that surname who lived approximately 1,000 years ago. McGinnis is a common Irish and Scottish (MacInnes) surname. However, an Irish paternal ancestral origin is supported by the test subject's closest and most frequent Y-DNA surname matches which are dominated by exclusive Gaelic Irish surnames, see **Figures 2 and 3**. The dominance of Irish surnames among the test subject's closest and most frequent genetic relatives indicates that his direct male ancestor was living somewhere within Ireland when he first acquired the McGinnis surname, see **Figure 2**. BigY DNA testing, which demonstrates a more accurate chronological appearance of surnames among a tribal group of related males, clearly shows that all of the test subject's McGinnis genetic relatives descend from a single McGinnis-Adam who carries the *R-BY21159* mutation, and that his McGinnis-Adam shared common ancestry with the Gaelic Irish 'Duffys,' see **Figure 3**. It is the test subject's closest and most frequent Irish genetically recurring surname matches which will reveal where his direct male ancestor lived within Ireland an estimated 1,000 years ago.

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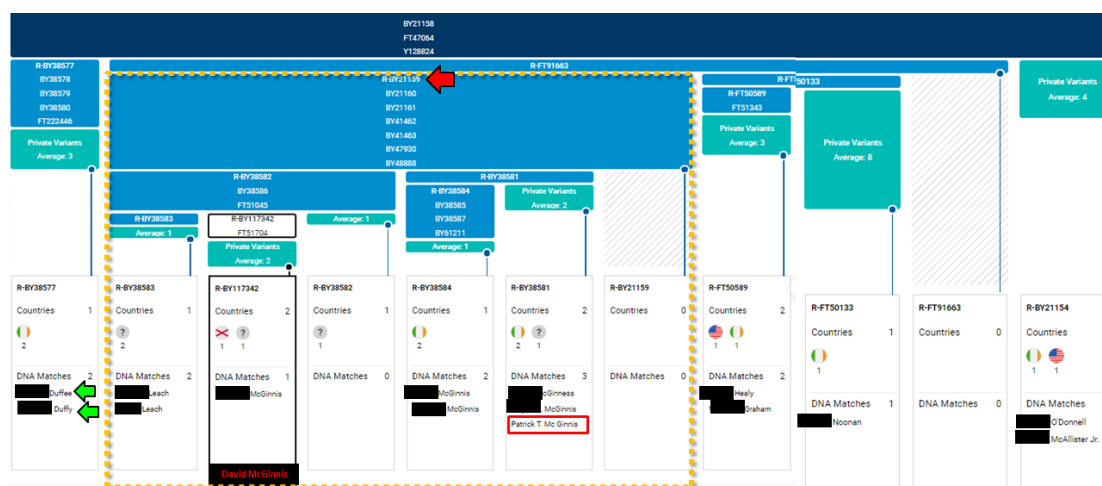


Figure 3: Block Display of Mr McGinnis's closest BigY SNP matches. While the STRs examined in the Y-DNA111 test are prone to replication or deletion with each generation, the SNPs explored in BigY testing are far more permanent mutations. BigY SNP testing offers a more accurate glimpse of the precise chronological development of surnames among a tribal group of related males. The test subject's BigY results reveal that all of the genetically matching McGinnis (yellow broken box) are descended from a single male who took the McGinnis surname and who carried the R-BY21159 mutation (red arrow) and that their founding McGinnis-Adam shares close ancestry with Irish 'Duffys' (green arrows). **Note:** Patrick T. McGinnis (red box) was recruited for Y-DNA testing, the 2 individuals named 'Leach' who appear within the McGinnis block are 'McGinnis in disguise,' having acquired the Leach surname within Ireland.

The McGinnis Surname in Ireland

All Gaelic Irish surnames have been extensively anglicised, and as a result one will typically find many different spellings of one's Gaelic surname. The most common spelling variants that occurred in 1911 include McGuinness, McGuiness, McGinnis and Maginnis. Distribution mapping of individuals named McGuinness, McGuiness, McGinnis and Maginnis in 1911 reveals that they are not distributed evenly but concentrate in specific counties, see **Figure 4**. Since farmers with each surname still concentrate in the area where their surname first appeared, or in the area where one's ancestors first settled, one can examine the distribution of McGuinness, McGuiness, McGinnis and Maginnis farmers in Ireland to determine how many genetically distinct groups existed. The 1901 census data reveals 8 geographically distinct groups of McGinnis and McGuinness in Ireland, one of whom the test subject, as revealed by his Y-DNA results, shares common paternal ancestry with, see **Figure 5**.

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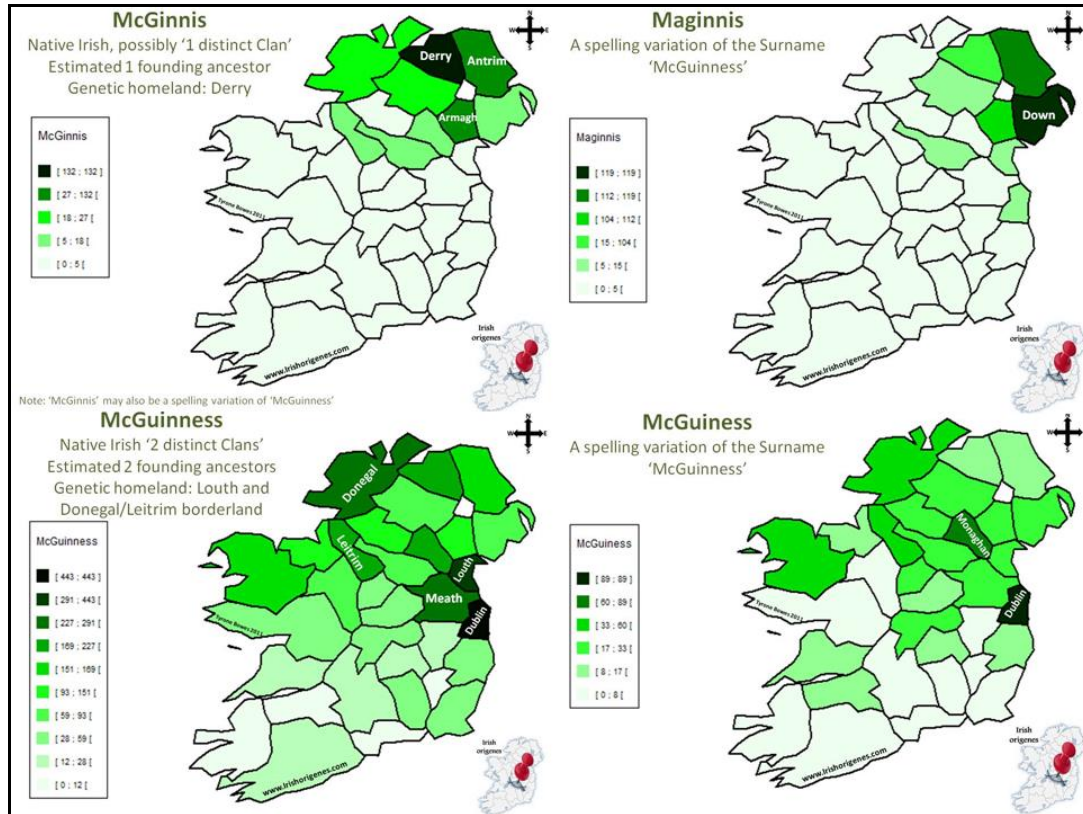


Figure 4: Distribution mapping of the McGuinness, McGuiness, McGinnis and Maginnis surnames in Ireland. Distribution mapping reveals that the McGuinness, McGuiness, McGinnis and Maginnis surnames are overwhelmingly associated with the northern half of Ireland where they concentrate in specific Irish counties.

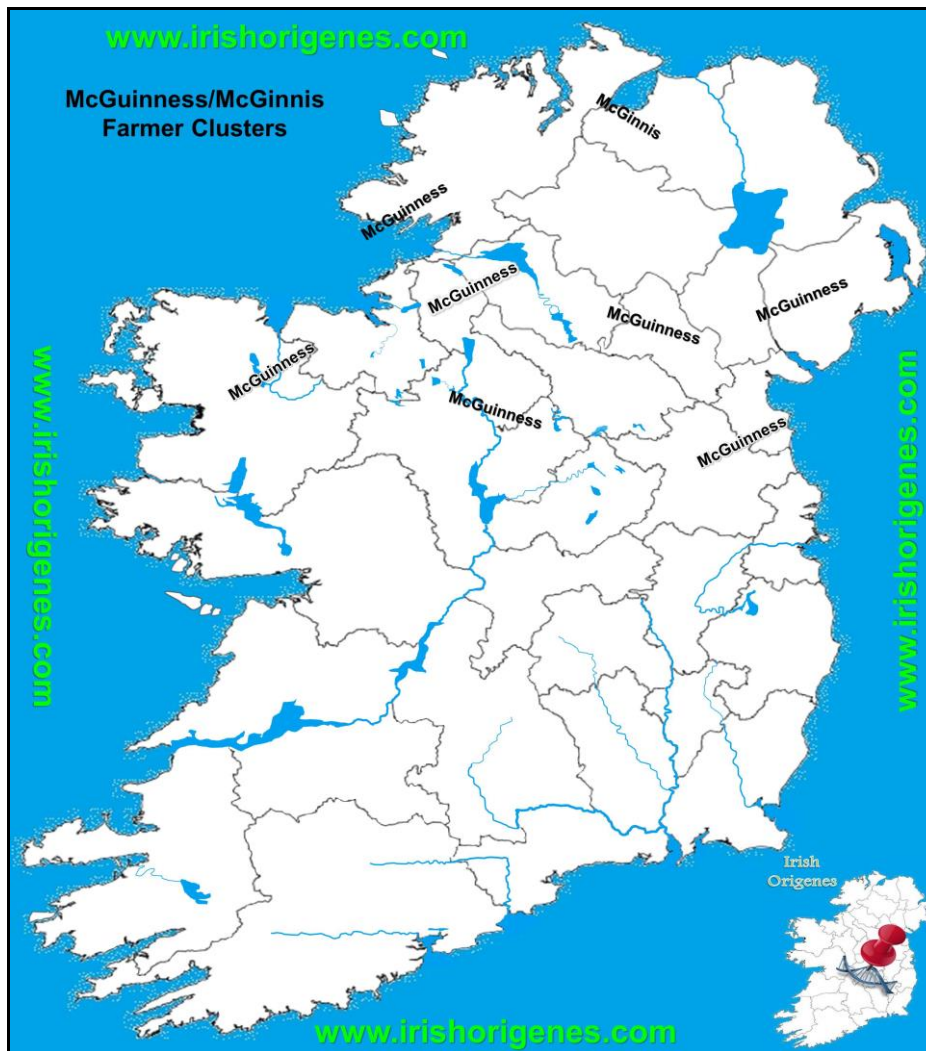


Figure 5: The McGinnis and McGuinness farming community in Ireland. An analysis of the distribution of farmers named McGuinness, McGuinness, McGinnis and Maginnis in 1901 reveals 8 geographically distinct groups indicating the existence of 8 genetically distinct McGuinness or McGinnis Clans. Since the test subject's Y-DNA results reveal that he is descended from a McGuinness/McGinnis-Adam; his paternal ancestry is linked to one of these 8 locations. Each surname is positioned in the location where farmers with that surname concentrate in early census data. The most common spelling is detailed in each location.

A Paternal Ancestral link with County Derry

The method of using genetic surname matches as revealed by commercial ancestral Y-DNA testing to pinpoint one's paternal ancestral genetic homeland works by exploiting the link between the Y chromosome, surname and land which are typically passed from father to son through the generations. In the absence of a link to the land the process becomes more challenging. The link with the land is greatest amongst the farming community, and since farmers in Ireland can still be found farming the lands where their ancestor lived when he first inherited his surname, or where one's ancestor first settled within Ireland, one can plot where farmers with the surnames that appear in one's Y-DNA results originate and identify an area common to all. This means for example, that a McGuinness from the Roscommon and Leitrim borderlands will upon Y-DNA testing be a match to individuals with surnames like Sharkey, Mulrenan and Morrisroe; surnames associated with the

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northwest midlands of Ireland. In contrast a McGinnis from Meath will be a Y-DNA match to males with surnames like Harlen, Gregan and McGrew; surnames associated with the east of Ireland.

An examination of the test subject's *closest and most frequent* genetically recurring Y-DNA STR matches reveals the surnames McGinnis, O'Donnell, McGonigle and Doherty, see **Figure 2**. An examination of the distribution of farmers named McGinnis, O'Donnell, McGonigle and Doherty reveals that they occur in *closest proximity* to one another in the far northwest of Ireland, see **Figure 6**. An examination of the Pre-Plantation surnames associated with the Donegal and Derry borderlands reveals McGinnis farmers on the southern shores of Lough Foyle and close to the Inishowen peninsula where many of the surnames that appear among the test subject's closest and most frequent genetic relatives concentrate, see **Figure 7**.

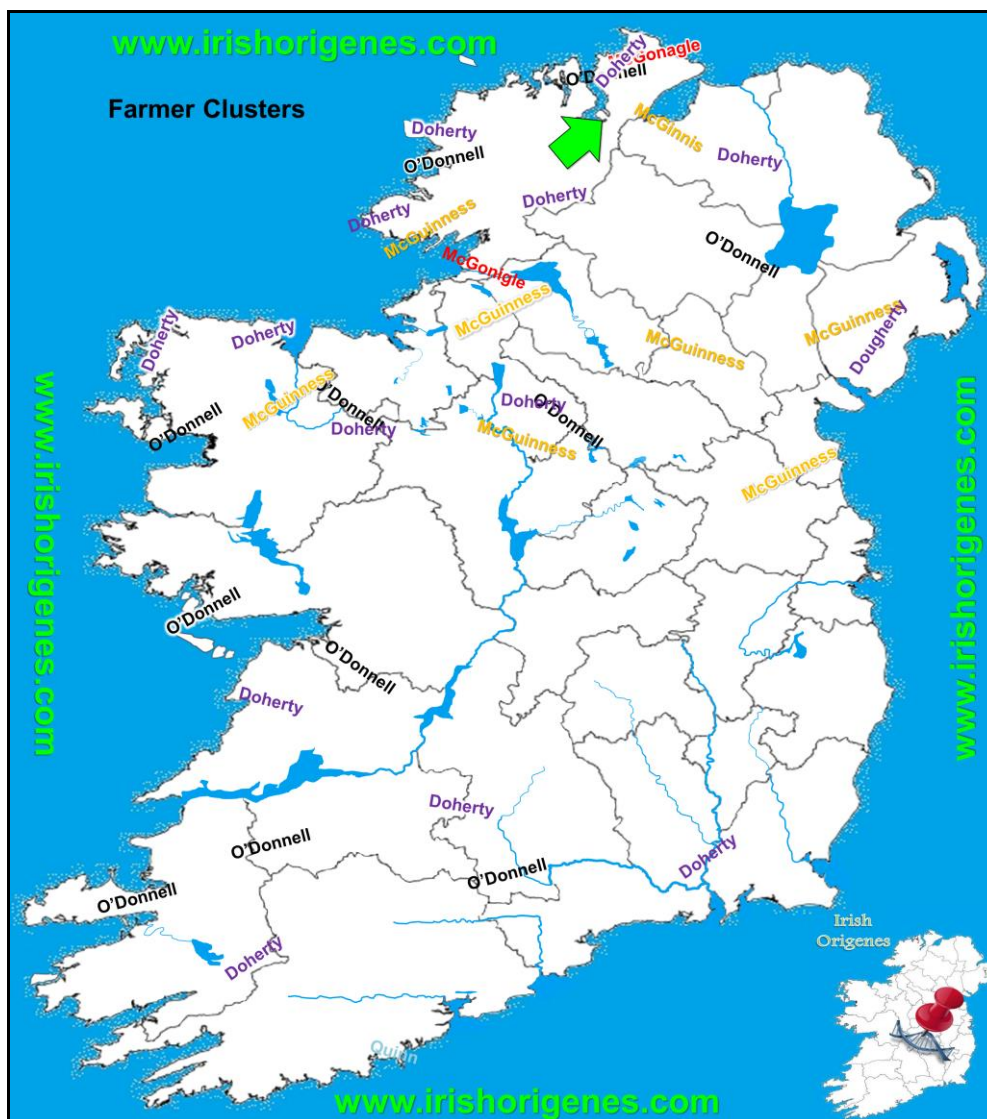


Figure 6: A Paternal Ancestral link with the far northwest of Ireland. An examination of the distribution of McGinnis/McGuinness, O'Donnell, McGonigle and Doherty farmers reveals that they lived in closest proximity to one another in, or near the Inishowen peninsula in the far northwest of Ireland (green arrow). Each surname is positioned in the location where farmers with that surname concentrate in early census data. The most common spelling is detailed in each location.



Figure 7: The surnames of the Donegal and Derry borderlands. The Irish Origenes Surnames map reveals that McGinnis farmers concentrate on the southern shores of Lough Foyle in County Derry (**red arrow**). To the northwest, on Inishowen, one finds many of the Gaelic Irish surnames that appear as close recurring genetic matches (**orange arrows**) in the Y-DNA 111 STR results. The Duffy surname appears as the test subject's closest recurring non-McGinnis BigY recurring genetic match and is also associated with the Inishowen peninsula (**yellow arrow**). The Y-DNA results reveal that the test subject's Gaelic Irish ancestor first took the McGinnis surname while living on the southern shores of Lough Foyle.

The Clan Territories of the Donegal and Derry Borderlands

By the 14th and 15th Centuries Ireland was a patchwork of territories which were dominated by over 400 of the most notable Irish Clans and Norman families. The Irish Origenes Clan Territories of Ireland Map was reconstructed based on the location of castles and towerhouses and their known historical link to a particular Clan or Family. Research at Irish Origenes has discovered that modern commercial ancestral Y-DNA testing will often reveal one's shared paternal ancestry with one or more of the prominent Clans or Families that once ruled over one's paternal ancestral genetic homeland. An examination of Northwest Ireland reveals an area dominated by Gaelic Irish Clans, see **Figure 8**. Inishowen was controlled by both the Doherty and McLaughlins who also share the test subject's M222 Haplogroup and appear among the test subject's Y-DNA genetic relatives, see **Figure 8**.

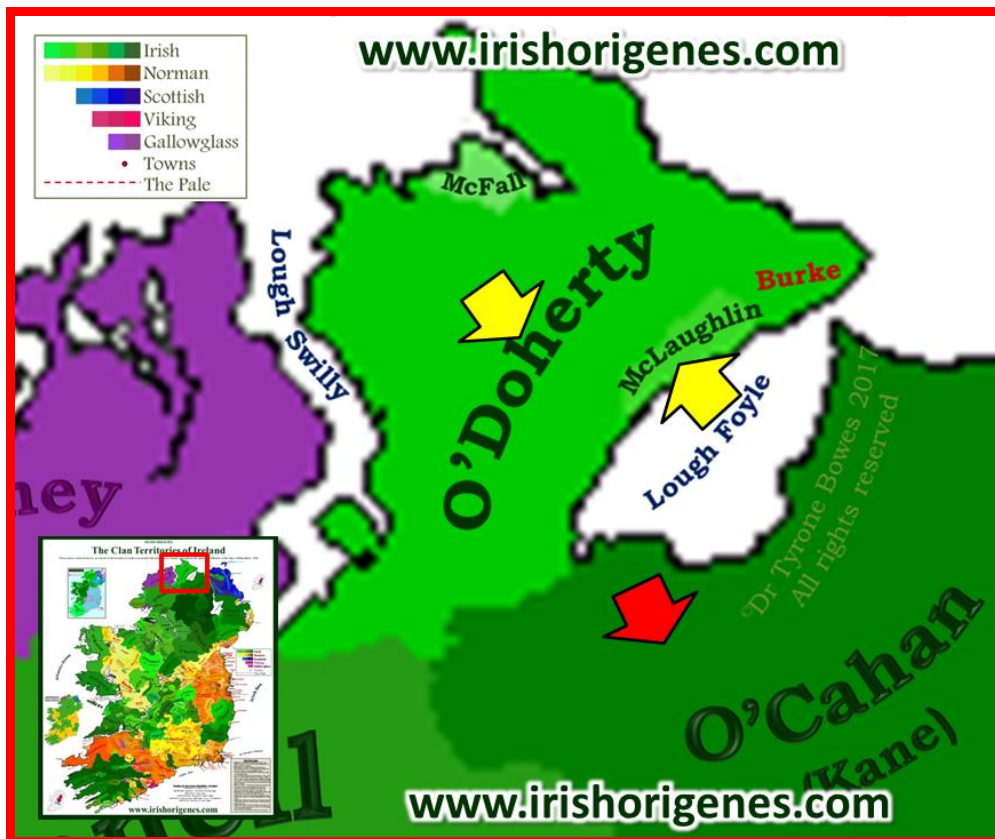


Figure 8: The Clan territories of the Donegal and Derry Borderlands. The test subject's Derry McGinnis ancestors concentrate on the southern shores of Lough Foyle (red arrow) in an area that was controlled by the O'Cahans (Kane). To the northwest lay the lands of the Dohertys and McLaughlins that appear among the test subject's Y-DNA genetic matches and who dominate the test subject's M222 Haplogroup (yellow arrows).

Mr McGinnis's Paternal Ancestral Genetic Homeland

Census data reveals that the Derry McGinnis farming community concentrates in the farmland that lies to the east of the modern City of Derry; and it is there that the test subject's paternal ancestral genetic homeland is to be found, see **Figure 9**. It was there that his direct male ancestor lived when he first acquired the McGinnis surname. His paternal ancestor lived among a tribal group of M222^{+ve} related males who acquired other surnames like Duffy, McGonigle, Doherty, McLaughlin and McGee (among many others). Later, with the arrival of Plantation Scots in around 1610AD, some of the Derry McGinnis would acquire new surnames like Lowland Scottish 'Leitch' (Leech). When one's ancestors have lived in an area long enough they leave evidence of their long ancestral links in the placenames and historical monuments one finds there. Although no 'McGinnis' placenames could be identified, one does find references in the surrounding area in the castles, townlands and local placenames to some of the test subject's closest genetic relatives, see **Figure 9**. The test subject's McGinnis ancestors will undoubtedly have left evidence of their long ancestral links with this area in its history and in the DNA of the current inhabitants.

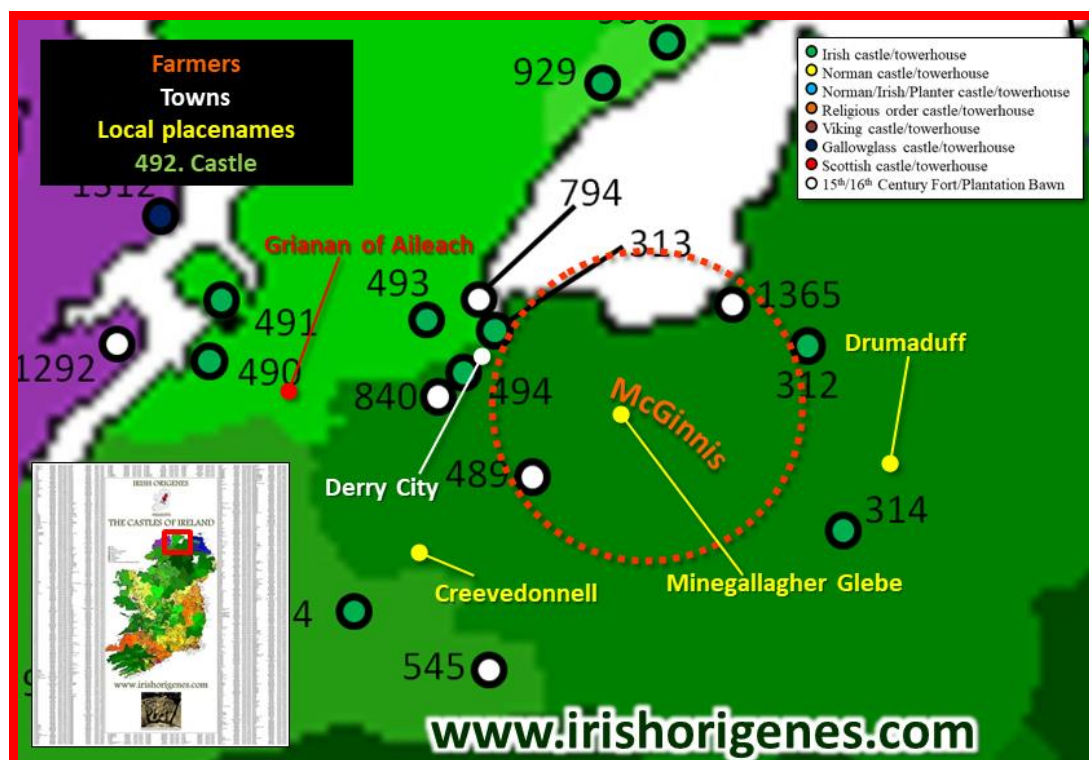


Figure 9: Mr McGinnis's Irish Paternal Ancestral Genetic Homeland. Census data reveals that the Derry McGinnis's concentrate in the farmland that lies to the east of Derry City, and it is there that his paternal ancestral genetic homeland (**orange broken circle**) is to be found. It was there that his direct male ancestor lived when paternally inherited surnames first appeared in Ireland. His paternal ancestor lived surrounded by genetic relatives who inherited surnames like Duffy, O'Donnell, McGonigle, Doherty, McLaughlin, Gallagher and McGee, many of whom have left evidence of their ancestral links with this area in its local placenames, townlands and castles. The Derry McGinnis will also have left evidence of their ancestral links with this area in the history, but also in the DNA of the McGinnis who still farm there. The test subject's M222 Haplogroup reaches its highest concentration in the male population that surrounds the history centre of Grianan of Aileach.

When did the Derry McGinnis-Adam live?

Putting a timeframe to a shared paternal ancestor

Research at *Scottish Origenes* has revealed a timetable to a shared paternal ancestor based on genetic distance upon Y-DNA STR testing, see **Figure 10**. That timetable reveals that the test subject's shared paternal ancestor with 'Patrick T. McGinnis' (who was recruited for Y-DNA testing from County Derry) lived approximately 300 years ago (based on a genetic distance of 4 at the 111 marker level) , see **Figure 10**. All 7 BigY testing McGinnis males share the **BY48888** mutation, and differ on average in approximately 5 SNP mutations; which according to the *Scottish Origenes* STR timetable have appeared within the last 300 years. This indicates that each Y-DNA SNP mutation occurs on average every 60 years, see **Figure 11**. The average number of SNP mutations that have appeared between the McGinnis Adam (**R-BY12159**) and each BigY testing McGinnis is 12; which equates to a 720 year timeframe. *These results in indicate that the founder of the Derry McGinnis (the Derry McGinnis-Adam) was born in around 1300AD.*

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Y-DNA111		
Genetic distance	Estimated time to a shared paternal ancestor / years	AD
0	0	-
1	75	1950-2015
2	150	1865-1950
3	225	1790-1865
4	300	1715-1790
5	375	1640-1715
6	450	1565-1640
7	525	1490-1565
8	600	1415-1490
9	675	1340-1415
10	750	1265-1340
11	825	1190-1265

Y-DNA67		
Genetic distance	Estimated time to a shared paternal ancestor/years	AD
0	0-100	1900-
1	100-200	1800-
2	200-300	1700-
3	300-400	1600-
4	400-500	1500-
5	500-600	1400-
6	600-700	1300-
7	700-800	1200-

Y-DNA37		
Genetic distance	Estimated time to a shared paternal ancestor/years	AD
0	0-200	1800-
1	200-400	1600-
2	400-600	1400-
3	600-800	1200-
4	800-1000	1000-

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Figure 10: Putting a timeframe to Y-DNA STR matches. The timetable to a shared paternal ancestor is based on the Y-DNA STR results of a 'closet MacGregor;' someone with the surname 'Valentine' but whose Y-DNA results revealed he is descended from an outlawed 'MacGrgeor.' Mr Valentine can trace his paternal ancestry to Montrose in the late 1700's where the Scottish Valentines concentrate in early census data, yet his closest genetic match is to the chiefly line of Clan MacGregor who originate near Loch Lomond. This means that his paternal ancestor had to have changed his surname soon after the MacGregors were outlawed in around 1600AD. Hence using the genetic difference between Mr Valentine and his MacGregor relatives one can put together a timeframe to a shared paternal ancestor based on their Y-DNA STR difference at the 111, 67 and 37 marker levels. Using the genetic distance at the 111 marker level, the test subject's shared paternal ancestor with Patrick T. McGinnis (who was recruited from Derry for Y-DNA testing) lived 300 years ago.

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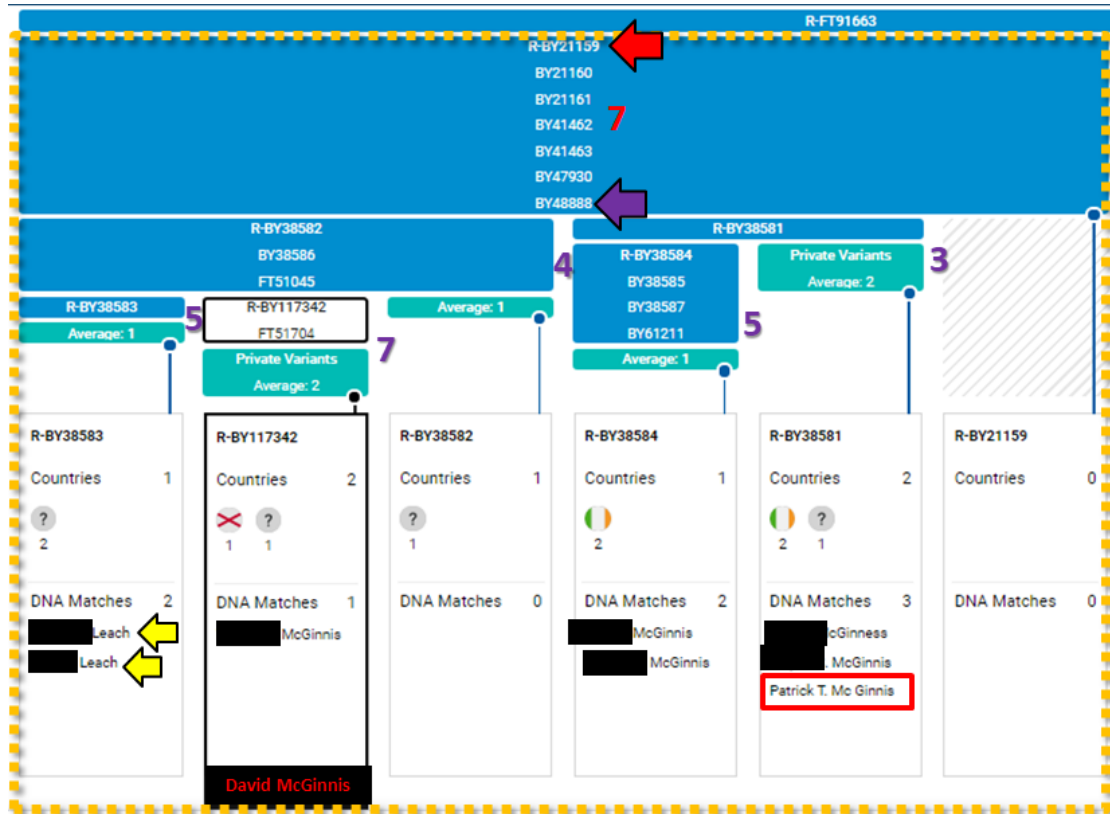


Figure 11: BigY SNP testing reveals that the Derry McGinnis-Adam was born in approximately 1300AD. Each of the McGinnis (and ‘closet McGinnis’ Leach’ yellow arrows) share the BY48888 mutation (purple arrow) and differ from one another on average with 5 SNP mutations. Based on a Y-DNA STR timetable, those 5 SNP mutations have appeared over a 300 year timeframe (when David and Patrick’s shared McGinnis ancestor lived). The average number of SNP mutations between the R-BY21159 McGinnis-Adam (red arrow) and each BigY testing McGinnis is 12; which equated to 720 years and indicates that the McGinnis-Adam lived in around 1300AD.

Irish Gaels

The test subject carries the ancient Irish R-M222 Y-DNA paternal genetic marker which first appeared in a single male who lived on, or near, the Inishowen peninsula in the far northwest of Ireland approximately 1,500 years ago. Research at Irish Origenes has revealed that the R-M222 Gaels of Ireland are directly descended from the Celts of ‘Gaul’ who sought refuge within Northwest Ireland as a direct result of the Roman Conquest of Gaul that began in 58BC.

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