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Case Study

Pinpointing the O'Brien Irish Paternal Ancestral Genetic Homeland

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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 potentially 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 'O'Brien' was living near others with whom he was related but who inherited other surnames like Kennedy, Hogan, Hartigan and Slattery. 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 paternal 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. Each of the estimated 1,500 unique Irish surnames had a single founding ancestor, that is an estimated 1,500 'Adams' from whom anyone with Irish paternal ancestry (and with one of those unique surnames) can trace direct descent. But science has demonstrated that only 50% of individuals with a unique Irish surname will be related to their surnames founding ancestor (*the surname-Adam*), the other 50% of males will have an association that has arisen due to '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 typically reflect one's ancestor's neighbours from around 1,000 years ago. As a result, if one's Irish paternal ancestor was descended from a Viking raider, Norman, or Plantation settler, then one's Y-DNA results may reflect earlier English, Welsh, French, and possibly Scandinavian origin. One must approach this process with an open mind!

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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 in a commercial ancestral Y-DNA database, see **Figure 1**. Those surnames, particularly ones that recur throughout the Y-DNA results will typically reflect the surnames of one's medieval ancestral neighbours. Mr O'Brien's closest and most frequent recurring surname matches as revealed in a Y-DNA STR database are detailed in **Figure 2**.

67 Marker Matches					
Genetic Distance	Last Name	Earliest Known Ancestor	Y-DNA Haplogroup	Terminal SNP	Match Date
1	O'Brien		R-DC63	DC63	9/30/2020
3	Mooney	Patrick Mooney b1936 d2009	R-M269		4/6/2021
3	Wright	William Quinn	R-FGC5659	FGC5659	9/7/2018
3	Kelly	Timothy O'Kelly Claughanbeg/Aughrim (Joe A)	R-M269		5/13/2014
3	Carroll		R-L226	L226	8/15/2012
3	Riel	Jean-Baptiste Riel b.1645 and d 1726	R-DC21	DC21	1/24/2012
3	Baldwin		R-M269		7/11/2011
3	Donohoe	Thomas Donohoe, Born, 1840, Edenderry, Co Off,aly	R-L226	L226	7/29/2009
3	Kelly	Timothy O'Kelly, Claughanbeg West. (Joe Arthur)	R-DC41	DC41	7/29/2009
4	O'BRIEN		R-M269		5/25/2021
4	Clancy	John Orangeby Clancy	R-M269		4/23/2021
4	Stack	John Stack (b~1770 - d1843)	R-M269		4/16/2021
4	Kelly		R-DC278	DC278	3/29/2021
4	O'Melia		R-DC21	DC21	7/17/2019
4	Morris	John Morris b.1680 d.1739	R-FT106631	FT106631	1/6/2019
4	O'Laughlin		R-DC170	DC170	10/5/2018
4	O'Bryan	Thomas O'Bryan, b. 1760 and d. 1827 of Chatham, NC	R-DC297	DC297	1/29/2018
4	Scillely		R-M269		12/22/2017
4	O'Bryan	John O'Bryan	R-DC297	DC297	12/13/2017
4	Hartigan	Patrick Hartigan 1818 - 1898	R-DC631	DC631	6/9/2017
4	O'Bryan	Thomas O'Bryan, b. 1760 and d. 1827 of Chatham, NC	R-DC297	DC297	5/17/2017
4	Slattery		R-M269		3/26/2017
4	Slattery		R-M269		12/13/2016
4	McCoy	John J McCoy, b. 1839 and d. 1893	R-FT248413	FT248413	10/12/2016
4	Slattery	Patrick Slattery 1760-1821 died Skeheenarinky	R-FT132717	FT132717	3/16/2016
4	Pattillo		R-M269		11/12/2015
4	Costello	James Costello, b.1860s	R-FT123075	FT123075	4/10/2015
4	Kelly	Jeremiah Kelly Dysart O'Dea. (Joe A)	R-M269		2/8/2014
4	KELLY	Col. John Patrick O'KELLY b c1690 and d 1746	R-DC278	DC278	12/29/2013
4	O'Donoghue	John Donoghue b.abt 1800, Knockane,Toomevara,CoTip	R-DC1316	DC1316	11/3/2011
4	Hamilton	William Alexander Hamiltondate of birth: 1795 GI	R-M269		11/23/2010
4	O'Brien	John O'Brien, 1802-1870, Cappafeean, Clare	R-DC495	DC495	10/5/2009
4	O'Loughlin	Michael O'Loughlin of Doonbeg, Co Galway. m. 1828	R-DC170	DC170	7/29/2009

Figure 1: Snapshot of test subject O'Brien's closest genetic surname matches as revealed in a Y-DNA STR database. The more Y-DNA STR markers two people share, the more recent their shared paternal ancestor once lived. The test subject's closest genetic surname matches are **NOT RANDOM**; he matches others named O'Brien/O'Bryan (**black arrows**). O'Brien is an exclusively Irish surname and the test subject's Y-DNA matches are dominated by individuals with **Irish** or **Irish-associated** surnames or with earliest recorded ancestral links with **Ireland**. Some of those surnames like Kelly (**yellow arrows**), Donohoe (**purple arrows**), O'Loughlin (**blue arrows**), and Slattery (**red arrows**) also recur among his Y-DNA matches. Highlighted font indicates each surnames associated ethnicity, or the location of an earliest paternal ancestor; **Irish/Ireland**, **Scottish/Scotland**, **Irish/Scottish-associated**.

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Test Subject	Haplogroup	Y-DNA STR Test Results						
		67 Marker Matches						
		Genetic Distance						
		1	3	4	5	6	7	
O'Brien	R-DC63				Callaghan/Callahan/O'Callaghan(x15) Carey(x4) Casey(x13) Gaffey(x3)			
					Crowe/Crow(x4) Corey/Corry/Curry(x7) Fitzgerald(x5) Hart(x9) Hogan/Hogin/O'Hogain(x23) Jones(x9)	Ahern/O'Hearn/Hearn(x5) Anderson(x4) Butler(x4) Collins(x4) Cummings(x3) Davis(x4) Graham(x3)		
		O'Brien/Brien/O'Brian /O'Briant/O'Bryan/O'Briant(x3)	Kerily(x3) Cenoli/O'Connell(x3) O'Donoghue/O'Donoghue/O'Donohoe /Donahoe/Donohoe(x7)	O'Loughlin/O'Laughlin(x4) Slatery(x6) Costello(x5) Hartigan(x5) Morris(x6)	Kennedy/O'Kinneide(x19) McGrath/McCraw/McGrav(x21) McMahon/McMahon(x7) Nolan/Noiland(x8) O'Dea/O'Day(x4) O'Halloran/O'halloran/Halloran /Halloran/O'Halloran(x8) O'Mahony/Mahoney/Mahony(x11) Phelan/Whalen(x3) Thomas(x4) West(x4) Barr(x4) Howard(x3) Lindsay/Lindsay(x4) Lynch(x15) McDonagh/McDonough(x3) McIntire/McIntyre(x4) Slater(x4)	Halloran/Halloran(x3) Kane/Keaney(x5) Littell/Littell(x4) Malone/Melone(x4) McNamara(x6) Neal/Neel(x5) O'Neill/O'Neill(x6) Peavey/Peavy/Pevy/Pevey/Pevey(x8) Roch/Roch(x3) Shannon(x3) Tuchy/Tuchey/Toohey(x4)	Boiland(x4) Brennan/brannum(x3) Brown(x7) Butler(x30) Cowan(x3) Flanagan/Flanigan(x3) Larkin(x3) McCarthy(x4) McDonald/McDonnell(x3) McGuire(x4) Smith(x3) Tannahill(x4)	

Figure 2: The test subject's closest recurring genetic surname matches reveals a paternal ancestral link with Ireland. Surnames are shown at the point at which they first occur as a genetic match, figures in brackets are the numbers of individuals with a particular surname that appear as a genetic match at the 67 or 37-marker levels. For example, the first match to an individual named 'O'Brien' shares 66/67 STR markers, but not all genetically matching males named O'Brien, Brien, O'Brian, O'Briant, O'Bryan or O'Bryant will match at that level. The dominance of Irish-associated surnames among his closest recurring Y-DNA STR matches indicates a most recent paternal ancestral origin within Ireland. Highlighted font indicates each surnames associated ethnicity; **Irish**, **Scottish**, **Irish/Scottish**, **Norman**.

Upon Y-DNA testing the test subject matched many other individuals named O'Brien (or with common spelling variants) who tested independently, see **Figures 1 and 2**. This indicates that the test subject is directly descended from an O'Brien-Adam; literally the first male (Adam) to take that surname who lived approximately 1,000 years ago when paternally inherited surnames became common. The O'Brien surname is associated exclusively with Ireland, and a most recent paternal ancestral link with Ireland is supported by the test subject's closest genetic matches which are dominated by Irish-associated surnames, see **Figure 2**. The genetic distance exhibited between the test subject's genetically matching O'Briens (the most distant of whom shares 60/67 STR markers) indicates that the O'Brien surname has been in his paternal line for at least 800 years, see **Figure 3**. The mix of Irish and Norman surnames among the test subject's closest recurring genetic matches is not uncommon and merely reflects the fact that the test subject's O'Brien ancestors lived in, or near an area of Ireland that experienced permanent Norman settlement, see **Figure 3 and 4**. The Norman and Irish surnames reflect the relationships that developed between Gael and Gall (Norman) who have been neighbours for over 800 years. The Y-DNA results reveal that the test subject's founding paternal O'Brien-Adam lived at least 800 years ago in an area of Ireland that would experience permanent Norman settlement.

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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 3: The Irish Origenes timeframe to a shared paternal ancestor based on commercial Y-DNA STR differences. The Irish Origenes timeframe to a shared paternal ancestor is based on the Y-DNA test results of a 'closet-MacGregor;' someone whose Y-DNA test results reveals that his paternal ancestor was originally named MacGregor but changed their surname to 'Valentine' after the MacGregors were outlawed in the early 1600's. Mr. Valentine is a Y-DNA match to the current Chief of Clan MacGregor, and hence the genetic distance between both individuals at the 111, 67 and 37 STR marker levels allows Irish Origenes to construct a timetable to a shared paternal ancestor (detailed). The test subject's most distant O'Brien genetic relative shares 60 of 67 Y-DNA STR markers which indicates that the O'Brien surname has been in his paternal line for at least 800 years.

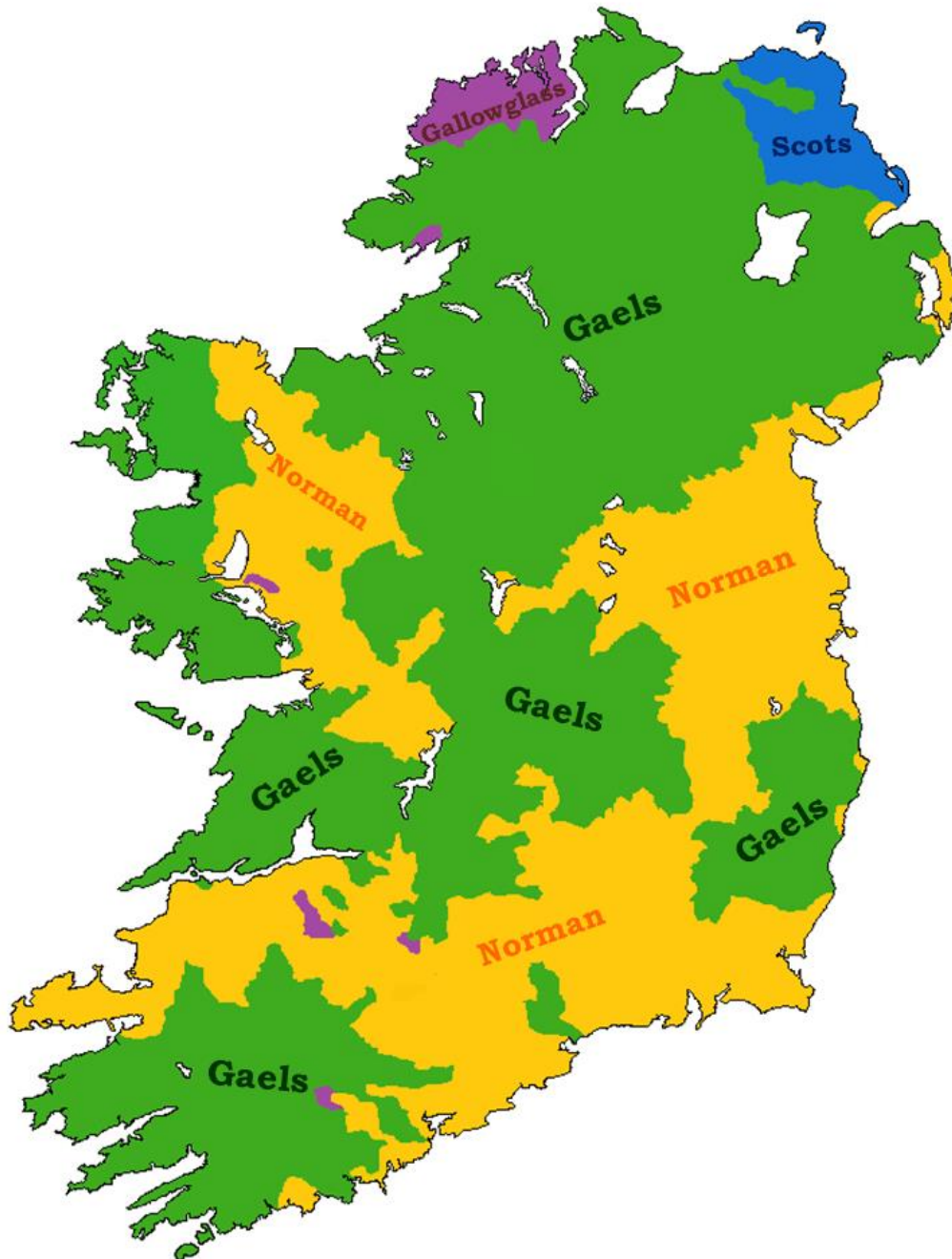


Figure 4: Areas of permanent Norman settlement. The Norman Conquest of Ireland began in 1169AD. Where the Normans settled permanently, they built their castles and towerhouses. This map was reconstructed based on Irish castle locations, and each castles historical association with an Irish, Norman, Scottish or Scottish Gallowglass clan or family. The test subject's Y-DNA result reveal that his O'Brien ancestors lived in (or near) an area of Ireland that experience permanent Norman settlement.

The O'Brien Surname in Ireland

The 1911 census of Ireland revealed approximately 35,000 individuals named O'Brien, Brien, or Breen. Those individuals were not scattered uniformly throughout Ireland but concentrated within specific Irish counties, see **Figure 5**. Since surnames arose in an agricultural society, farmers with each surname can still be found concentrated in the area where their surname first appeared, or in the areas where one's ancestors first settled. Distribution mapping of Irish farmers named 'O'Brien,

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Brien or Breen reveals them concentrated in 21 distinct locations, see **Figure 6**. This indicates that there were at least 21 geographically distinct clans within Ireland that have given rise to the test subject's 'O'Brien' surname. Each clan was potentially founded by a genetically distinct 'Adam' (although some may be related and arose due to migration). Since the test subject bears the O'Brien surname, has Y-DNA matching O'Brien genetic relatives, and a Y-DNA revealed Irish origin; his paternal ancestry is linked with 1 of 21 locations within Ireland, see **Figure 6**.

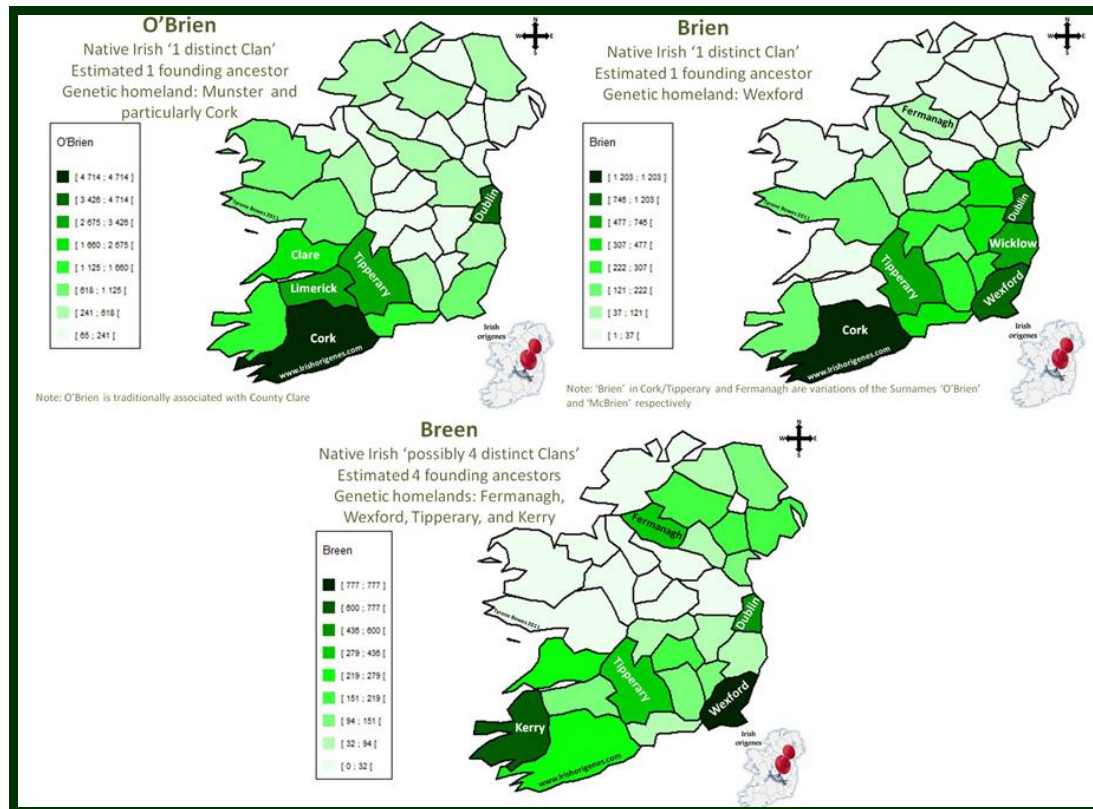


Figure 5: Distribution mapping of the O'Brien, Brien, and Breen surnames in Ireland. An examination of the distribution of all individuals named O'Brien, Brien, and Breen in 1911 reveals that they are not distributed evenly throughout Ireland but concentrate in specific Irish counties.

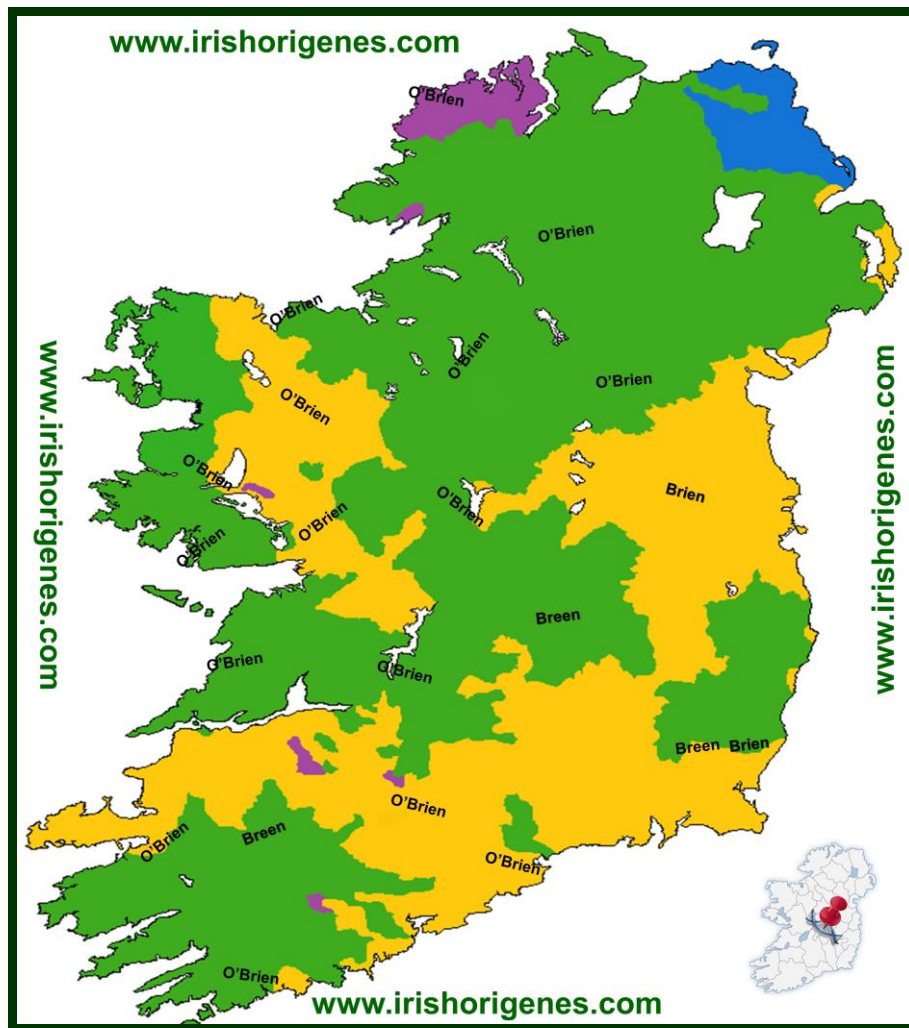


Figure 6: The O'Brien, Brien, and Breen farming communities and areas of permanent Norman settlement. Distribution mapping reveals at least 21 distinct groups of O'Brien, Brien, and Breen farming communities spread throughout Ireland, the majority of which are in, or near areas of permanent Norman settlement. Y-DNA testing reveals that the test subject's paternal ancestry is connected to one of these 21 locations. Each surname is positioned in the location where farmers with each surname concentrated in early census data. The most common spelling is detailed in each location.

A Paternal Ancestral link with the Tipperary, Limerick, and Clare borderlands

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 upon Y-DNA testing O'Briens of Donegal will be a genetic match to males with surnames like Doherty, McLaughlin, and McGee; surnames associated with Northwest Ireland. In contrast, an O'Brien

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from County Kerry will be a genetic match to males with surnames like Sullivan, McCarthy, and Donovan; surnames associated with the far southwest of Ireland. Y-DNA testing reveals that the O'Brien, Kelly, Donohoe, Clancy, O'Loughlin, Slattery, Costello, and Hartigan surnames appear among the test subject's closest and most frequent *exclusively Irish* Y-DNA STR matches, see **Figure 2**. An examination of the distribution of farmers named O'Brien, Kelly, Donohoe, Clancy, O'Loughlin, Slattery, Costello, and Hartigan reveals that they all occur together within the bordering counties of Clare, Tipperary, and Limerick, see **Figure 7**. An examination of the surnames associated with the Clare, Tipperary and Limerick borderlands reveals many of the Gaelic and Norman surnames that appear among the test subject's closest and most frequent genetic relatives, see **Figures 2 and 8**.

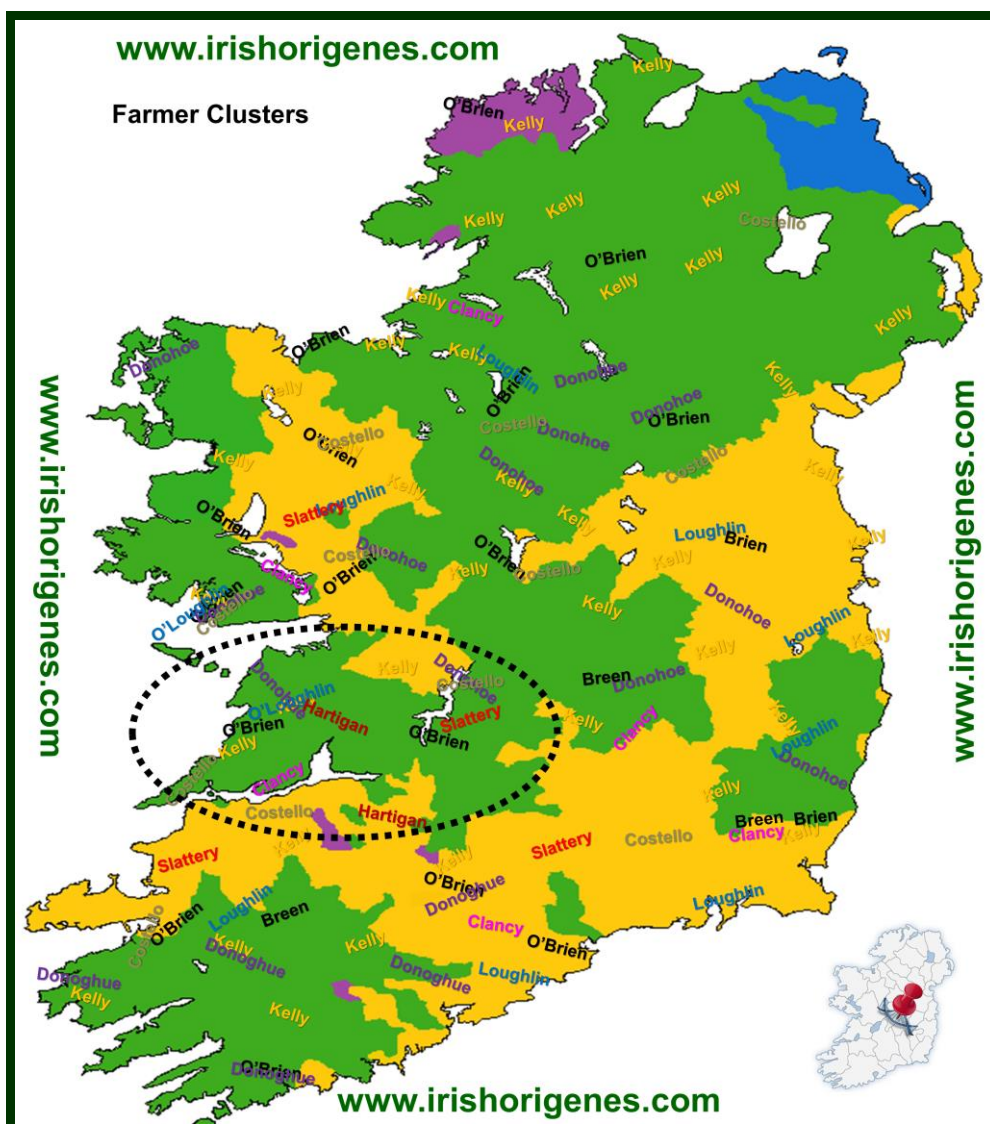


Figure 7: Y-DNA testing reveals a Paternal Ancestral link with the Clare, Tipperary, and Limerick borderlands. The O'Brien, Kelly, Donohoe, Clancy, O'Loughlin, Slattery, Costello, and Hartigan surnames appear among the test subject's closest and most frequent exclusively Irish Y-DNA STR matches. Distribution of farmers named O'Brien, Kelly, Donohoe, Clancy, O'Loughlin, Slattery, Costello, and Hartigan reveals that they **ONLY** occur together within the bordering counties of Clare, Tipperary, and Limerick (**black broken circle**) in an area where the Gaelic and Norman worlds collided. Each surname is positioned in the location where farmers with each surname concentrated in early census data. The most common spelling is detailed in each location.

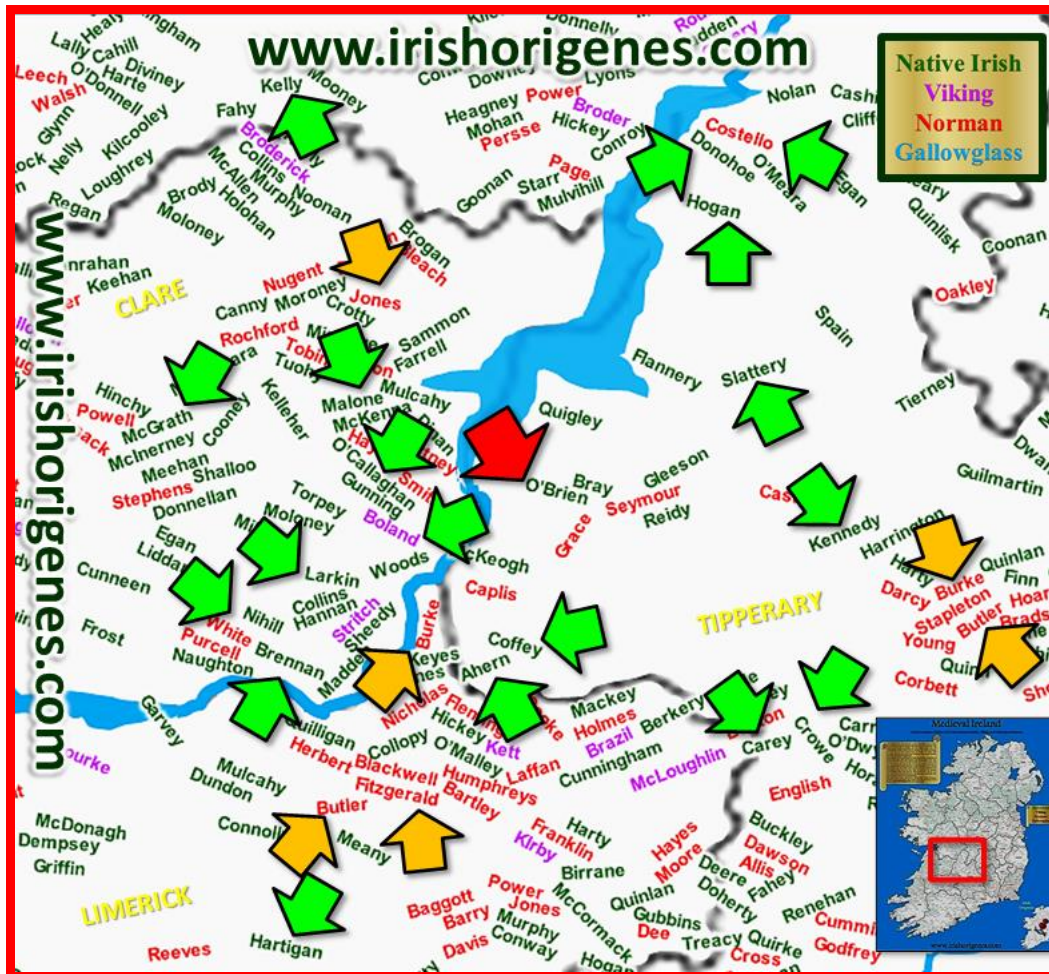


Figure 8: The Medieval/Pre-Plantation surnames of the Clare, Tipperary, and Limerick borderlands. An examination of the surnames associated with the Clare, Tipperary, and Limerick borderlands as it appears on the Irish Origenes Surnames of Ireland map reveals the test subject's O'Briens in Northwest Tipperary (red arrow) surrounded by Gaelic Irish (green arrows) and Norman-associated (yellow arrows) surnames that appear among his closest recurring Y-DNA matches. The test subject's founding Irish O'Brien Adam lived in Northwest Tipperary an estimated 1,000 years ago. Each surname is positioned in the location where farmers with each surname concentrated in early census data. The most common spelling is detailed in each location.

The Clan Territories of North Munster

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. Commercial ancestral Y-DNA testing and research at Irish Origenes has revealed that one will often exhibit 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 North Munster as it appears on the Irish Origenes Clan Territories of Ireland Map reveals an area dominated by the test subject's O'Brien ancestors, see **Figure 9**. Many of the Gaelic Irish clans and Norman families that dominated the Clare, Tipperary, and Limerick borderlands appear among the test subject's closest genetic relatives, **Figure 2** and **9**.

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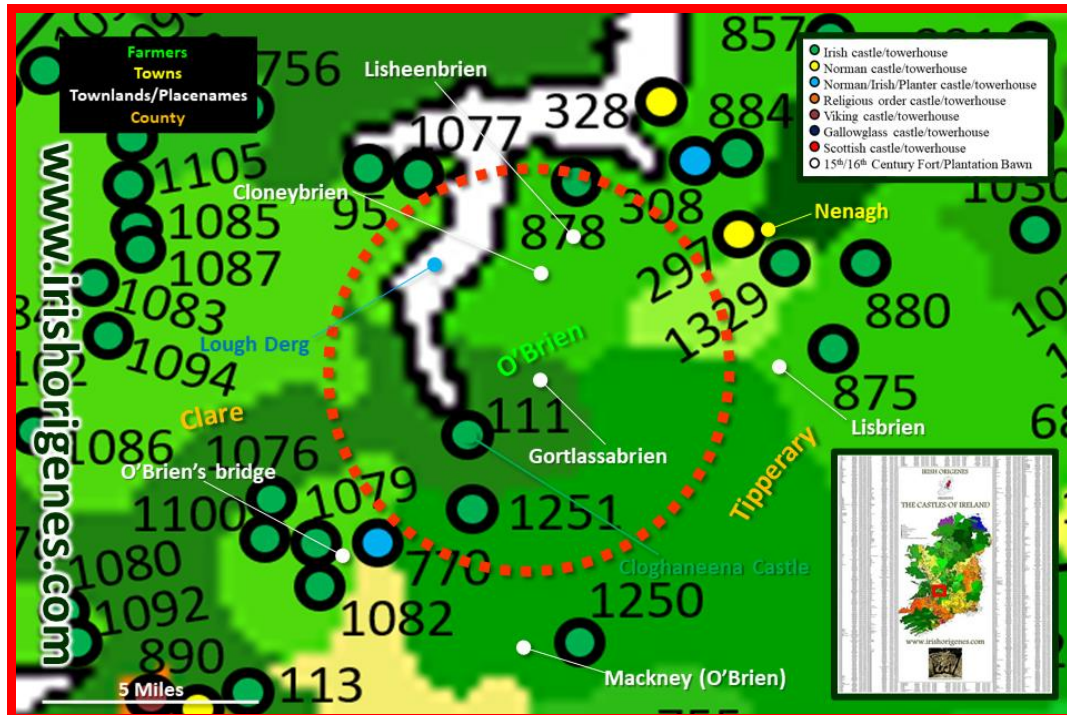


Figure 10: Mr O'Brien's Irish Paternal Ancestral Genetic Homeland. The test subject's paternal ancestral genetic homeland (**orange broken circle**) lies in the farmland that surrounds the townland of Gortlassabrien in Northwest Tipperary where the O'Briens concentrate in early census data. It was there that his paternal ancestors lived when he first inherited the O'Brien surname. His paternal founding O'Brien-Adam lived surrounded by genetic relatives who inherited surnames like Kelly, Kennedy, Donohoe, Clancy, Slattery, Costello, Hartigan and Hogan. With the arrival of the Normans in 1169AD some of his genetic relatives would acquire new surnames like Butler, Browne, and Fitzgerald. In the surrounding area one finds references to the test subject's O'Brien ancestors in its castles, townlands, and placenames.



Figure 11: View south from Gortlassabrien in Northwest Tipperary. Gortlassabrien marks the epicentre of the test subject's paternal ancestry. It was here that his O'Brien founding ancestor lived. His O'Brien ancestors came to dominate the lands that lay west of the River Shannon (visible in the centre) for hundreds of years.

Southern Dal gCais Brythonic Celts

The modern Irish are a mixed bunch descended from Neolithic farmers, Celts (Ancient Britons and refuge Gauls), Vikings, Normans, and 17th Century Plantation

settlers, see **Figure 12**. The test subject's Y-DNA results reveal a deeper 'Celtic' origin within the Rhine River valley of Central Europe. Great Britain takes its name from the 'Celtic' Brythonic tribes that began colonising the island from Central Europe in around 800BC. The Brythonic Celts would also flood into Ireland, settle in the Southwest, and give rise to the test subject's Munster *Dal gCais* tribal group. The Roman Conquest of Gaul in the 1st Century BC propelled Gaulish refugees into Britain and Ireland. It was the Celtic cousins of these Ancient Britons, the 'Gauls/Gaels,' who, ousted by the Romans from their homeland in Central Europe, would carve out new territories for themselves in the North of Ireland and Western Scotland, and would eventually forge the modern identity of the Irish and Scottish nations.

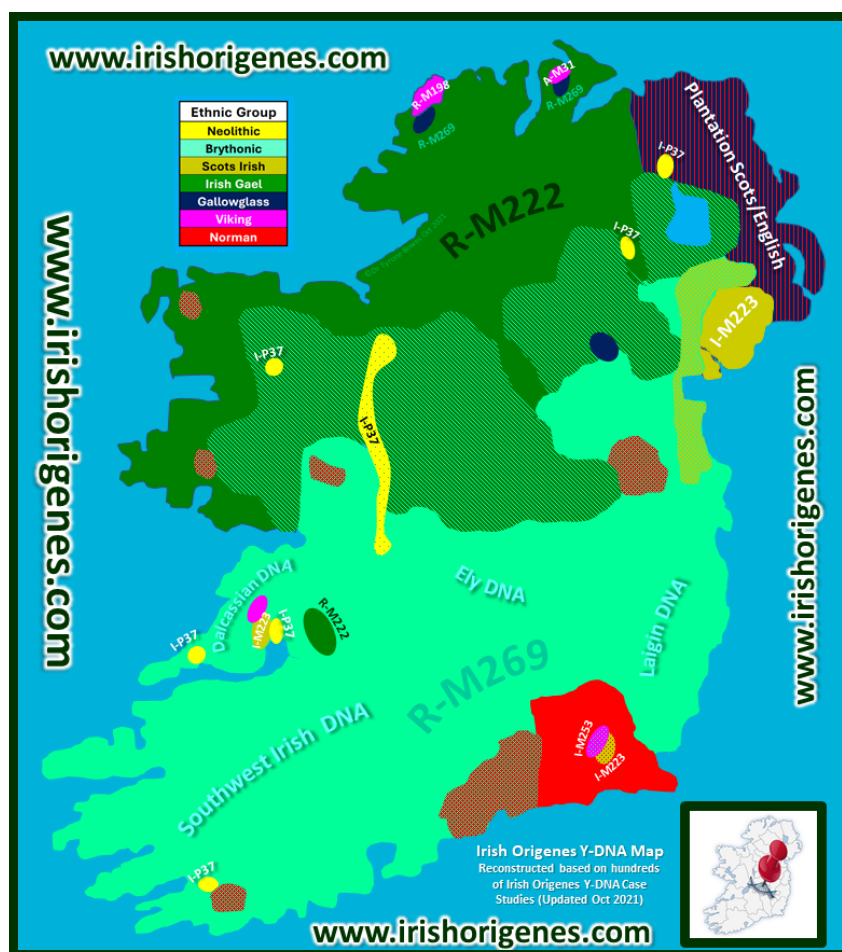


Figure 12: The Irish Origenes Y-DNA Map of Ireland. Y-DNA Case Studies at Irish Origenes reveals an ethnicity map of Ireland. The test subject's paternal ancestors were descended from the earliest Celtic inhabitants of Ireland (Brythonic Celts/Ancient Britons). The Celts would arrive in waves from Central Europe from approximately 800BC, with the last wave of 'Gaulish' refugees fleeing Roman Conquest arriving in the 1st Century AD.

How to confirm a pinpointed 'Paternal Ancestral Genetic Homeland'

Confirmation of the paternal ancestral link with the O'Briens of Northwest Tipperary will require the recruitment of O'Brien farmers from the area surrounding Gortlassabrien for *Y-DNA* testing.

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