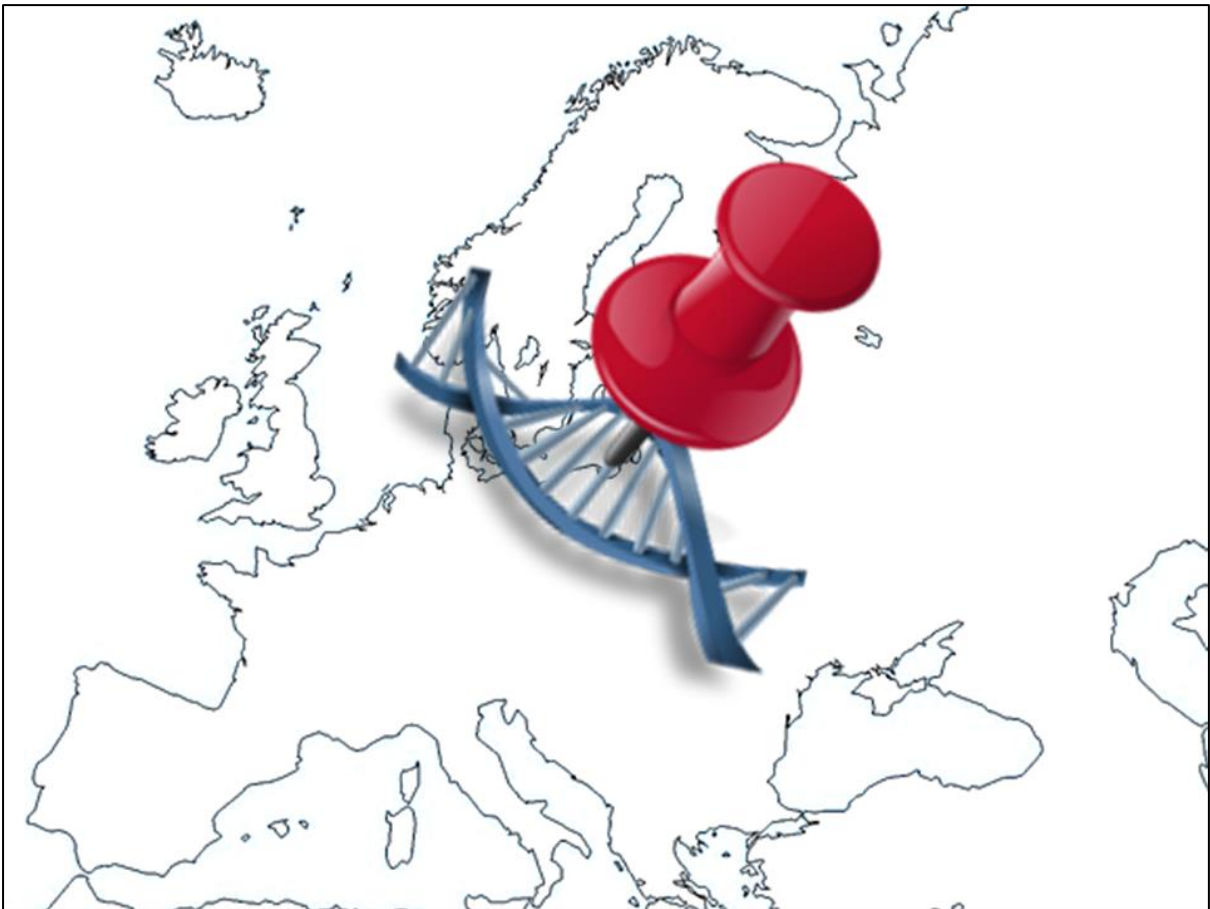


# PART I

## Reconstructing Mr Robinson's Ancient Paternal Ancestral Journey



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**Dr Tyrone Bowes**

**2/11/2016**

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## INTRODUCTION

The more Y-DNA genetic markers (STRs) or mutations (SNPs) that two people share the more recent their common male ancestor once lived. In this manner, the genetically recurring surnames that appear at the 67 and 37 Y-DNA STR marker levels will typically reflect ones ancestral neighbours from the time when paternally inherited surnames became common (which was approximately 1000 years ago in the UK and Ireland). But the Y-DNA test results also reveals many more people who share less Y-DNA STR genetic markers which reflect shared paternal ancestry prior to the appearance of surnames and those genetic relatives can reveal clues as to one's *ancient* paternal ancestral journey. In addition, an analysis of more permanent mutations known as SNPs, the vast majority of which are older than surnames will also shed light on one's ancient origin.

## INTERPRETING MR ROBINSON'S DISTANT GENETIC MATCHES

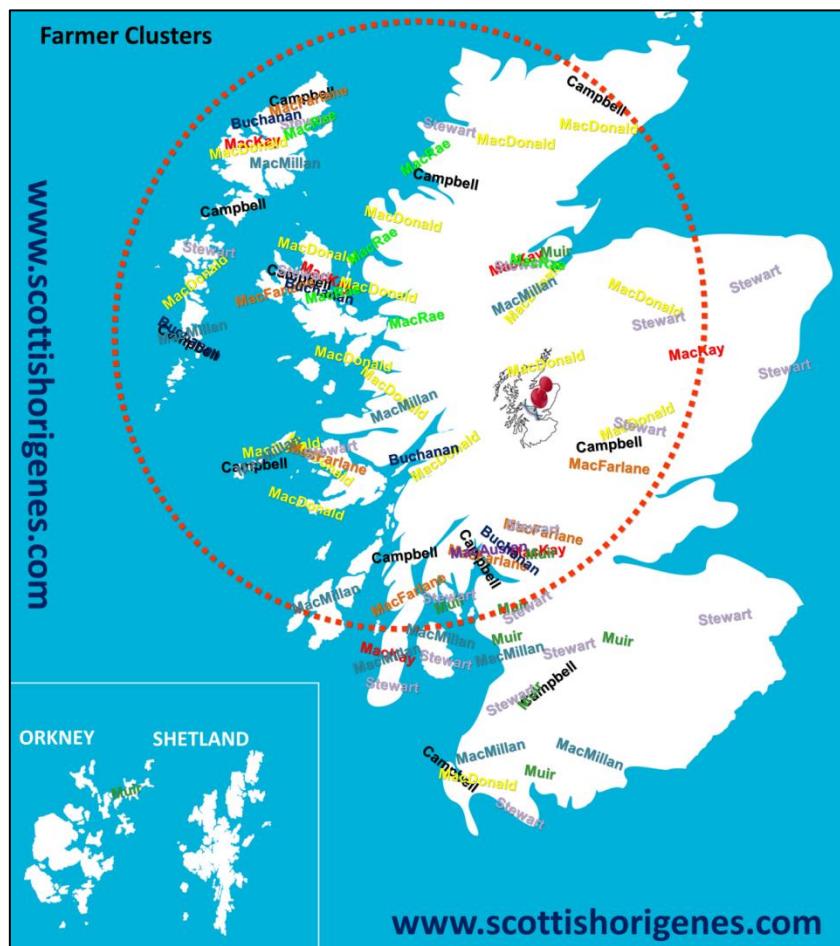
### BigY Matches

The BigY DNA test explores more permanent mutations known as SNPs which occur on the male Y chromosome. SNP mutations are far less frequent than the repetitive STR DNA sequences examined in the YDNA67 test. As such, the BigY mutations can shed light on one's more distant (pre-surname) paternal ancestral origin. Like the Y-DNA67 results, the BigY genetic matches are *not random* with approximately 50% of the test subject's BigY genetic matches featuring surnames that recur throughout the results, see **Figure 1**. Similar to the test subject's YDNA STR results, the test subject's BigY matches were also almost completely dominated by Scottish-associated surnames, see **Figure 1**. The threshold for BigY genetic matches is set by FTDNA, and in this instance the test subject's current BigY genetic relatives do not shed light on the his pre-Scottish origin. However, the predominance of Scottish matches in the BigY results indicate a long paternal ancestral link with the Highlands of Scotland, an association that which predates the appearance of surname by many hundreds of years, see **Figure 2**.

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BigY Recurring Matches						
Surname	Shared Novel Variants	Known SNP Difference	Non Matching Known SNPs	Matching SNPs	Number	Frequency
Stewart	35	1	CTS3850	26733	1	5
McCoy	35	1	CTS3850	26744	2	5
McDonald	18	1	CTS3850	25532	7	9
Buchanan	36	2	CTS3850 Y783.2	26821	18	19
McFarland	34	2	CTS3850 Y783.2	26710	35	3
Moore	33	2	CTS3850 Y783.2	26565	38	4
McMillan	33	2	CTS3850 Y783.2	26727	40	4
McAusland	33	2	CTS3850 Y783.2	26572	43	3
Veger	19	2	CTS3850 Y783.2	26862	60	3
Campbell	17	2	CTS3850 Y783.2	26138	67	5
Ferguson	17	2	CTS3850 Y783.2	26887	68	3
Alexander	16	2	CTS3850 Y783.2	26641	75	9
Mcrae	14	2	CTS6498 CTS3850	25034	104	4

**Figure 1:** Genetically recurring surname matches for test subject Robinson as revealed in the BigY DNA database. The test subject's BigY genetic matches were dominated by Scottish surnames which are **NOT RANDOM**; approximately 50% of his genetic relatives have surnames that recur throughout his BigY results. Highlighted font (**surname panel**) denotes the ethnicity associated with each surname; **Scottish**. The '**Number panel**' details the position which the closest individual with each surname appears in the test subject's FTDNA BigY matches, for example there are 19 individuals called Buchanan who appear among the test subject's BigY matches, the closest of whom appears as the test subject's 18<sup>th</sup> closest genetic relative in FTDNA's BigY database.



**Figure 2:** The test subject's closest BigY genetically recurring Scottish surname matches reveal a pre-surname paternal ancestral link with the Highlands of Scotland. The Stewart, MacKay (McCoy), MacDonald, Buchanan, MacFarlane, Muir (Moore), MacMillan, MacAuslan, Campbell, Ferguson, Alexander and MacRae farming communities are overwhelmingly associated with the Scottish Highlands (**red broken circle**). Each surname has been placed on the map where farmers with that surname concentrated in early census data.

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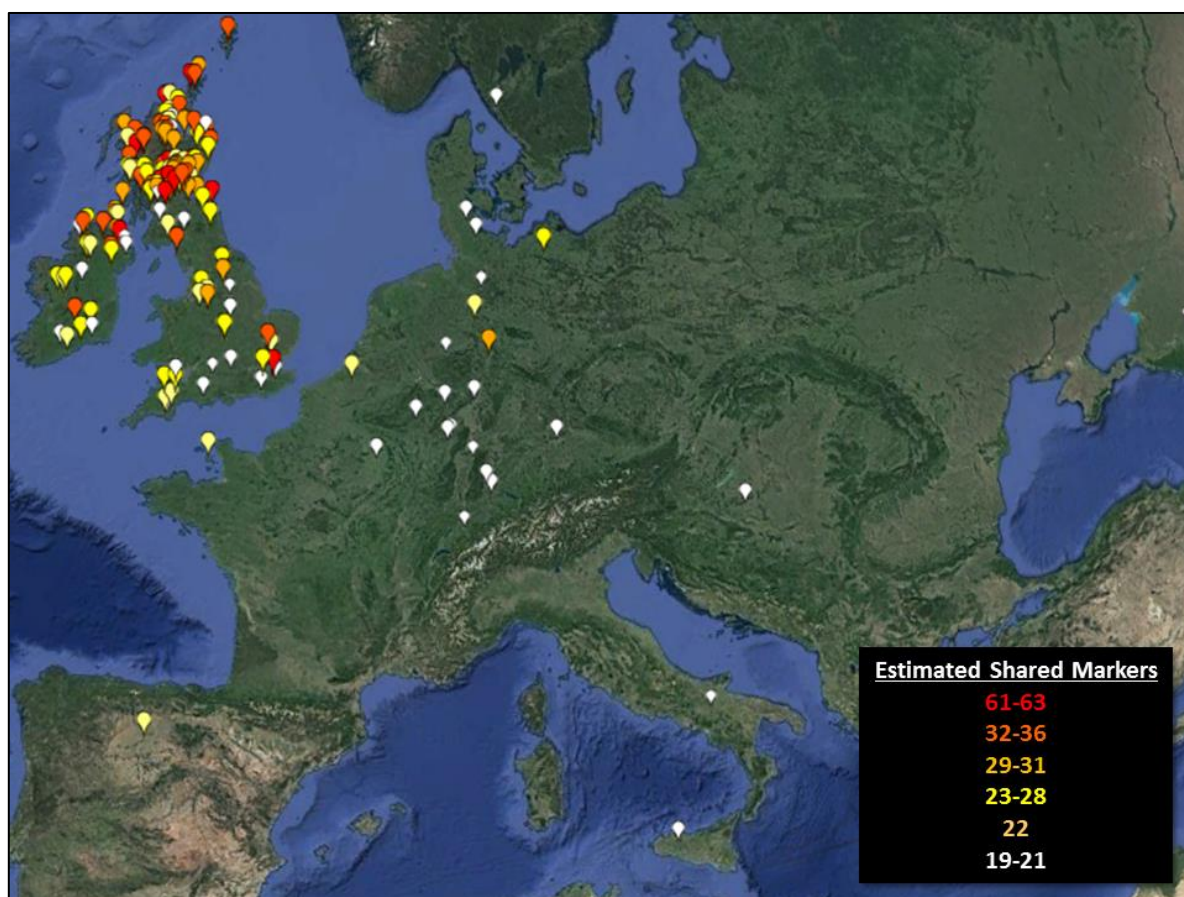
## Ysearch matches

Mr Robinson's results were uploaded to the Ysearch database and the match criteria lowered to reveal additional genetically matching individuals. Many of these new matches also reveal details of the geographical origin of their earliest known paternal ancestor, see **Figure 3**. By plotting those ancestral locations and sorting the genetic matches according to the number of shared genetic markers one can begin to reconstruct Mr Robinson's ancient paternal ancestral journey, see **Figure 4**.

Last Name	User ID	Origin	Markers Compared	Genetic Distance	Estimated shared markers	Pin Colour	
Craig	32GWC	East Kilbride, Lanarkshire, Scotland	67	4	63	Red	
Roberts	XFA7Y	Sutherland, Scotland	67	4	63		
Anderson	H5535	Berwick on Tweed, England	67	5	62		
Campbell	9nyfg	Glenlyon, Perthshire, Scotland	67	5	62		
McMullen	Y8HDP	Grange of Muckamore, Antrim, Northern Ireland	67	5	62		
Austin	XPQHF	Kent, England	67	6	61		
Ferguson	AHV5Y	Kilmadock, Scotland	67	6	61		
Goins	4V7GF	Scotland, Orkney Isles, Scotland	67	6	61		
MacDonald	JJ2DE	Airth, Stirlingshire, Scotland	67	6	61		
MacDonald	FYFSP	Drymen, Scotland	67	6	61		
MacDonald	MUV9C	Riddarch Knoydart Glenngary Scotland, Scotland	67	6	61		
McDonald	YYSHN	Knoydart, Scotland	67	6	61		
Eunson	S6C84	Kirkwall, Orkney Isles, Scotland	38	2	36		Orange
Grant	JMHAM	Inverness-shire, Scotland	37	2	35		
Bain	5FVTZ	Shetland Isles, Scotland	37	3	34		
MacKenzie	9M6K9	Ross & Cromarty, Scotland	37	3	34		
Sweeney	GEHH6	Tipperary, Ireland	37	3	34		
Boyle	BHD27	Donegal, Ireland	37	4	33		
Campbell	GWJV6	Derry/Londonderry, Northern Ireland	39	6	33		
Campbell	BWBTO	Greenock, Scotland	37	4	33		
Campbell	VAS54	Killin, Scotland	37	4	33		
Fox	43Q4A	Whitehaven, Cumberland, England	37	4	33		
MacGregor	EUQ4Q	Milnathort, Orwell Parish, Kinross-shire, Scotland	37	4	33		
McRae	4BQV2	Kintail, Ross-shire, Scotland	37	4	33		
Rock	VK8E7	Lamagh, Northern Ireland	37	4	33		
Stirling	VEZ46	Forfar, Angus, Scotland	37	4	33		
Urquhart	JWBVE	Knockbain, Scotland	37	4	33		
Badenoch	9MNQP	Rathven of, Scotland	38	6	32		
Bruce	EP9PG	Aberdeenshire, Scotland	37	5	32		
Buchanan	KJYA8	Stirlingshire, Scotland	37	5	32		
Crawford	HATX4	Argyllshire, Scotland	37	5	32		
MacDonald	TBY8Q	Strathmiglo?, Scotland	37	5	32		
MacPherson	B2CSX	Shielfoot, Acharacle, Ardnamurchan, Argyll, Scotland	37	5	32		
MacRae	YDGKS	Applecross, Ross-shire, Scotland	37	5	32		
Matheson	P8P4Q	Gartymore, Kildonan, Sutherlandshire, Scotland	37	5	32		

**Figure 3:** Snapshot of Mr Robinson's genetic matches as revealed in the Ysearch.org database. By uploading the test subject's Y-DNA results to the Ysearch database and dropping the match criteria it revealed nearly 200 genetic relatives who reveal details (village, town or county plus Country) of their earliest known paternal ancestral origins; which can be sorted according to the number of shared genetic markers. Individuals with recorded ancestors within early 19<sup>th</sup> Century cities are excluded from analysis as they are most likely the result of recent migration.

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**Figure 4:** Earliest known Ancestral locations revealed by Mr Robinson's Ysearch.org genetic matches. Mr Robinson's genetic relatives revealed most recent ancestral links with Britain and Ireland and an earlier ancient link with Central Europe. Each pin is positioned in the location where a Ysearch genetic relative recorded his earliest known paternal ancestor. Pin colour reflects the estimated number of shared genetic markers.

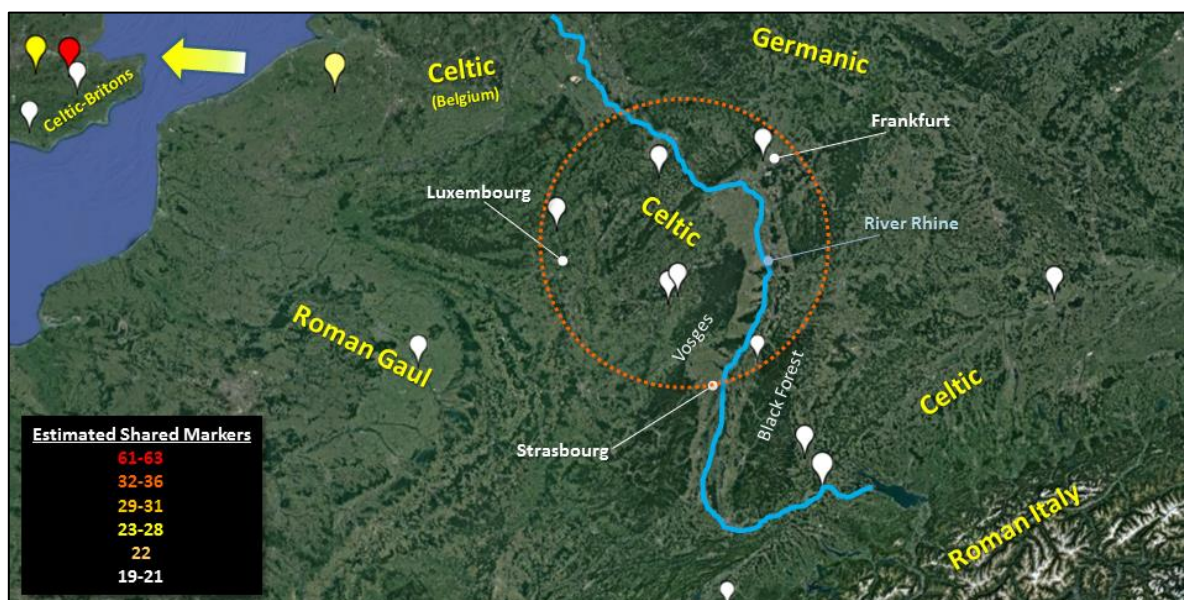
### MR ROBINSON'S CELTIC ROOTS

An examination of the ancestral locations revealed by the test subject's genetic matches who share between 19 and 21 Y-DNA STR markers reveals that the majority are concentrated within Central Europe, see **Figure 5**. It was along the Rhine River valley between the modern cities of Luxembourg, Strasbourg and Frankfurt that the test subject's paternal ancestral journey, as recorded by his Y-DNA began; it is there that one finds a cluster of some of his most distant genetic relatives (sharing the least number of genetic markers), see **Figure 5**. It was there that his prehistoric paternal ancestors originated. By Roman times (100 BC – 100 AD) his Celtic ancestors lived in a volatile borderland, squeezed between the Roman world of Gaul to the west and Italy to the south, and invading barbarian Germanic tribes to the north, see **Figure 5**. The test subject's Y-DNA results reveal that his paternal ancestors followed the course of the River Rhine seeking refuge among their Celtic kin in Britain, see **Figure 6**.

An examination of the ancestral locations recorded within Britain in the ysearch database reveals that his Celtic ancestors first settled within Kent in the southeast, with some venturing to Devon and Cornwall in the English southwest, while the test subject's direct

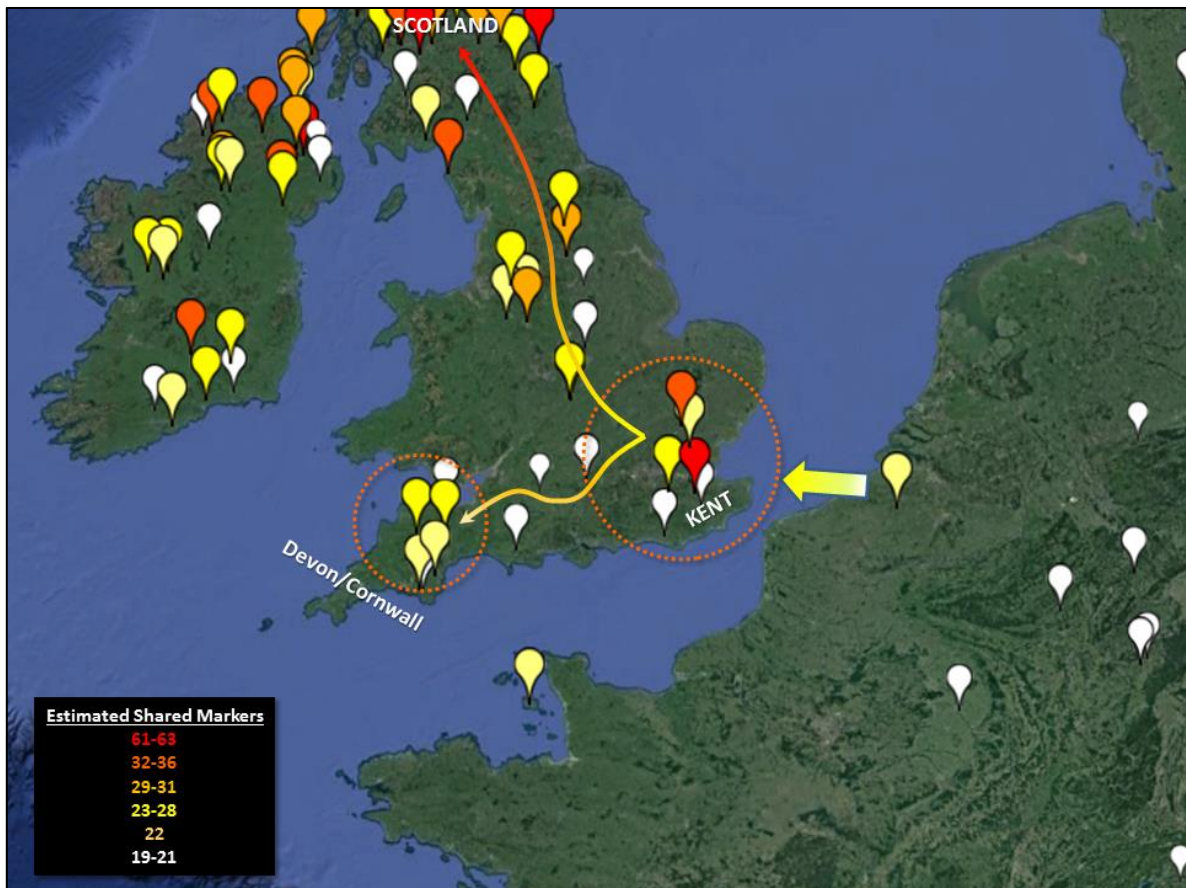
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paternal line ventured north into Scotland, see **Figure 6**. Within Scotland, one is struck by the sheer number of genetic relatives with earliest known ancestral links above the Clyde and the Firth of Forth within Central Scotland, see **Figure 7**. It was within the Trossachs of North Central Scotland that the test subject's refugee Celtic ancestors from the Rhine River valley settled permanently and flourished.

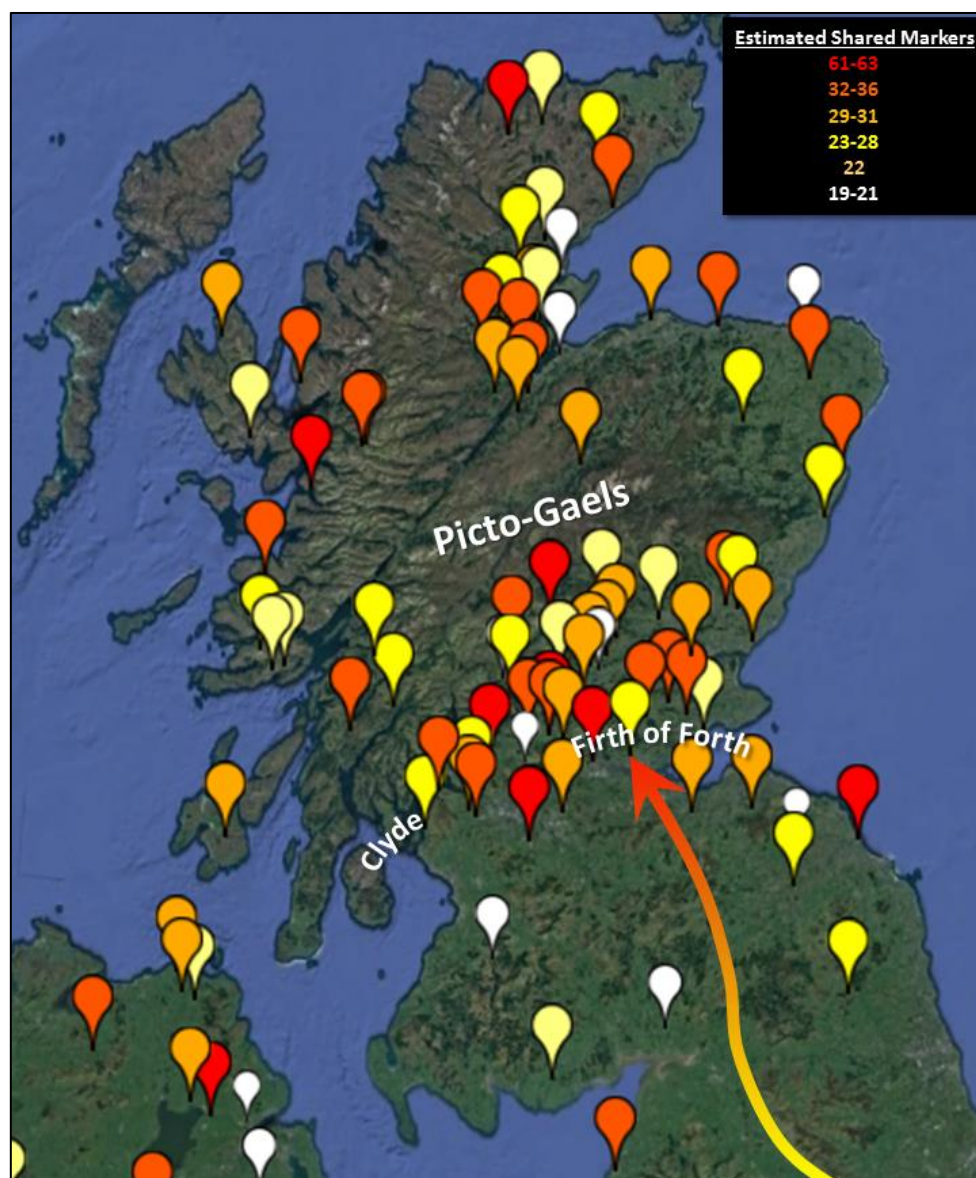


**Figure 5:** The paternal ancestral journey from Central Europe to Southeast England. The test subject's paternal ancestral journey as recorded in his Y-DNA began in Central Europe between the modern cities of Luxembourg, Strasbourg and Frankfurt (orange broken circle) where many of his most distant genetic relatives record earliest ancestral origins. By Roman times the Celts of what is now Southern Germany were squeezed between the conflicting worlds of the Romans of Gaul and Italy, and the Germanic tribes of what is now Northern Germany. The area surrounding the Rhine between the Vosges and Black forest mountains was a turbulent conflict zone and the test subject's DNA reveals that his paternal ancestors sought refuge in Celtic Briton (via the River Rhine).

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**Figure 6:** Arrival in Britain. The clustering of genetic relatives with ancestral links in Kent and bordering Counties reveals that the test subject's ancestors arrived in Southeast England. From Kent some of his paternal ancestors spread into the far southwest of England (Devon/Cornwall) while others spread north into Scotland. Today, both Scotland and Cornwall are regarded as 'Celtic' areas of Britain.



**Figure 7:** Refuge above the Clyde and Firth of Forth. The concentration of many of the test subject's genetic relatives with recorded ancestral links in Central Scotland reveals that his paternal ancestors settled and thrived above the Clyde and Firth of Forth.

### **SUMMARY OF MR ROBINSON'S PATERNAL ANCESTRAL JOURNEY**

Mr Robinson's Y-DNA results indicate that his paternal ancestors originated thousands of years ago in the Celtic heartland of the Rhine River valley which lies between the modern Cities of Luxembourg, Strasbourg and Frankfurt. Between 100 BC and 100 AD the Celtic tribes of this area found themselves squeezed between Conquering Romans in the south and west and the warlike Germanic tribes from the north. Their homeland became a conflict zone which led to an exodus of Celts via the River Rhine into Britain. Some of his paternal ancestors spread from Kent in Southeast England into the modern Celtic heartlands of Devon and Cornwall in the southwest, while his direct paternal ancestors moved north into Scotland (presumably staying one step ahead of the Conquering Romans). His paternal ancestors settled permanently above the Clyde and Firth of Forth, where by 1000 AD they had become, or were adsorbed into the Picto-Gaelic peoples of Northern Scotland.