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Case Study
Pinpointing the McDonald 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 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 'McDaniel' was living in close proximity to others with whom he was related but who inherited other surnames like McMahon, McKenna and Mathews. 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, Scottish, 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. Those surnames, particularly one's that *recur* among one's closest Y-DNA genetic matches, will typically reflect the surnames of one's medieval ancestral neighbours. Mr McDonald's closest genetic surname matches as revealed by commercial ancestral Y-DNA testing are detailed in **Figure 1**.

67 Marker Matches					
Genetic Distance	**Last Name**	**Earliest Known Ancestor**	**Y-DNA Haplogroup**	**Terminal SNP**	**Match Date**
5	Matthews	James MATHEWS/MATTHEWS b 1830 d 1870-80	R-M269		5/12/2017
7	Brady		R-BY23635	BY23635	4/2/2015
7	Caviness		R-M269		2/22/2017
7	Devine	Patrick Devine; ; Ireland	R-DF21	DF21	1/27/2015
7	Flynn	William Flynn b. 1797 and d. 1862	R-Z16278	Z16278	12/28/2018
7	Griffin	William Griffin, b. 1832	R-M269		1/27/2015
7	MacMahon	Redmond McMahon b.1793, d. 1869	R-M269		1/27/2015
7	MacMahon		R-M269		1/27/2015
7	Mathews	Thomas Mathews Father of Patrick Mathews Donore, c	R-M269		1/27/2015
7	Mc Kenna	Michael Mc Kenna (Mick Mór) 1766-1864, Monaghan	R-M269		1/27/2015
7	Mc Kenna	John Mac Kenna, Truagh, b. abt 1660 d. 1746	R-M269		1/27/2015
7	mcardle		R-M269		3/25/2017
7	McDaniel	James McDaniel b. 1849, d. 1930	R-BY81770	BY81770	7/10/2016
7	McDaniel		R-M269		7/28/2015
7	McDonnell	Henry McDonnell	R-L21	L21	1/27/2015
7	mckenna	Patrick McKenna b1824	R-Y106312	Y106312	11/12/2015
7	McKenna	Arthur McKenna	R-M269		1/27/2015
7	Neal	Edward Neal (1740s-ca.1802), Pennsylvania-Kentucky	R-M269		1/27/2015
37 Marker Matches					
Genetic Distance	**Last Name**	**Earliest Known Ancestor**	**Y-DNA Haplogroup**	**Terminal SNP**	**Match Date**
4	Matthews	James MATHEWS/MATTHEWS b 1830 d 1870-80	R-M269		4/3/2017
4	McKeown		R-M269		2/13/2016
4	Fox	Luke Fox b c 1819 and d 1866 Ballycastle Co Antrim	R-M269		2/13/2015

Figure 1: *Snapshot of test subject McDonald's closest genetic surname matches at the 67 and 37 marker levels 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 closest genetic surname matches are* ***NOT RANDOM****; they are dominated by exclusively Irish and Irish-associated surnames. In addition, the test subject matches others named McDonald (****red arrow****), and McDaniel (****orange arrows****; an Irish form of McDonald) together with individuals with other surnames like Mathews (****yellows****), McMahon (****blue arrows****) and McKenna (****purple arrows****) that recur among his matches.*

Upon Y-DNA testing the test subject was a close genetic match to another named 'McDonald' and 'McDaniel' (an Irish variant of the more common 'McDonald') who tested independently, see **Figure 1**. This indicates that the test subject is directly descended from a McDonald/McDaniel-Adam; literally the first male (Adam) to take that surname who lived approximately 1,000 years ago (when paternally inherited surnames first appeared). The 'McDonald' surname is associated with both Ireland and Scotland. However, the test subject's closest genetic surname matches are dominated by Irish-associated surnames which reveal a most recent paternal ancestral link with Ireland.

The McDonald Surname in Ireland

Distribution mapping of Catholics named McDonald (together with common Irish spelling variants) reveals that they were not distributed evenly throughout Ireland but were associated with specific counties, see **Figure 2**. Since surnames arose in an agricultural based 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. An examination of the distribution of Catholic farmers with any of the common spelling variants of Gaelic McDonald reveals that they occur in 19 distinct groups within Ireland, see **Figure 3**. This indicates the existence of potentially at least 19 genetically (and geographically) distinct Clans that are associated with the 'McDonald' surname; one of whom (as revealed by the Y-DNA results) the test subject shares common paternal ancestry with**.**

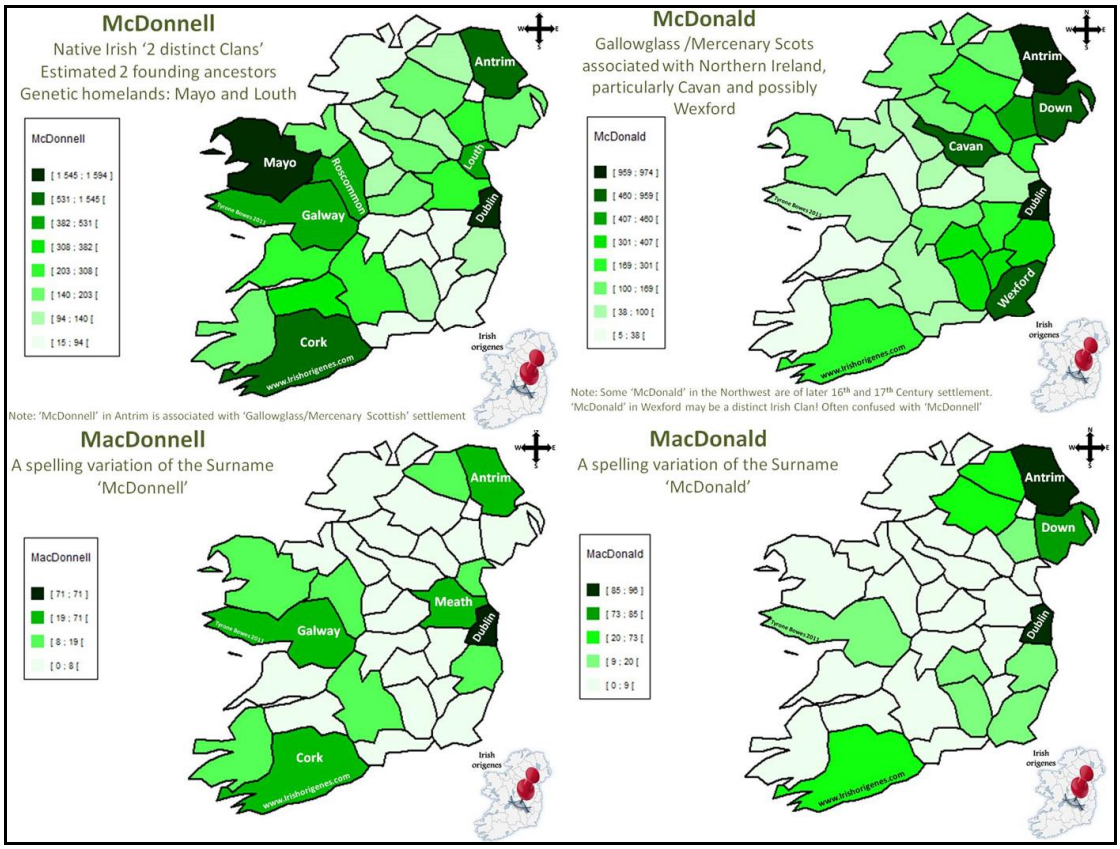

Figure 2: *Distribution mapping of Catholic Irish named McDonald and McDonnell in 1911. Distribution mapping reveals that individuals named McDonnell, McDonald, MacDonnell and MacDonald were not distributed evenly throughout Ireland but were associated with specific Irish counties. While many of the Catholics (descendants of those who lived in Ireland before the 16th and 17th Century Plantations) that carry the McDonald (and variants thereof) may be of mercenary Scottish Gallowglass origin (post 1259AD), some are of Gaelic Irish origin.*

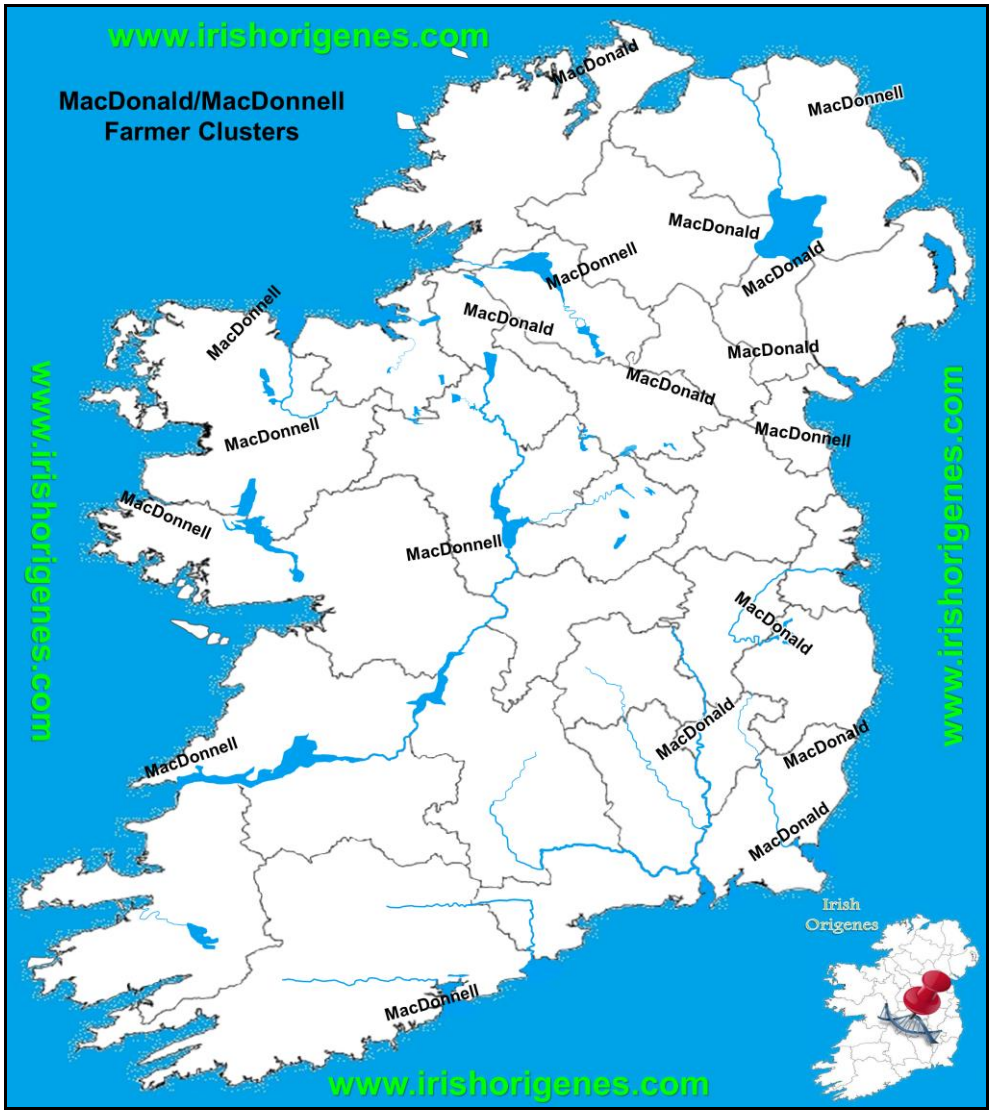

Figure 3: *The Catholic McDonald farming community in 1901. Distribution mapping reveals that farmers named McDonald or McDonnell were not distributed evenly throughout Ireland but were associated with 19 specific locations. Since the test subject's Y-DNA results reveals that his paternal ancestry is linked to a Gaelic Irish McDonald/McDonnell-Adam, his paternal ancestry is therefore connected to one of 19 possible locations within Ireland. Each surname is positioned in the area where farmers with that surname concentrate in 1901. The most common spelling is detailed in each location.*

A Paternal Ancestral link with Southern Ulster

The method of using genetically recurring 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 among 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 'McDonald' from Argyllshire will upon Y-DNA testing be a genetic match to individuals named MacLeod, MacLean

and MacKay; surnames associated with the Western Isles of Scotland. In contrast, a McDonald from County Cork will be a Y-DNA genetic match to individuals named Sullivan, McCarthy and Donohoe; surnames associated with the far southwest of Ireland. Hence it is the test subject's closest genetically recurring surname matches revealed upon Y-DNA testing that will identify where his founding McDonald ancestor lived.

Y-DNA testing revealed that the Gaelic Irish-associated surnames McMahon, McKenna and Mathews appeared among the test subjects closest genetically recurring matches, see **Figure 1**. An examination of the distribution of farmers named McDonald/McDaniel, McKenna, McMahon and Mathews reveals that they are common surnames associated with multiple locations, but that they crucially only occur together, and in closest proximity to one another in Southern Ulster in Northern Ireland, see **Figure 4** and **5**. An examination of the Surnames associated with Southern Ulster (as it appears on the Irish Origenes Surnames map) reveals 'McDonald' and 'MacDaniel' farmer clusters spread along the Ulster and Leinster borderlands, and surrounded by surnames that appear among the test subject's closest recurring genetic and singular genetic matches, see **Figure 6**.

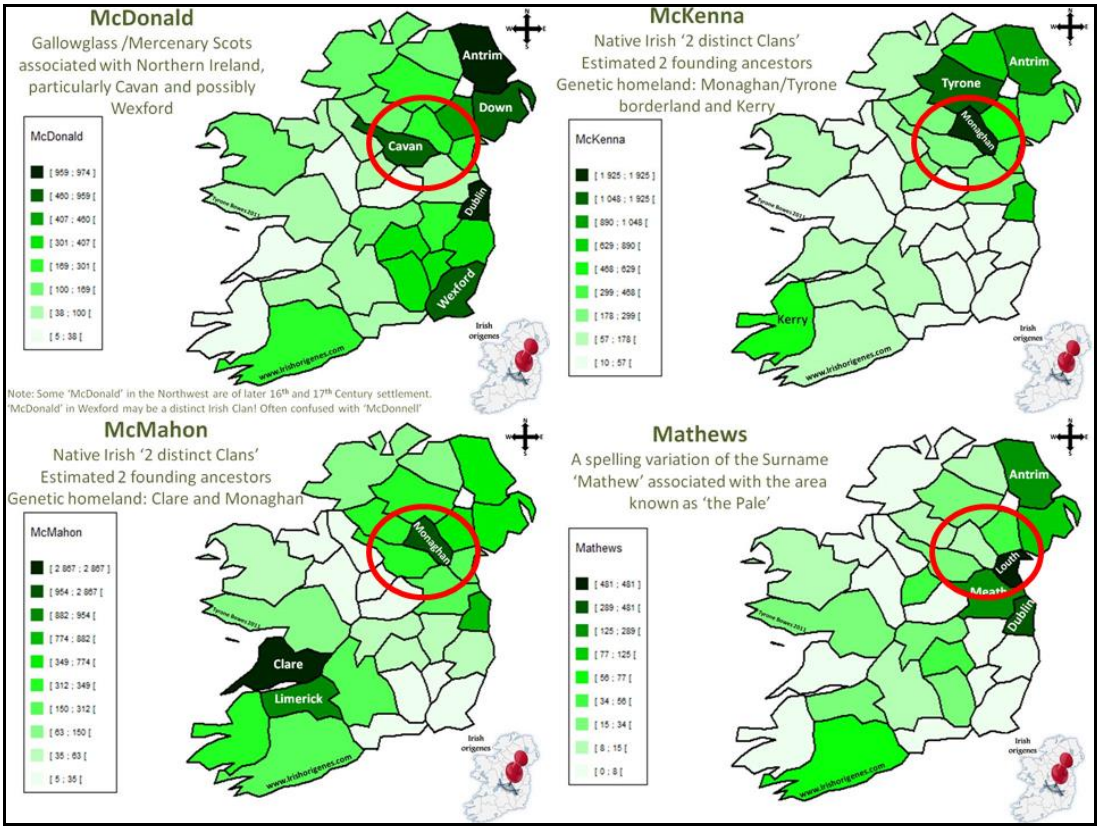

Figure 4: *Distribution mapping reveals a paternal ancestral origin within Southern Ulster. Distribution mapping of the McDonald/McDaniel, McKenna, McMahon and Mathews surnames reveals that they are associated with multiple locations within Ireland, but that they concentrate within the borderlands of Leinster and Ulster (**red circle**).*

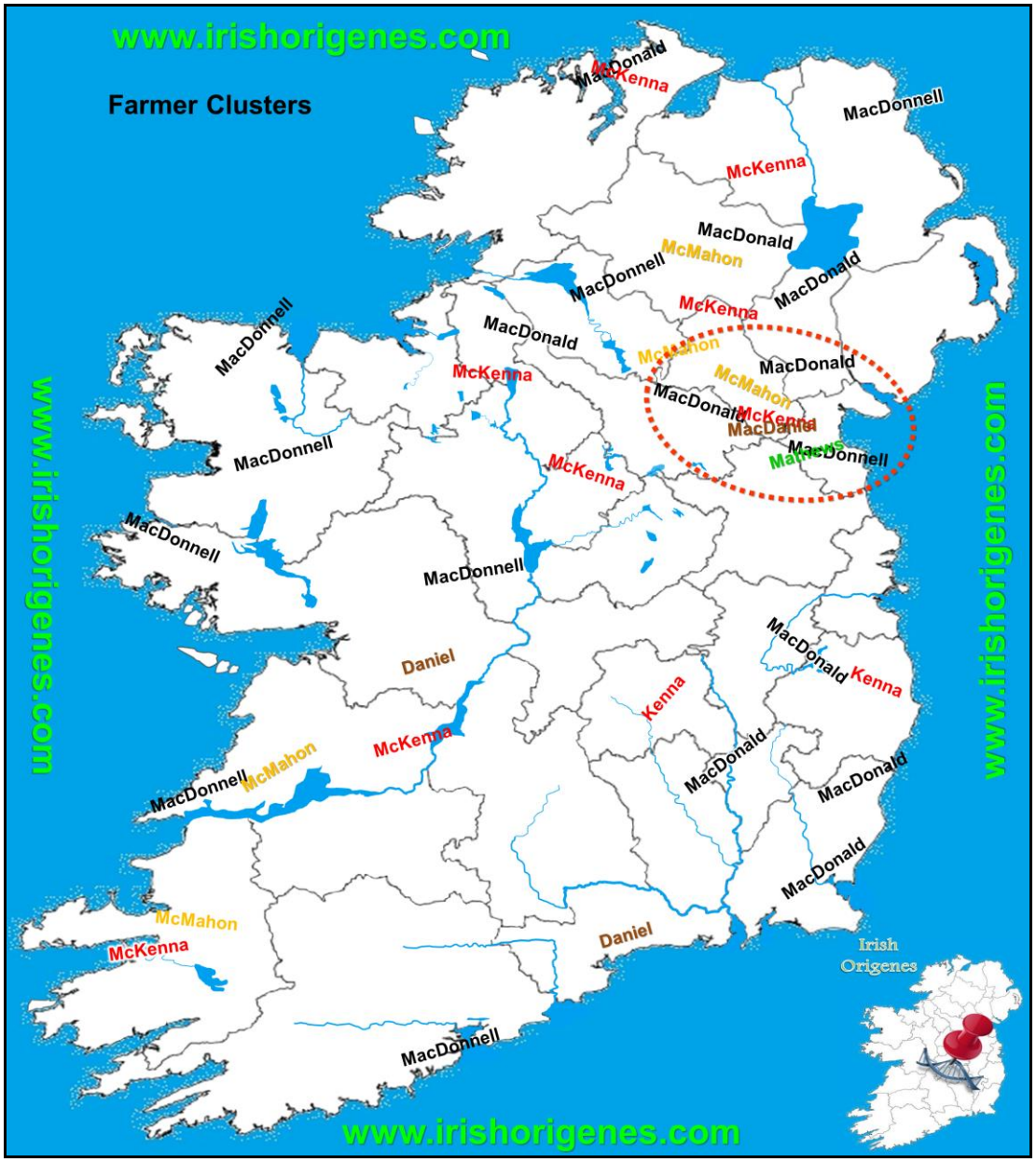

Figure 5: *Overlay mapping confirms a paternal ancestral origin within Southern Ulster. Distribution mapping reveals that farmers named McDonald, McKenna and McMahon are each associated with multiple different locations within Ireland. However, those farming communities only occur together with the McDaniel and Mathews farming communities within Southern Ulster (**orange broken circle**). The McDonald/McDaniel, McKenna, McMahon and Mathews surnames arose among a tribal group of related males living in Southern Ulster an estimated 1,000 years ago. Each surname is positioned in the area where farmers with that surname concentrate in early census data. The most common spelling is detailed in each location.*

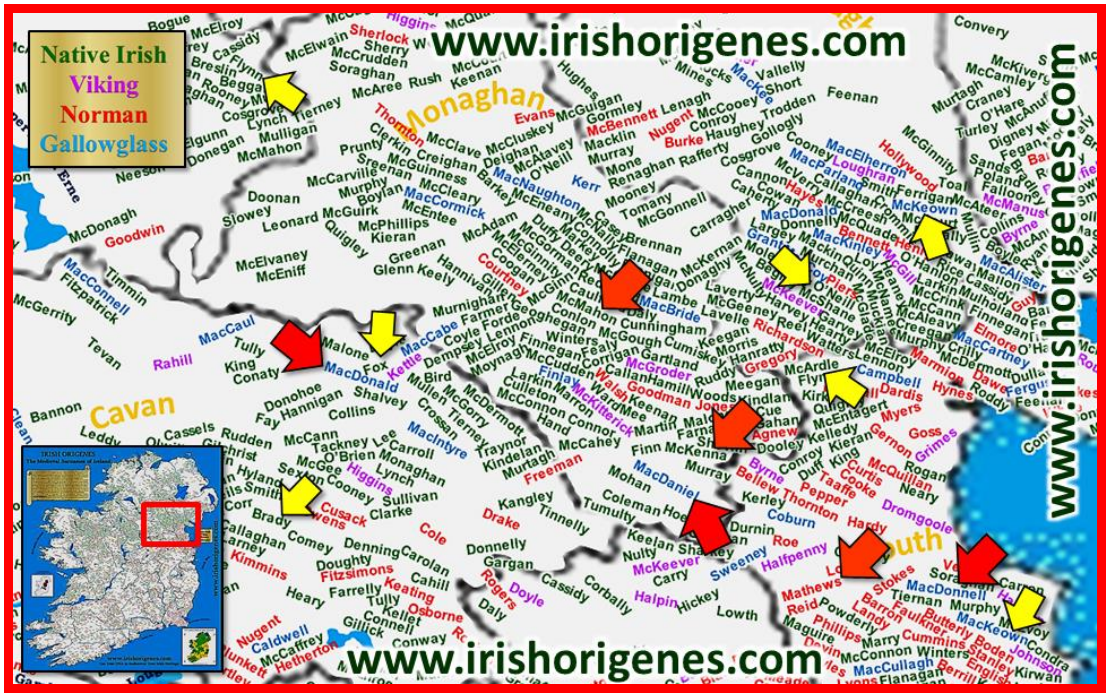

Figure 6: *The surnames of Southern Ulster. An examination of the Pre-Plantation surnames found in Southern Ulster reveals the test subject's McDonald/McDaniel ancestors (**red arrows**) concentrate along the Leinster and Ulster Borderlands. In the surrounding area one finds almost all of the surnames that appear as close recurring (**orange arrows**) or singular genetic matches (**yellow arrows**) to the test subject. These genetically matching surnames arose among a tribal group of Gaelic Irish males who lived in Southern Ulster an estimated 1,000 years ago. Image taken from the Irish Origenes Surnames of Ireland map which details where farmers with each surname concentrate in early census data. The most common spelling is detailed in each location.*

The Clan Territories of the Ulster and Leinster 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. Modern commercial ancestral Y-DNA testing will often reveal one's shared paternal ancestry with at least one of the Clans or Families that once ruled over one's paternal ancestral genetic homeland. 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. An examination of the Ulster and Leinster borderlands as it appears on that map reveals an area dominated by Gaelic Irish Clans in the north, and Norman families in the south, see **Figure 7.** A number of the Gaelic Irish Clans that dominated Southern Ulster appear among the test subject Y-DNA matches, see **Figure 1** and **7**.

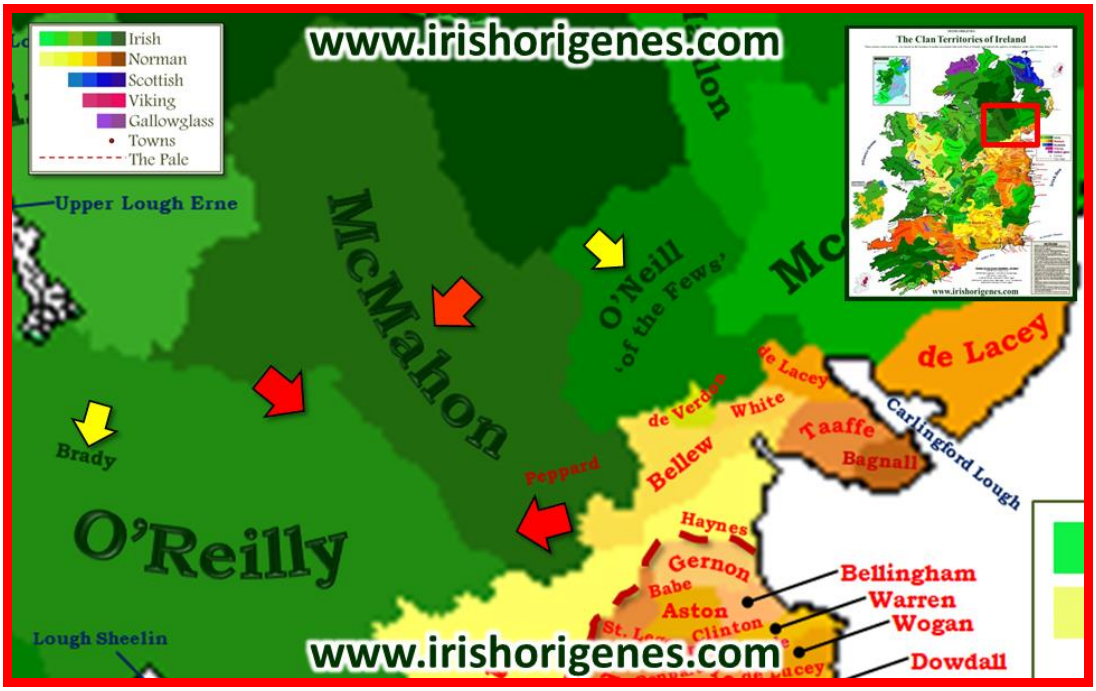

Figure 7: *The Clan territories of Southern Ulster. The test subject's Gaelic Irish 'McDonald/McDaniel' ancestors (**red arrows**) lived in an area dominated by Gaelic Irish Clans like the McMahons (**orange arrow**) who appear as a close recurring genetic match, while the Bradys and O'Neills (Neal) appear as close singular genetic matches (yellow arrows). Image taken from the Irish Origenes Clans of Ireland map which was reconstructed based on Irish castle locations and their historically associated Clan or Family.*

Mr McDonald's Irish Paternal Ancestral Genetic Homeland

Early census data reveals that farmers named McDaniel concentrate in the farmland that surrounds Carrickmacross town in South County Monaghan; and it is there that the test subject's Irish paternal ancestral genetic homeland is to be found, see **Figure 8.** It was there that the test subject's Gaelic Irish paternal ancestor lived approximately 1,000 years ago when he first took the 'McDaniel' surname, which over time was corrupted to the more common 'McDonald.' His founding paternal ancestor lived among a Gaelic Irish tribal group among whom arose other surnames like McMahon and McKenna. With the arrival of the Normans in 1169AD, some of his genetic relatives acquired new surnames like Mathews. When one's ancestors and their genetic relatives have lived in an area for long enough, one will often find evidence of their ancestral links with that area in the surrounding castles and placenames. An examination of the surrounding area reveals castles, townlands and local placenames associated with the test subject's ancestors and their closest Y-DNA genetic relatives, see **Figure 8**. The test subject's McDaniel ancestors will also have left evidence of their long ancestral links with this area in its history, and in the DNA of the current inhabitants.

The 'Townland' is Ireland's smallest and oldest unit of land division. The entire country is divided into over 60,000 different townlands, many of which predate the arrival of the Normans in 1169AD. Many townlands are also named after the Clan or Family that arose there. The location of a townland known as 'Rath*daniel*' to the southeast may be an indication that the Gaelic Irish McDaniels originally lived in neighbouring County Louth, but were pushed further north by the Norman advance.

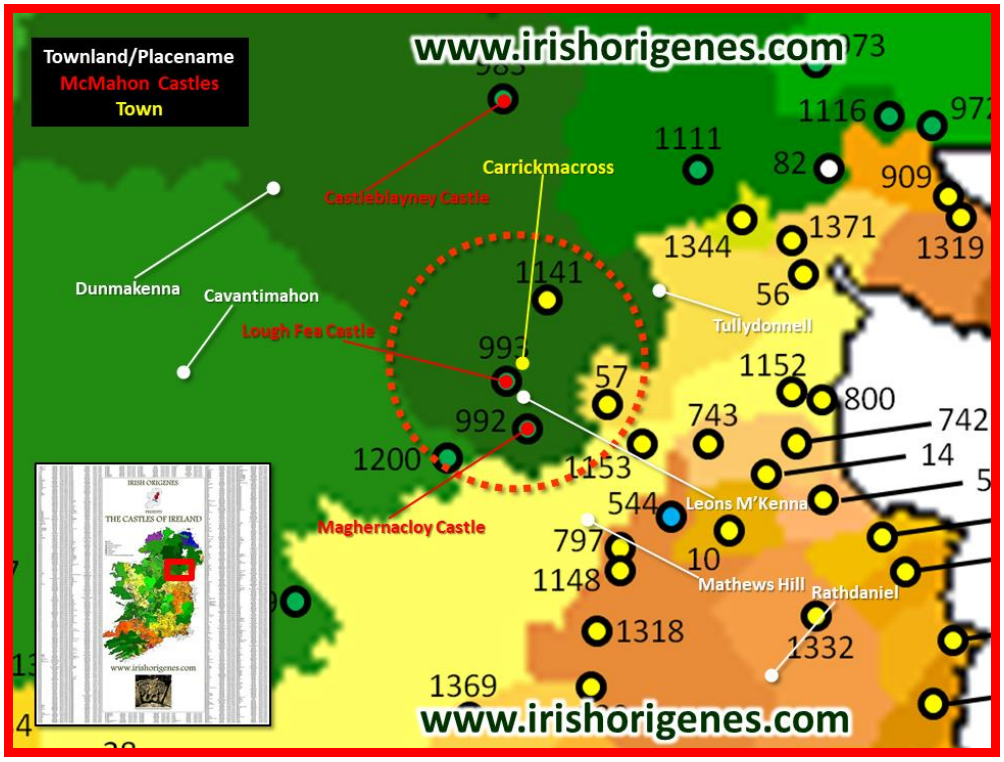

Figure 8: *Mr McDonald's Irish Paternal Ancestral Genetic Homeland. The test subject's Irish paternal ancestral genetic homeland (**orange broken circle**) is located in the farmland that surrounds the town of Carrickmacross in South County Monaghan. It was there that his Gaelic Irish paternal ancestor lived when he first acquired the 'McDaniel' surname approximately 1,000 years ago. His McDaniel founding ancestor lived surrounded by male relatives who acquired other surnames like McMahon, McKenna and Mathews among many others. The surrounding area reveals castles, townlands and local placenames that are associated with the test subject's McDaniel ancestors and their closest genetic relatives. The test subject's genetic relatives will also have left evidence of their long ancestral links with this area in its history, and in the DNA of its current inhabitants. Image taken from the Irish Origenes Castles of Ireland Map.*

Ancient Britons

The test subject's M-269 Haplogroup, together with his more distant Y-DNA matches (at the 25 and 12 marker levels) which are a diverse mix of Irish, Scottish, Welsh and English surnames; indicate that his paternal ancestors were Brythonic Celts that dominated both Britain and Ireland until the arrival of both exiled Gaels and conquering Romans over 2,000 years ago.

How to confirm a pinpointed 'Paternal Ancestral Genetic Homeland'

One must keep in mind that this is a scientific DNA approach to identifying an origin. As such, the paternal ancestral connection to the identified area can be confirmed by Y-DNA testing McDonald or McDaniel males from the farmland that surrounds Carrickmacross town in South County Monaghan.

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