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Pinpointing Mr McDonald's Scottish Paternal Ancestral Genetic Homeland

A Scottish Case Study

www.Scottishorigenes.com



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

Dr Tyrone Bowes

3rd 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 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 'McDonald' was living in close proximity to others with whom he was related but who inherited other surnames like MacAlister, MacKinnon and Maclan. Given that 1,000 years have passed since paternally inherited surnames became common, 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.

Early 19th century census data demonstrates that Scottish surnames could still be found concentrated in the areas from which they originated. 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 ones '**Paternal Ancestral Genetic Homeland.**' The 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 surname Adam), 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 adoptions or maternal transfer of the surname. Since Scotland adopted a similar Clan based society these scientific findings can be applied to Scotland and people with Scottish paternal ancestry.
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 Scottish ancestor was descended from an Anglo-Saxon settler, Viking raider, or 12th Century Norman one's DNA results will 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 test 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 one’s that recur throughout one’s Y-DNA results will typically reflect the surnames of one’s medieval ancestral neighbours. The test subject’s closest genetically recurring surname matches as revealed by commercial ancestral 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
4	MacDonald	John McDonald, 1828-1880	R-M198	M198	10/10/2016
4	McDonald	Archibald McDonald b 1770, d 1808 White Co TN	R-CLD17	CLD17	10/10/2016
5	MacDonald	Alexander McDonald b mid 1750's	R-YP326	YP326	11/2/2018
5	Bellavance		R-M173		12/15/2017
5	McDonald	John MacDonald, b. 1793 and d. 1866	R-CLD12	CLD12	1/3/2017
5	MacDonald	SCOTLAND	R-BY29711	BY29711	10/10/2016
5	McDonald	Alexander McDoanld b Abt1760 d 1852	R-BY82206	BY82206	10/10/2016
6	McDonald		R-BY27147	BY27147	8/24/2018
6	McDonald		R-YP6398	YP6398	6/8/2018
6	MacDonell	John Roy McDonell, Invernesshire, Scotland	R-YP6398	YP6398	5/13/2018
6	MacDonnell	Donald McDonell b. 1753 d. 1858	R-YP6398	YP6398	7/7/2017
6	Macdonald	Allan Macdonald,, c1378-c1428	R-CLD12	CLD12	2/23/2017
6	MacDonald		R-BY29711	BY29711	10/10/2016
6	McDonald	James McDonald 1760 Cross Creek, Cape Fear River,	R-CLD12	CLD12	10/10/2016
6	McDonald	John McDonald b. abt. 1800	R-M173		10/10/2016
7	McDonald	Alexander Elder McDonald, b.1797 and d.1854	R-YP326	YP326	5/12/2019
7	McDaniel	William F McDaniel, b. 1870 and d. 1937	R-FT122110	FT122110	1/13/2019
7	McDaniel	Jacob McDaniel 1760 NC - 1832 GA	R-FGCLR579	FGCLR579	9/21/2018
7	McAllister	Aaron McAllister, b. 1826 and d. 1895	R-YP326	YP326	8/31/2018
7	MacDonald	Allan MacDonald, b. abt. 1779; d. 1870	R-FT118664	FT118664	6/14/2018
7	Churchwell	Archibald, McDonald 1788-1854	R-M173		12/22/2017
7	MacDonald	McDonald	R-FT85321	FT85321	11/26/2017
7	Miller	John B McDonald, b. ~1851, Nova Scotia	R-CLD50	CLD50	5/5/2017
7	MacDonald		R-FT95849	FT95849	12/20/2016
7	Macdonald		R-FT118664	FT118664	10/10/2016
7	MacDonald	Ward McDonald, Cork, Ireland	R-CLD51	CLD51	10/10/2016

Figure 1: Snapshot of Mr McDonald’s closest genetic surname matches as revealed in the FTDNA Y-DNA database. The more Y-DNA markers two people share the more recent their shared paternal ancestor once lived. The test subject’s Y-DNA matches are **NOT RANDOM**; he matches multiple individuals named MacDonald (red arrows) together with others with Scottish or Scottish-associated surnames. Highlighted font denotes the ethnicity associated with each surname: Scottish, Scottish-associated, Irish.

Test Subject	Haplogroup	Y-DNA Test Results									
		111				67			37	25	
		Genetic Distance				Genetic Distance			Genetic Distance	Genetic Distance	
	4	7	8	9	2	6	7	4	1	2	
McDonald	R-M198	McDonald (x128)	McAllister (x8) McDaniel (x29) ² Smith (x2) ³	Alexander (x3) Mckean/MacCain (x7) ² McKinnon (x2)	Wilson (x5) Perkins (x9)	McConnell (x16) ¹	Fulton (x6) ⁴ Jones (x3) Scott (x4)	Forsberg (x2) Hewson (x2) Spokely (x2) McLeod (x2)	Johnston (x4)	Brownfield (x3)	Carter (x3) ⁵ Cooper (x3) Lindbeck (x2) McArthur (x4)

Figure 2: Mr McDonald’s closest recurring Y-DNA STR genetic surname matches reveal a Scottish paternal origin. Surnames are shown at the point at which the first appear as a genetic match, figures in brackets represent the number of individuals with each surname at the 111, 67 and 37 marker levels. For example, the first McDonald to appear as a genetic match shares 107 of 111 genetic markers, although not all 128 McDonalds may match at that level. The test subject’s closest recurring genetic matches are **NOT RANDOM**; they are dominated by Scottish-associated surnames which indicate a most recent paternal origin within Scotland. Highlighted font indicates each surnames associated ethnicity; Scottish, Scottish-associated, Welsh. ¹Common spelling variants of McDonald. ²Common spelling variants of Scottish Mclan. ³Anglicised version of McGowan/McCowan. ⁴Possible members of the same close family recruited for DNA testing which may be excluded from further analysis. ⁵Carter is often an anglicised form of Scottish ‘McArthur.’

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Upon commercial ancestral Y-DNA testing Mr McDonald matched many others named 'McDonald,' see **Figures 1** and **2**. This indicates that Mr McDonald is directly descended from his surnames founding ancestor; the McDonald-Adam, literally the first male (Adam) to take that surname who lived approximately 1,000 years ago (when surnames first appeared). However, McDonald is a very common surname, which means that were potentially many MacDonald-Adams, genetically unrelated to one another and living in different locations. The MacDonald surname is also associated with Scotland and Ireland, yet the dominance of Scottish-associated surnames among the test subject's closest Y-DNA matches indicates that his direct male ancestor lived somewhere within Scotland an estimated 1,000 years ago, see **Figure 2**.

Scottish MacDonald

Since farmers in early census data concentrated in the area where their surname first appeared, or in the area where one's ancestors first settled, one can examine the distribution of Scottish farmers named MacDonald, to estimate how many MacDonald Clans existed. By plotting the location of McDonald farmers in early Scottish census data it reveals 18 distinct clusters; indicating the existence of potentially 18 genetically distinct Scottish Clans that used the 'McDonald' surname, see **Figure 3**. Since the test subject's Y-DNA results reveal that he is descended from a MacDonald-Adam, his paternal ancestry is linked to one of these 18 distinct locations within Scotland. It is Mr McDonald's closest and most frequent Scottish-associated genetic surname matches, as a snapshot of his ancestor's medieval neighbours, which can be used to pinpoint where his McDonald ancestors originated.

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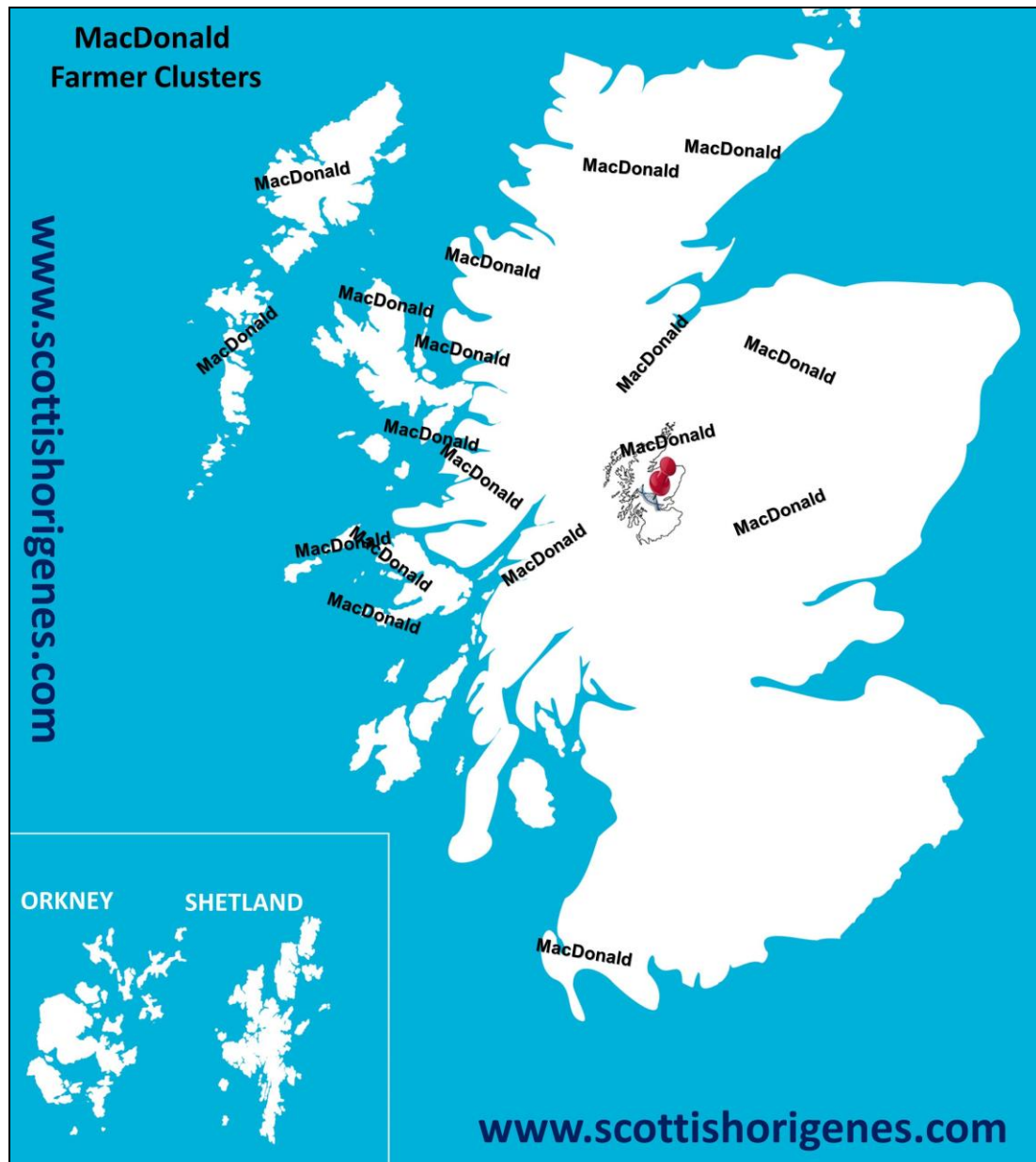


Figure 3: The Scottish MacDonalld farming communities. Farmers with each surname still concentrated in early census data in the area where their surname first appeared, or in the areas where their ancestors first settled. An examination of the distribution of Scottish farmers named MacDonalld reveals 18 distinct groups. Each group potentially represents a genetically distinct Clan (unrelated to one another) although some are undoubtedly related and arose due to migration. The test subject's paternal ancestry is linked to one of these 18 locations. Each surname is positioned in the area where farmers with that surname concentrate in early census data.

A Paternal Ancestral link with the Isle of Mull

The method of using genetic surname matches as revealed by commercial ancestral Y-DNA testing to pinpoint a 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 Scotland can still be found farming the land where their ancestor lived when he first inherited his surname, or where one's

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ancestor first settled within Scotland, one can plot where farmers with the surnames that appear in one's Y-DNA results cluster; and identify an area common to all. This means, for example, that upon Y-DNA testing a MacDonald from Wigtownshire will be a genetic match to males with surnames like MacCamon, MacDowall and MacNeillie; surnames associated with the far southwest of Scotland. In contrast, a MacDonald from the Isle of Skye will upon Y-DNA testing have genetic matches to males named MacRaid, MacCowan and Matheson; surnames associated with the Western Isles of Scotland.

Y-DNA testing reveals that the Gaelic surnames of MacDonald, MacAlister, MacKinnon and MacLeod dominate among the test subject's closest recurring genetic matches, see **Figure 2**. Distribution mapping of farmers named MacDonald, MacAlister, MacKinnon and MacLeod reveals that they only occur together within the Isle of Mull on the west coast of Scotland, see **Figure 4**. The Scottish Origenes Surnames and DNA Map of Scotland details where farmers with each surname concentrated in early census data, and an examination of the Isle of Mull and surrounding mainland as it appears on that map reveals at least 4 distinct clusters of 'MacDonalds' together with almost all of the Gaelic (Mac) surnames that appear among the test subject's closest recurring genetic relatives, see **Figures 2 and 5**.

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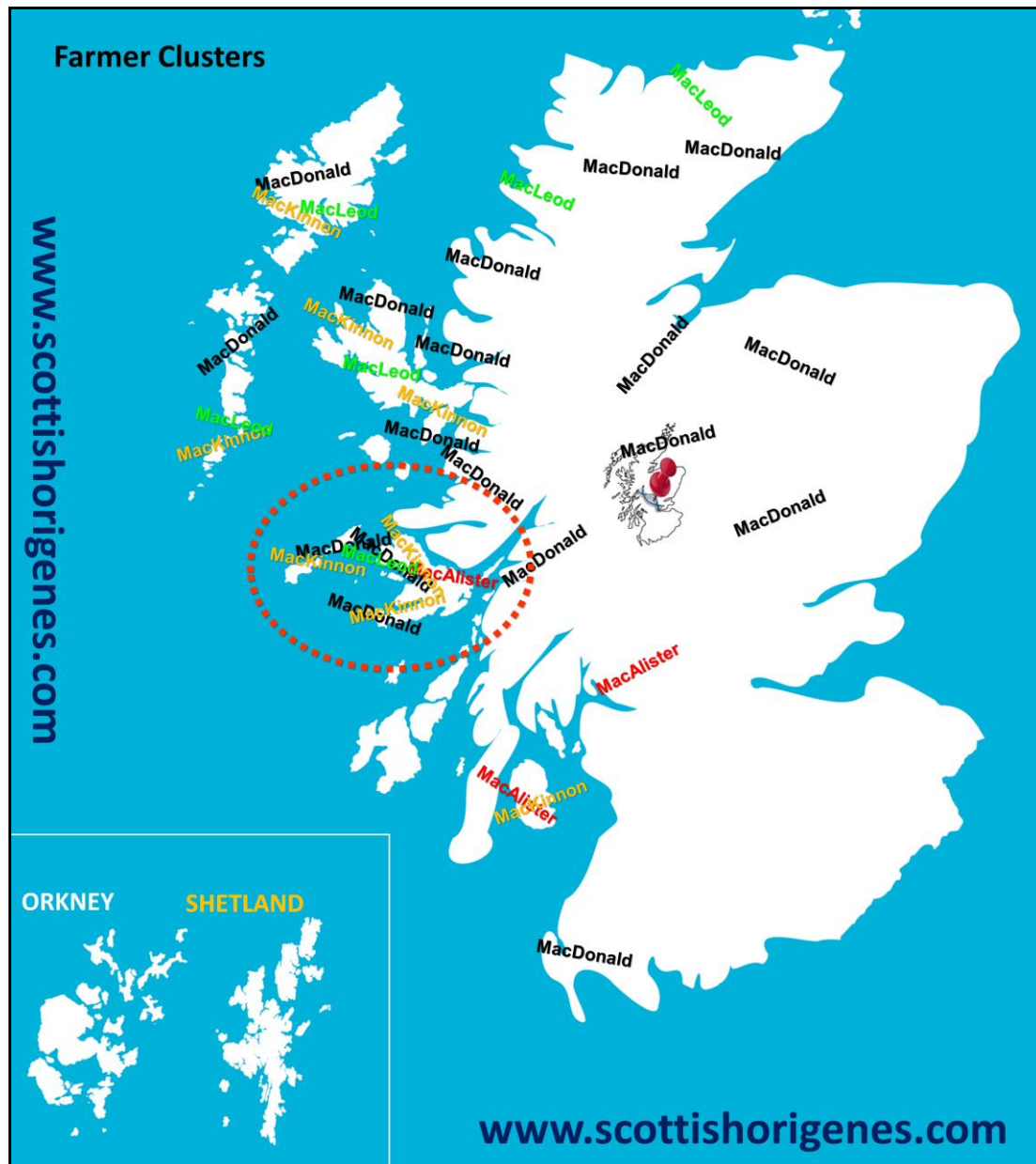


Figure 4: The test subject's closest genetic match reveals a paternal ancestral link with the Isle of Mull. Y-DNA testing reveals that the MacDonald, MacAlister, MacKinnon and MacLeod surnames arose among a group of related males living in a Gaelic part of Scotland. Distribution mapping of the MacDonald, MacAlister, MacKinnon and MacLeod surnames reveals that they only occur together on The Isle of Mull (**red broken circle**). Each surname has been placed on the map in the area where farmers with that surname concentrated in early census data. The most common spelling is detailed in each location.

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Figure 5: The Surnames of the Isle of Mull. An examination of the surnames associated with the Isle of Mull reveals McDonalds (red arrows) together with surnames that appear as close recurring genetic matches (orange arrow) to the test subject. These surnames arose among a group of related males who settled on the Isle of Mull an estimated 1,000 years ago. 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.

The Clan Territories of the Isle of Mull

By examining the locations of the castles and towerhouses that are historically associated with a particular surname, it reveals that Medieval Scotland was a patchwork of territories dominated by the most notable Clans and Families. Commercial ancestral Y-DNA testing has revealed that many males with Scottish paternal ancestry will be genetically related to at least one of the prominent Clans or families that once ruled over one's paternal ancestral genetic homeland. An examination of the castles and towerhouses of the Isle of Mull and its surrounding areas reveals a mix of Clans of Scots Gael and Norse-Gael origin, see **Figure 6**. The Clan map reveals that the Isle of Mull was dominated in the late Middle ages by the MacLeans who appear among the test subject's Y-DNA genetic relatives, see **Figures 2 and 6**. In contrast, the test subject's Norse-Gael McDonald ancestors dominated the Scottish mainland that lay to the north of Mull, together with their close 'Maclan' genetic relatives, see **Figures 2 and 6**.

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Figure 6: The principal Medieval Clans and Families of the Isle of Mull. An examination of the Clan Territories of the Isle of Mull and surrounding mainland reveals an area dominated by Clans of Scots-Gael and Norse-Gael origin. By the late Middle ages the test subject's MacDonal ancestors dominated the mainland that lay to the north of Mull (red arrow). The Clans of Maclan and MacLean (orange arrows) also dominated this area and appear among the test subject's closest recurring genetic relatives. The Clan territories map was reconstructed based on castle locations and their known historically associated Clans and Families.

Mr McDonald's Scottish Paternal Ancestral Genetic Homeland

Early census data reveals that the MacDonal and their Y-DNA revealed genetic relatives concentrate together in the area surrounding Dervaig village in the far north of Mull; and it is there that the test subject's Scottish Paternal Ancestral Genetic Homeland is to be found, see **Figure 7**. It was there that his direct male ancestor first took the 'MacDonal.' His paternal ancestor had settled there together with genetic relatives, some of whom acquired new surnames like McAlister, MacKinnon, Maclan, MacLeod, MacCowan and MacArthur. When one's paternal ancestors have lived in an area for a long time, one will often find evidence of their links with that area in the surrounding historical monuments and placenames. An examination of the area surrounding Dervaig reveals 'Aros Castle' which at one point was associated with his MacDonal ancestors, together with a location known as 'Maoll MhicDhomhnuill' (MacDonal's Peak), see **Figures 7 and 8**. The test subject's paternal ancestors will also have left evidence of their ancestral links with this area in both the history of this location and in the DNA of the areas current inhabitants.

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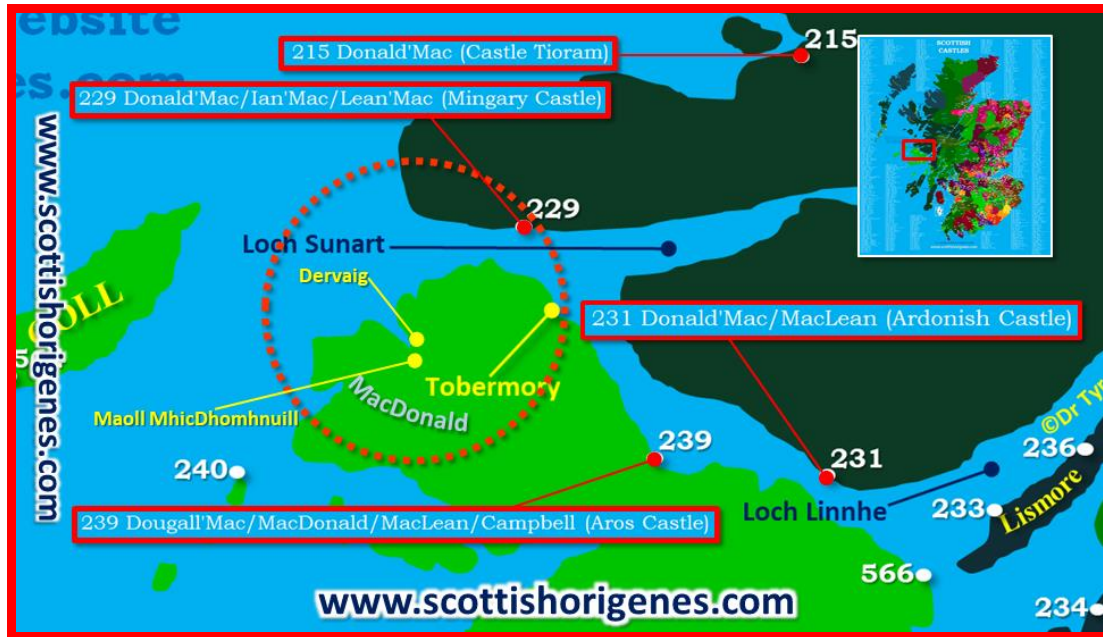


Figure 7: Mr McDonald's Scottish Paternal Ancestral Genetic Homeland. Mr McDonald's Scottish paternal ancestral genetic homeland (**orange broken circle**) is centred upon the village of Dervaig (Viking for 'Good Inlet') in the far north of the Isle of Mull. It was there that the test subject's paternal ancestor settled an estimated 1,000 years ago when paternally inherited surnames first appeared within Scotland. While his paternal ancestor took the MacDonald surname, his neighbours/relatives acquired other surnames like McAlister, MacKinnon, Maclan, MacLeod, MacCowan and MacArthur. His ancestors have left evidence of their long ancestral links with the Isle of Mull in the remains of at least one castle (Aros Castle), and the placename of 'Maoll MhicDhomhnuill' (MacDonald's Peak). The test subject's paternal ancestors will also have left evidence in the history of this location, and in the DNA of the Donalds that may still live and farm there.



Figure 8: 'Maoll MhicDhomhnuill' (MacDonald's Peak).

Vikings

The modern Scots are a diverse bunch descended from pre-historic inhabitants, Celts (Picts, Ancient Britons, Gaels), Romans, Anglo-Saxons, Vikings, Norse-Gaels and Normans. Clues to the ethnic origin of the test subject's paternal ancestors can be found in his R-M198 Y-DNA Haplogroup and his more distant genetic surname matches (at the 25 and 12 marker levels) where one finds Scandinavian surnames. This indicates that the test subject's founding paternal ancestor was of Viking origin.

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The MacDonalds of Scotland derive their name from Donald, grandson of the Norse-Gael 'Somhairle,' Thane of Argyle (1113 -1164AD). The Y-DNA test results indicate that the test subject's Scottish paternal MacDonald ancestors were indeed the descendants of Scandinavian Vikings who had arrived in the Western Isles of Scotland and were adsorbed into Scots Gaelic society.

How to confirm the McDonald Genetic Homeland

One must keep in mind that this is a scientific 'DNA' approach. The DNA does not lie and commercial ancestral Y-DNA testing of MacDonalds who live (preferably farm) in the north of the Isle of Mull will confirm the paternal ancestral link with that location.

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