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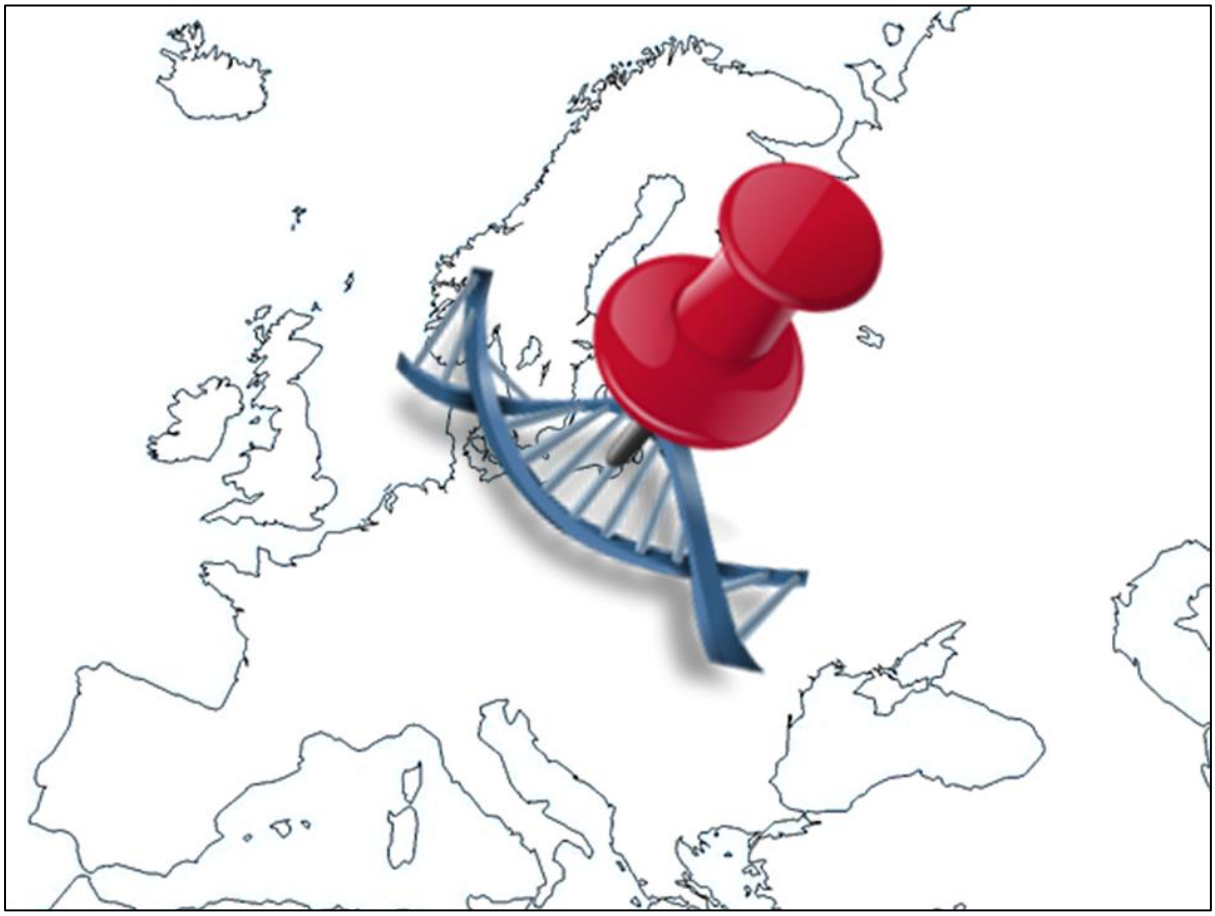
PART I

Pinpointing Mr Henderson's Ancient Paternal Ancestral Origin



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INTRODUCTION

The surnames of the people with whom one shares a common male ancestor as revealed by a commercial ancestral Y-DNA test are like a snapshot of one's ancestral neighbours in multiple locations over many thousands of years. The more markers or mutations that two people share, the more recent their common male ancestor lived. In this manner the genetically recurring surnames that appear at the 67 and 37 marker level will reflect ones ancestral neighbours from the time when paternally inherited surnames became common, which was roughly 1000 years ago in the UK and Ireland. But the Y-DNA test also reveals many surnames that appear as genetically recurring matches at the 25 and 12 marker level, these surnames reflect shared ancestry prior to the appearance of surnames and they may reveal clues as to one's ancient paternal ancestral journey.

INTERPRETING MR HENDERSON'S DISTANT GENETIC MATCHES

To reveal ones ancient paternal ancestral journey one must first identify the surnames that reappear as distant genetic matches. These recurring surnames will help reveal a distant ancestral link with specific geographical areas. Results for test subject 'Henderson' are shown in **Figure 1**.

Test Subject	Haplogroup	Y-DNA test results				
		25 marker			12 marker	
		exact	-1	-2	exact	-1
Henderson	I1d	-	Schofield(x4)	Cook(x7) Pinkston(x5) Anderson/Andersson(x8) Brown(x5) Carpenter(x5) Johnson/Johansson/Jonsson(x9) Olsen/Olson(x7) Reed/Reid(x5) Smith(x5)	Jackson(x4) Hansen/Hanson(x5) Mallett(x6) Rushen/Rushing(x13) Summer/Sumner(x4) Young(x7) Lyle/Lyles/Liles(x23)	Hamby/Hanby(x4)[1] Chisholm(x8) Herrick(x3)[1] Springer(x4)

Figure 1: Mr Henderson's distant genetically recurring surname matches. Surnames appear at the point at which they first occur as a genetic match e.g. the first match to an individual called Schofield occurs at 24/25 markers, although not all Schofields may match at that level. Figures in brackets represent the number of individuals with a particular surname who appear as a genetic match. Coloured font denotes the ethnicity associated with each surname; Scottish, Scandinavian, English, black font indicates surnames with multiple ethnic origins. Surnames in bold occur 3 times or more. [1]Members of the same close family recruited for Y-DNA testing and excluded from further analysis.

Mr Henderson's distant recurring genetic matches are to surnames that are predominantly associated with either England or Scandinavia. However, tracking one's ancestral journey prior to the appearance of surnames can be tricky as multiple geographical associations are typically revealed. Another approach is simple to plot the location of the most distant known paternal ancestor for ***all*** of his distant genetic matches. This information together with the identified genetically recurring surname matches can allow one to reconstruct a

paternal ancestral journey over many millennia. Plotting these locations reveals four geographic areas that are linked to Mr Henderson's paternal ancestral journey, see **Figure 2**.

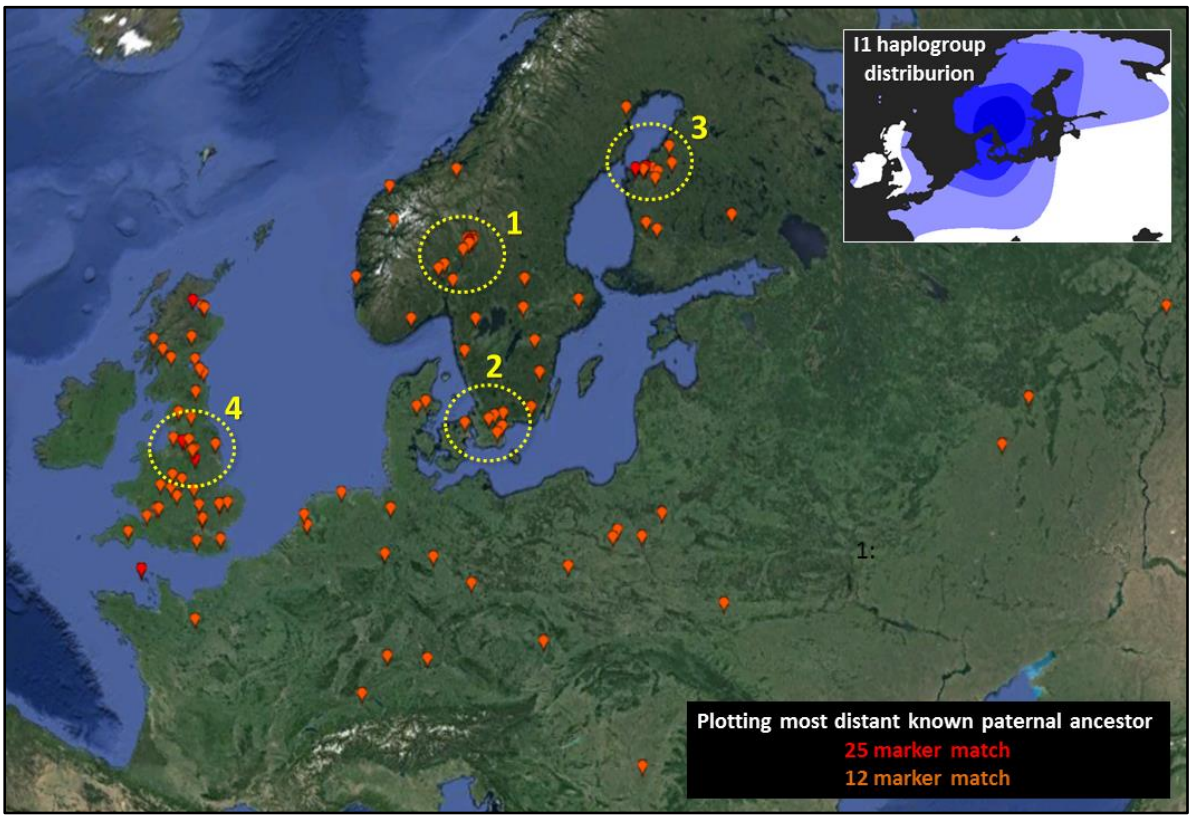

Figure 2: Ancestral locations revealed by Mr Henderson's distant genetic matches. By plotting the earliest known location of the most distant known paternal ancestor for all of Mr Henderson's 25 and 12 marker genetic matches it reveals 4 distinct clusters in Norway(1), Sweden(2), Finland(3), and England(4). Three of these clusters are situated in Scandinavia where Mr Henderson's I1 haplogroup originates and where today it reaches its highest density in the male population (top right corner).

HEDMARK IN NORWAY

SOURCE OF MR HENDERSON'S SCANDINAVIAN ROOTS

There are 7 different individuals who appear as distant genetic matches and who can trace their earliest known ancestor to the area surrounding the town of Elverum in Hedmard, in southern Norway, see **Figure 3**. This cluster represents the origin of the I1 haplogroup, it is the area where many thousands of years ago the I1 mutation occurred in a single male. The descendants of this I1-founding ancestor proliferated and spread south, east and west. Today a large proportion of the male population of southern Norway are $I1^{+ve}$. It is even possible that Mr Henderson's Viking ancestor left this area of southern Norway for Britain in around 800AD.

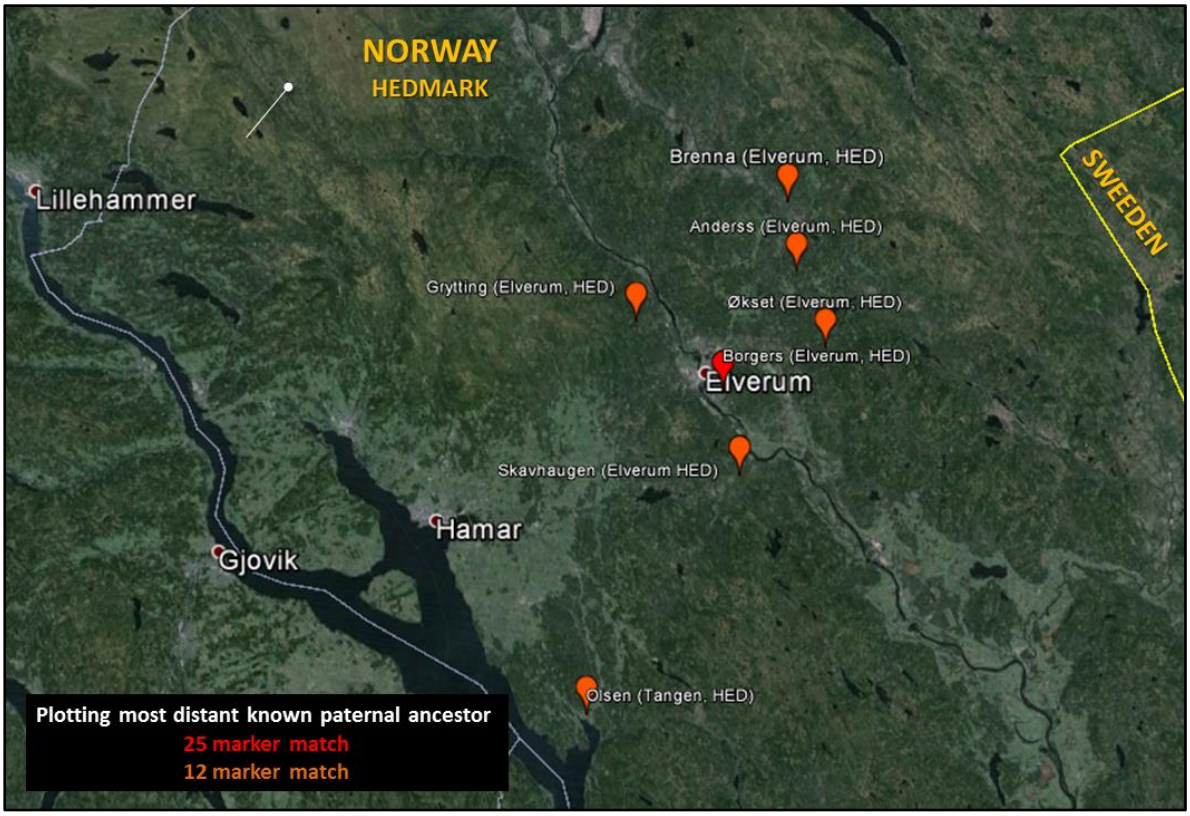

Figure 3: Distant genetic matches reveal an ancestral link with Elverum in Norway. There are 7 different individuals who occur as a distant genetic match to Mr Henderson who reveal a most distant known paternal ancestor close to the town of Elverum in Hedmark in southern Norway, which lies close to the border with Sweden (cluster 1, Figure 2). This is the origin of haplogroup I1 and Mr Henderson's paternal ancestors lived here thousands of years ago.

THE MIGRATION ROUTE EAST

Mr Henderson's distant genetic matches reveal that as the population in southern Norway increased they spread south along the coast, and migrated eastward, see **Figure 4**. The timing of the earliest migration can only be guessed at, and probably occurred in pre-history. However, the nearest cluster of genetic matches to the southern Norwegian I1 origin can be found in Skane in southern Sweden, a region close to Copenhagen in neighbouring Denmark, see **Figure 5**. Further east one finds a significant cluster in the area surrounding the city of Vaasa in eastern Finland, see **Figure 6**. In contrast to the earlier migration this cluster can be explained; it is the direct result of the colonization of eastern Finland by Swedish settlers in 1370AD. Based on Mr Henderson's Y-DNA results a high proportion of the Swedish settlers were recruited from Skane in southern Sweden. Today at least a quarter of the population of the Finnish City of Vaasa are Swedish speakers.

Figure 4: The easterly migration route of haplogroup I1 as revealed by Mr Henderson's genetic matches. Some of the descendants of I1 spread east along the coast to southern Sweden (green arrow) and later to Finland (yellow arrow).

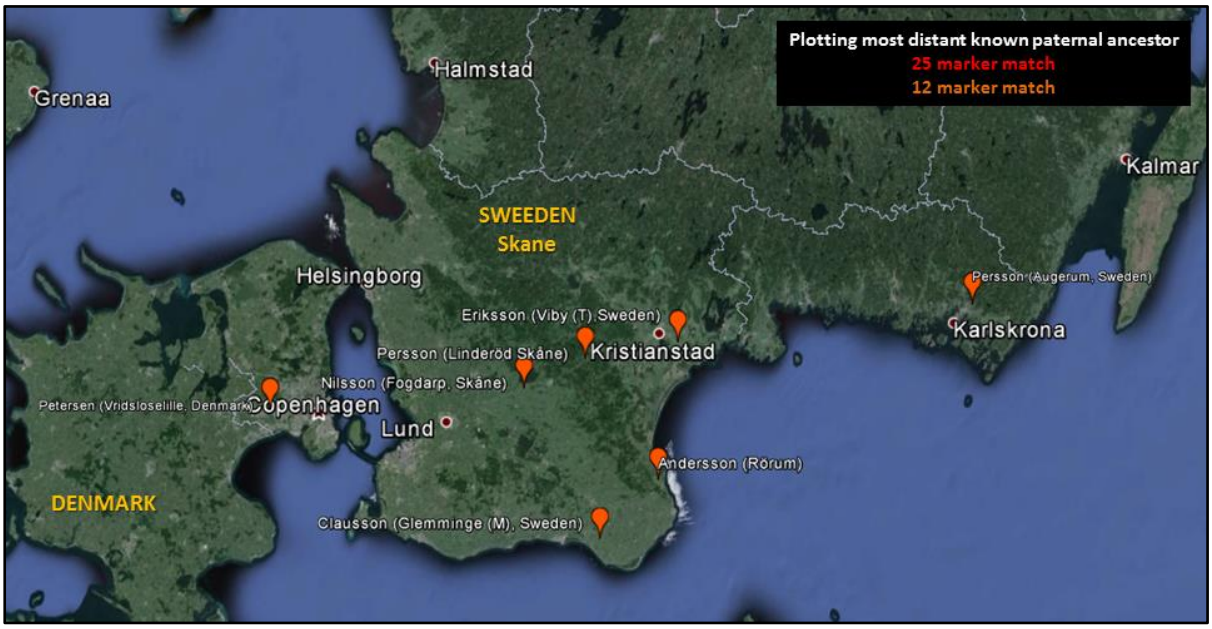

Figure 5: The I1 colonisation of Skane in Southern Sweden. There are 7 individuals who appear as a 12 marker match to Mr Henderson and who record a most distant known ancestor in, or close to Skane in southern Sweden (cluster 2, Figure 2).

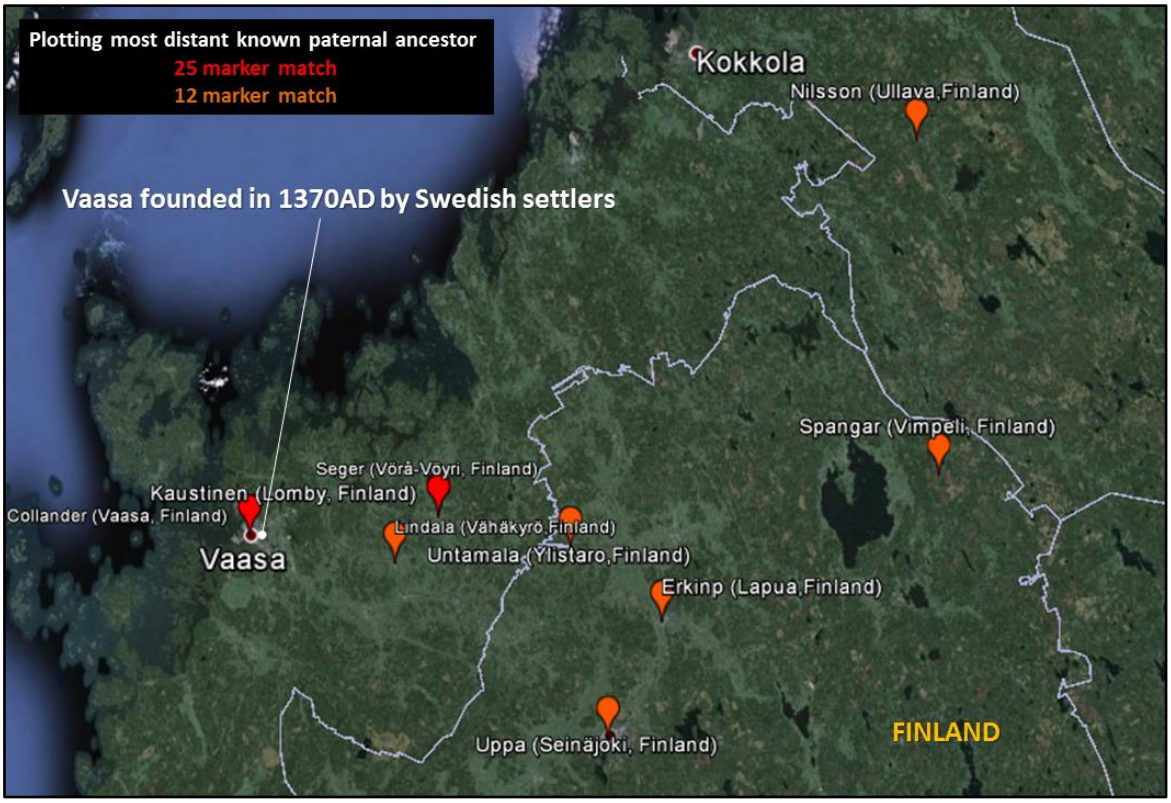

Figure 6: The I1 clustering in Finland. Mr Henderson shows a surprising number of matches to individuals with ancestral links to the area surrounding the City of Vaasa (cluster 3, Figure 2) on Finland's east Baltic coast. These genetic matches are the descendants of Swedish settlers from Skane (Figure 4) who were recruited by Charles IX of Sweden to found the City of Vaasa in 1370AD.

THE MIGRATION ROUTE WEST

THE VIKING SETTLEMENT OF BRITAIN

Many of Mr Henderson's distant genetic matches detail a distant paternal ancestor in Britain, see **Figure 7**. At first glance there does not appear to be a pattern to these known ancestral locations. However, a closer inspection reveals two 25 marker matches in the midlands of England, see **Figure 8**. Genetically recurring surname matches that appear at the 25 marker level will typically reflect shared ancestry just prior to the appearance of paternally inherited surnames in 1000AD. Crucially, the surname of one of these 25 marker midland-matches is 'Schofield,' which appears as Mr Henderson's closest recurring genetic match in **Figure 1**. Hence, there is a strong ancestral link with the Schofield surname in Mr Henderson's paternal ancestral journey, and surname distribution mapping reveals that Schofield is associated with a single geographical area centred upon the town of Oldham in the English Midlands, the same town listed as the last known location of the Schofield match in **Figure 8**. Finally, history records Oldham as being a Viking settlement founded in 865AD.

At some point after 865AD Mr Henderson's ancestors ventured north into Scotland. His distant Y-DNA results show evidence of this movement, as Mr Henderson matches a number

of individuals called Chisholm, which is associated exclusively with Scotland, being derived from a place called Chisholm, in the Scottish Borders, see **Figure 9**. These matches to Chisholm are evidence that Mr Henderson's Viking ancestors migrated north into Scotland from the English Midlands.

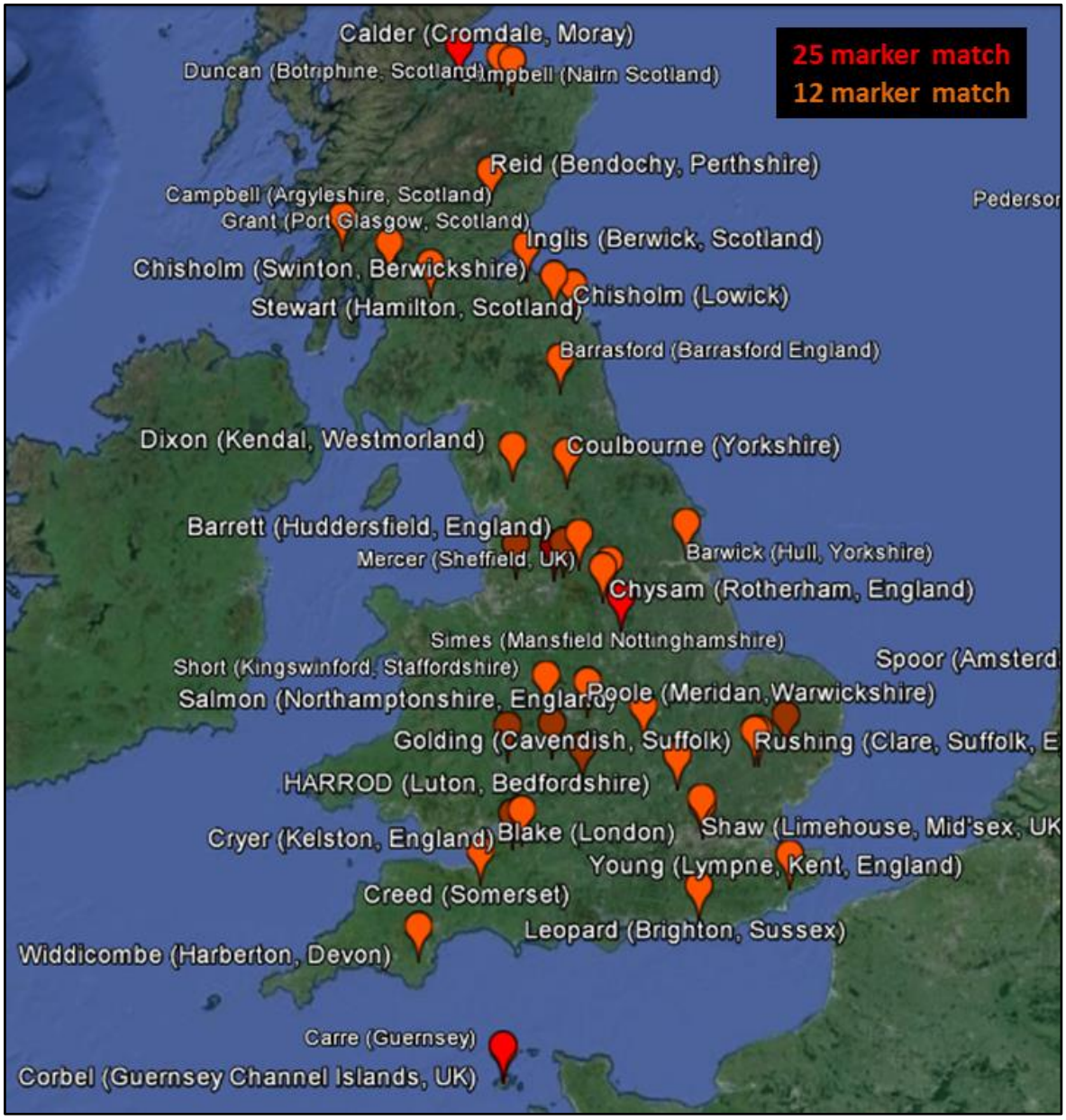

Figure 7: Location of the most distant known British ancestors of Mr Henderson's 25 and 12 marker matches. Some of the descendants of I1 in Britain may pre-date the arrival of the Vikings and have arrived in pre-historic times or later with the Romans, Anglo-Saxons, and Jutes. However many will have arrived during the Viking age and some of these matches may be associated with Viking areas of settlement in Britain.

Figure 8: Mr Henderson's ancestral link with Oldham. Two of Mr Henderson's 25 marker matches, which reflects shared ancestry just prior to the appearance of surnames and about the time of Vikings, have their earliest known ancestors in the English Midlands. One of these individuals is called Schofield, a surname which appears as a recurring genetic match and is associated with a single geographical area centred upon Oldham. Oldham was founded by Vikings in 865AD.

Figure 9: Mr Henderson's ancestral migration route north to Scotland. Mr Henderson has recurring genetic matches that support an ancestral link with Oldham. His genetically recurring matches to the exclusively Scottish 'Chisholms' indicate that his ancestors later migrated north into Scotland.

CONFIRMING MR HENDERSON'S ANCIENT PATERNAL ANCESTRAL JOURNEY

The beauty with the DNA approach is that the ancestral links with specific areas can be confirmed by Y-DNA testing males with particular surnames who currently lived in those identified locations. To confirm the ancestral link with the English Midlands will require the commercial ancestral Y-DNA testing of Schofields living in the area surrounding Oldham. To confirm the migration route north into Scotland will require the testing of Chisholms from the Scottish lowlands.

It is impossible using genetically recurring surname matches alone to pinpoint where Mr Henderson's Viking ancestors lived within Scandinavia, mainly because Scandinavian surnames typically change with each generation. Pinpointing the area within Scandinavia from which Mr Henderson's Viking ancestors departed will first require taking the 'comprehensive genome' test at FTDNA ($566). Over-time, and as more and more people sequence their full length Y-DNA (using this test), it will reveal more SNPs which are specific to different parts of the I1 heartland which encompasses large areas of southern Norway, southern Sweden and almost all of Denmark.

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