*Contact Irish or Scottish Origenes for a **FREE CONSULTATION** on your DNA test results or to find out about a suitable DNA test:*
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Dawson
An Autosomal (Ancestry.com) DNA Case Study

www.irishorigenes.com

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INTRODUCTION

There are several commercial ancestral DNA tests that can be used to explore one's ancestry. By far the most popular is the 'autosomal test' which sheds light over ***all*** of one's recent ancestral lines. With autosomal DNA testing one will typically match many individuals (both male and female) and making sense of those relationships can be quite challenging. However, as with every DNA test the same golden rule applies, the more DNA that two people share the more recent their shared (paternal or maternal) ancestor once lived. In addition, many of one's autosomal matches will reveal surnames and placenames associated with their family tree, and those surnames and locations can hold clues as to the origin of the various branches in one's own ancestral tree. The challenge of modern autosomal DNA analysis is linking a common location revealed in the autosomal DNA test result with a particular ancestral surname.

INTERPRETING THE AUTOSOMAL RESULTS

An examination of test subject Dawson's 'autosomal' DNA test results revealed 33,025 genetic relatives, the vast majority of whom record ancestral information, see **Figure 1**. The locations recorded by the test subject's autosomal genetic relatives are ***NOT RANDOM***, the countries of Scotland and Ireland feature prominently in frequency and shared DNA, see **Figure 1**.

Autosomal DNA stats			
Genetic Relatives	**33,025**	**Percentage**	**Max. Shared DNA/cMs**
>20cM Generic relatives	1874	5.7	1196
>20cM Ireland	257	13.7	868
>20cM Scotland	212	11.3	868

Figure 1: *Scotland and Ireland gave strong autosomal DNA signals. Autosomal DNA testing revealed 33,025 genetic relatives, almost 2,000 of whom shared more than 20cMs of DNA. The locations recorded by those genetic relatives are NOT RANDOM, given their respective populations sizes, Ireland and Scotland dominate in frequency and shared DNA.*

The Ancestral links with Scotland and Ireland

The locations recorded within Scotland and Ireland by the test subject's autosomal genetic relatives are not random, and a blast search of that ancestral detail for the 1841 counties of Scotland revealed 5 DNA hotspots centred upon Lanarkshire, Mid-Lothian, Fife and Angus on the Tay Estuary, and bordering Argyllshire and Inverness-shire in the Highlands and Islands of Western Scotland, see **Figure 2**. An examination of the Irish counties recorded by the test subject's autosomal genetic relatives revealed 5 DNA hotspots centred upon Antrim, Donegal, and Cavan in Ulster, Dublin in Leinster, and Cork in Munster, see **Figure 3**. The dominance of Ulster counties which were heavily colonised by Scots and English in the early 17th Century could indicate that some of the test subjects 'Irish DNA' is the result of more recent Plantation settlement. The signal from County Dublin is non-specific noise, the result of more recent migration to the City of Dublin.

A

County	Frequency	Percentage	Max. Shared DNA / cM
Shetland	4	1.9	21
Orkney	10	4.7	37
Caithness	9	4.2	61
Sutherland	7	3.3	49
Ross and Cromarty	8	3.8	49
Invernesshire	38	17.9	49
Argyllshire	34	16.0	53
Stirlingshire	25	11.8	45
Perthshire	22	10.4	96
Dunbartonshire	13	6.1	45
Buteshire	2	0.9	24
Nairn	3	1.4	37
Morayshire	7	3.3	49
Banffshire	9	4.2	37
Aberdeenshire	28	13.2	49
Kincardineshire	10	4.7	49
Angus	29	13.7	61
Fife	30	14.2	61
Clackmannanshire	6	2.8	40
Kinrosshire	4	1.9	45
West Lothian	12	5.7	61
Mid Lothian	49	23.1	96
East Lothian	16	7.5	46
Renfrewshire	30	14.2	46
Lanarkshire	64	30.2	384
Ayrshire	42	19.8	41
Dumfriesshire	18	8.5	49
Wigtownshire	6	2.8	28
Kirkcudbrightshire	5	2.4	32
Peebleshire	2	0.9	37
Selkirkshire	3	1.4	25
Berwickshire	6	2.8	37
Roxburghshire	6	2.8	38

B

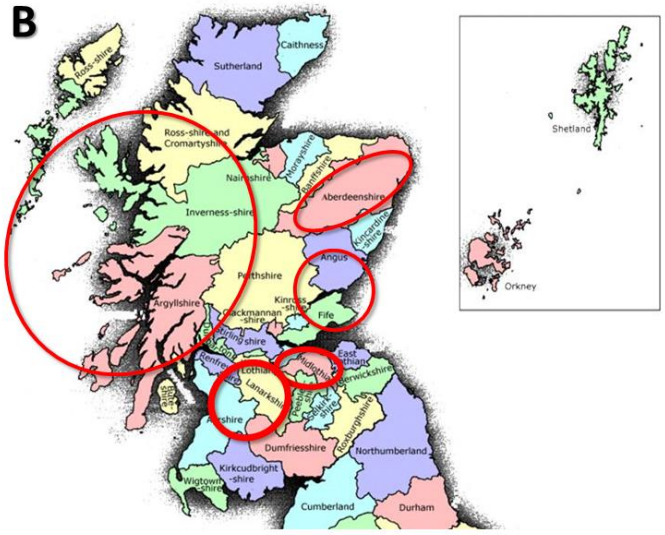

Figure 2: *Autosomal testing reveals 5 DNA hotspots within Scotland. An examination of the 1841 counties of Scotland detailed by the test subject's autosomal genetic relatives that shared greater than 20cMs of DNA reveals autosomal DNA hotspots centred on Lanarkshire, Mid-Lothian, Fife and Angus which span the Tay Estuary, and bordering Argyllshire and Inverness-shire in the Highlands and Islands of Western Scotland (**red arrows**, **panel A**, **red circles**, **panel B**). Much of the signal from Lanarkshire and Mid-Lothian may be non-specific noise, the result of more recent migration to the cities of Glasgow and Edinburgh, respectively.*

A

	County	Frequency	Percentage	Shared DNA / cM
Connaught	Roscommon	7	2.7	33
	Leitrim	10	3.9	38
	Sligo	7	2.7	34
	Mayo	3	1.2	36
	Galway	15	5.8	37
Munster	Tipperary	10	3.9	384
	Clare	6	2.3	40
	Kerry	2	0.8	25
	Cork	38	14.8	53
	Limerick	16	6.2	33
	Waterford	3	1.2	33
Leinster	Laois	3	1.2	29
	Offaly	5	1.9	61
	Kilkenny	11	4.3	56
	Kildare	7	2.7	38
	Dublin	47	18.3	53
	Wicklow	7	2.7	33
	Wexford	9	3.5	38
	Carlow	6	2.3	33
	Longford	1	0.4	22
	Louth	4	1.6	31
	Westmeath	6	2.3	33
	Meath	11	4.3	27
Ulster	Cavan	24	9.3	42
	Monaghan	8	3.1	384
	Fermanagh	4	1.6	28
	Donegal	57	22.2	112
	Tyrone	22	8.6	40
	Derry	39	15.2	96
	Antrim	44	17.1	384
	Down	26	10.1	40
	Armagh	25	9.7	61

B

Figure 3: *Autosomal testing reveals 5 DNA hotspots within Ireland. An examination of the Irish counties detailed by the test subject's autosomal genetic relatives that share greater than 20cMs of DNA reveals 5 autosomal DNA hotspots centred on Antrim, Donegal, and Cavan in Ulster, Dublin in Leinster, and Cork in Munster (**red arrows**, **panel A**, **red circles**, **panel B**). The signal from Dublin is non-specific noise, the result of more recent migration to the city.*

Ancestral Surnames

The test subject's most recent ancestral papertrail reveals a mix of surnames of Irish, Scottish, and English origin, see **Figure 4**. 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 area where one's ancestors first settled. An examination of the distribution of Scottish farmers named Campbell, Ferguson, McFarlane, and Scott revealed multiple distinct groups spread throughout Scotland, some of which are also associated with autosomal DNA revealed hotspots, see **Figure 5**. In Ireland, the descendants of Gaelic Irish and Normans were overwhelmingly Catholic in early census data, while those descended from 17th Century Plantation Scots and English were overwhelmingly Protestant. Irish census data reveals that the Skillen surname is of possible 17th Century Plantation settlement, and distribution mapping reveals a single distinct group in Southeast Ulster, see **Figure 6**. In contrast, census data reveals that the Daugherty/Doherty and Hanley/O'Hanley surnames are of Gaelic Irish origin, and distribution mapping of Catholic farmers named Daugherty/Doherty and Hanley/O'Hanley reveals multiple distinct groups spread throughout Ireland, some of which are also associated with autosomal DNA revealed hotspots, see **Figure 6**.

Surname	Earliest Recorded Ancestral Location
Dent	England
Scott	?
Harrison	?
Price	?
Daugherty	Ireland
Thomas	Wales
Ferguson	Argyll, Scotland
Robinson	?
MacFarlane	Argyll, Scotland
Campbell	Argyll, Scotland
Skillen	Down, Ireland
O'Hanley	Scotland

Figure 4: *Ancestral surnames and earliest recorded ancestral locations. Highlighted font indicates each surnames associated ethnicity or location of an earliest recorded ancestor: Scottish/Scotland, English/England, Irish/Ireland, Multiple-associated ethnicities/locations.*

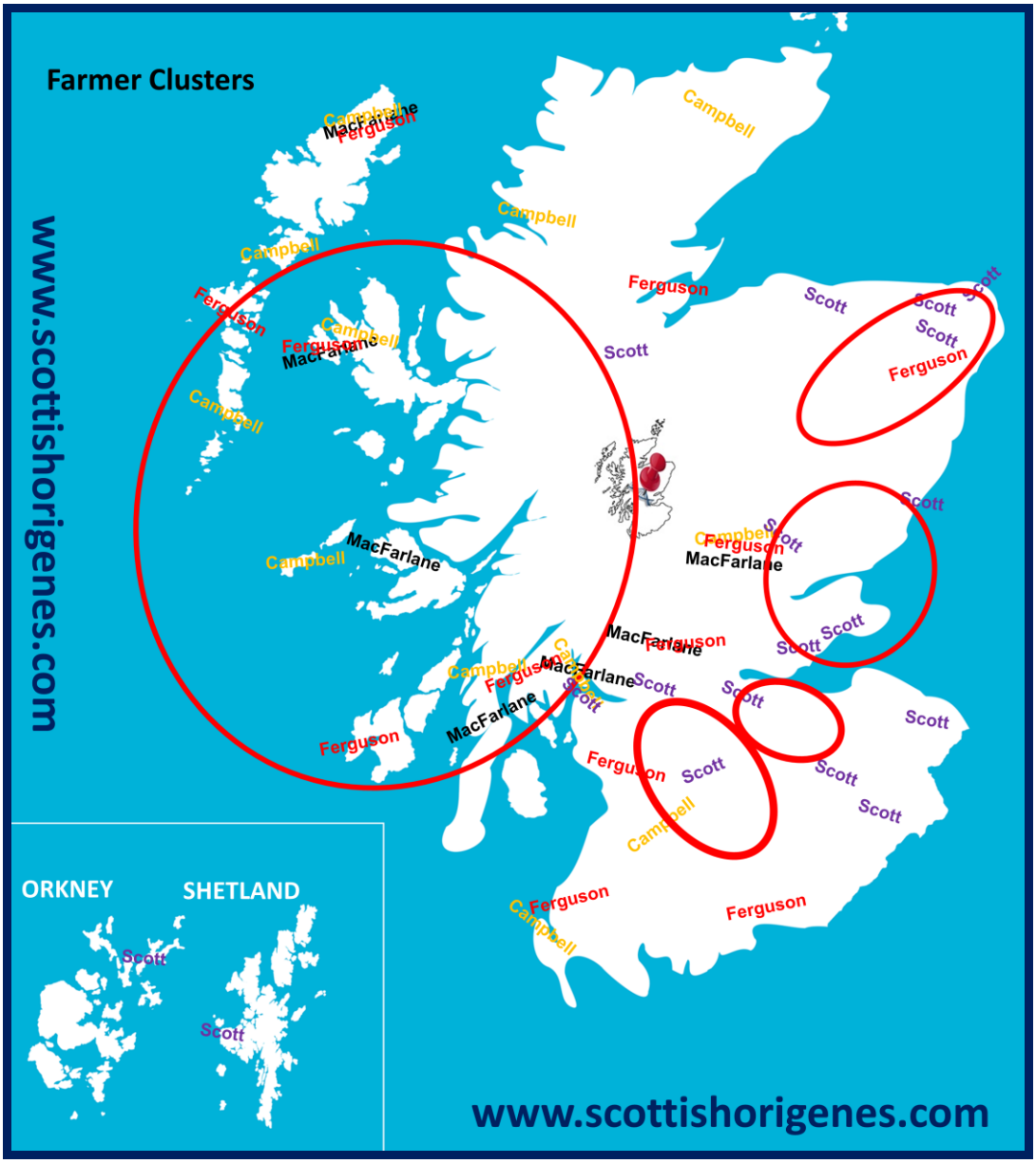

Figure 5: *Scottish farming communities and autosomal DNA revealed hotspots. Farmers with each Scottish surname still concentrated in early census data in the area where their surname first appeared. Distribution mapping reveals that farmers named Campbell, Ferguson, McFarlane, and Scott concentrated in distinct locations, some of which are located among the test subject's autosomal DNA hotspots (**red circles**). Each surname is placed in the location where farmers with each surname concentrated in early census data. The most common spelling is detailed in each location. Each surname is positioned as it appears on the Scottish Origenes Surnames of Scotland map, free to view: https://www.origenesmaps.com/.*

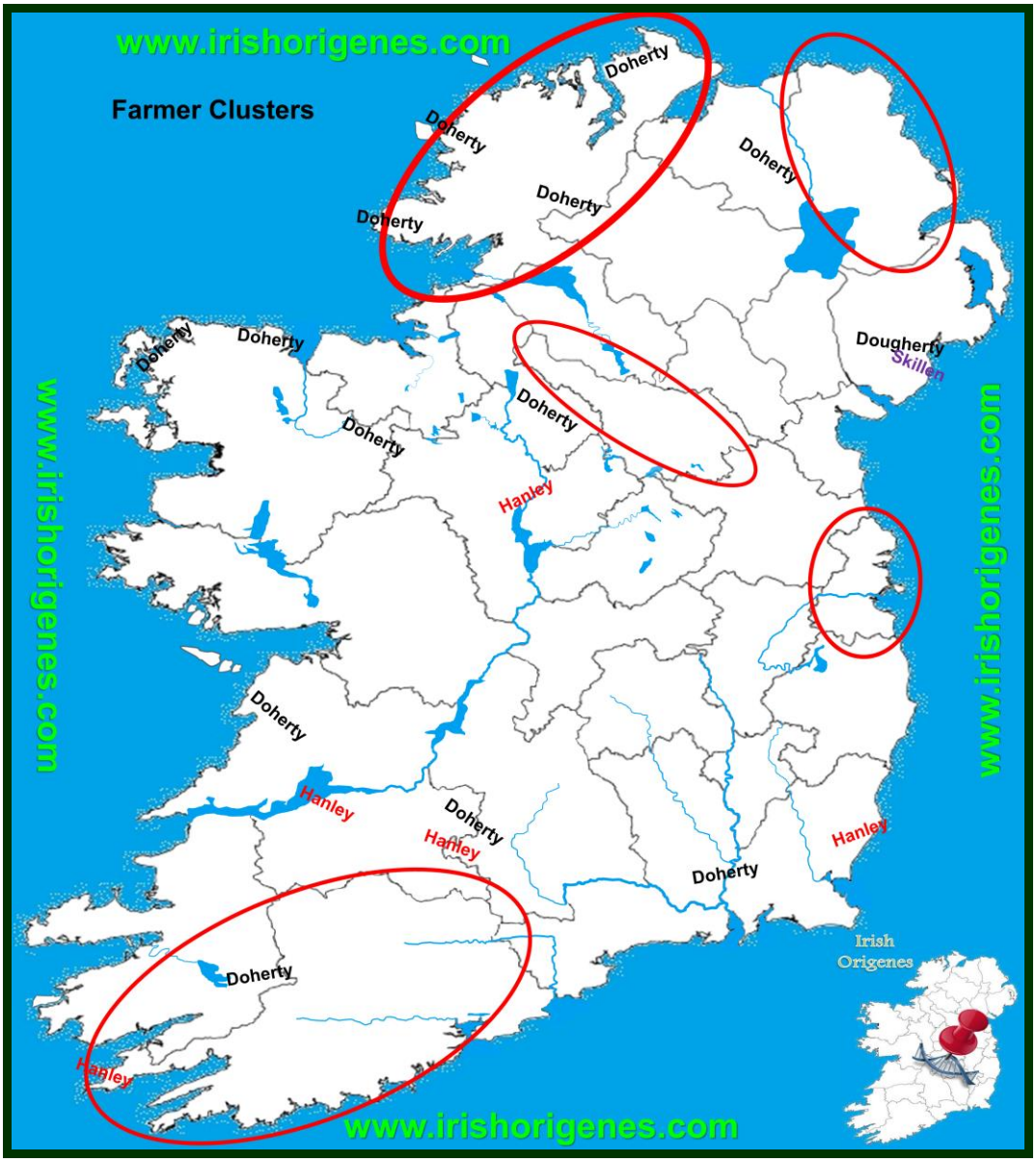

Figure 6: *Irish farming communities and autosomal DNA revealed locations. Census data reveals that individuals with Gaelic Irish or Norman surnames were overwhelmingly Catholic, while those with 16th and 17th Century Plantation Scottish or English surnames were overwhelmingly Protestant. Distribution mapping of farmers (Protestant, male, heads of household) named Skillen in early census data reveals a single distinct group concentrated in County Down in Southeast Ulster. In contrast, the Daugherty/Doherty and Hanley/O'Hanley surnames are of Catholic Gaelic Irish origin. Distribution mapping reveals multiple distinct groups of farmers named Daugherty/Doherty and Hanley/O'Hanley spread throughout Ireland, some of which are associated with autosomal DNA revealed locations (**red circles**). Each surname is positioned as it appears on an Irish Origenes Surnames maps, free to view: https://www.origenesmaps.com. Surname search function available at: https://analysis.irishorigenes.com/surnames*

LINKING ANCESTRAL SURNAMES WITH AUTOSOMAL DNA HOTSPOTS

The ancestral information (surnames and locations) recorded by one's autosomal DNA genetic relatives are not random, reflecting the relationships that developed among one's most recent ancestral lines in specific locations. One can therefore blast search that detail for locations associated with the test subject's ancestral surnames. One can then compare the distribution of one's ancestral surnames with

DNA revealed locations together with autosomal blast search results to begin the process of linking each ancestral surname with its most recent Scottish and/or Irish origin.

The non-random nature of the ancestral locations recorded by the test subject's autosomal genetic relatives can be easily demonstrated by examining the countries of Britain and Ireland that are recorded in association with each ancestral surname, see **Figure 7**. Blast searching for ancestral surnames and common variants within Britain and Ireland, graded according to maximum shared DNA (cMs), confirms an Irish origin for the test subject's Skillens and Daughertys/Dohertys, and Scottish origins for her Campbell, Ferguson, McFarlane, and Scott ancestral lines, see **Figure 7**. Interestingly, the 'Scott' surname is also prevalent within England among her genetic relatives, which is an indication that the test subject's Scotts lived on the borderlands of Scotland and England where the Scotts surname is particularly prevalent, see **Figure 7**.

Blast searching among the ancestral information recorded by the test subject's autosomal genetic relatives for each Irish-associated ancestral surname in association with each Irish county reveals a clear origin within Donegal for her Daughertys (Dohertys), see **Figure 8**. The Irish Origenes Medieval Surnames of Ireland map illustrates where farmers with each surname concentrated in early census data, and an examination of Northwest Ireland reveals the Dohertys near Carndonagh on the Inishowen peninsula, see **Figure 9**. The Dohertys were one of the most prominent clans of Ulster, and their genetic signature and their historically associated castles and towerhouses dominate Inishowen. An examination of Southwest County Down as it appears on the Plantation surnames of Ireland map reveals that the Skillens are exclusive to the farmland near Annalong, see **Figure 10**. The Skillen surname has no British equivalent, and McLysaght, in his Surnames of Ireland book, indicates that Skillen is a Pre-Plantation Viking surname. This indicates that the Skillens were Vikings who had settled in County Down long before the Plantation of Ulster.

Blast searching among the ancestral information recorded by the test subject's autosomal genetic relatives for each Scottish ancestral surname in association with each Scottish county confirms an Argyllshire origin for her Campbells, reveals an Inverness-shire origin for her Fergusons, a Dunbartonshire origin for her McFarlanes, and a Roxburghshire/Border Scots connection for her Scotts, see **Figure 11.** The Scottish Origenes Surnames of Scotland was constructed based on the locations where farmers with each surname concentrated in early census data, and hence illustrate the precise origin of each Scottish surname. An examination of the Western Isles of Inverness-shire reveals the Fergusons on the Isle of Skye and North Uist, see **Figure 12**. Further examination reveals that it is North Uist rather than Skye that dominates among the test subject's autosomal genetic relatives, indicating that her Fergusons originated on North Uist. Autosomal DNA testing failed to link the O'Hanleys to an Irish origin, and given the families historical Scottish O'Hanley links, this indicates that the surname is in fact a corruption of Scottish 'Ohenly' which is exclusive to South Uist, see **Figures 8** and **12**. The test subject's ancestral surnames and DNA revealed origins are summarised in **Figure 13**.

Autosomal Blast Search Results								
	Ireland		Scotland		England		Wales	
Surname	Frequency	Max. DNA/cMs	Frequency	Max. DNA/cMs	Frequency	Max. DNA/cMs	Frequency	Max. DNA/cMs
Dent	0	0	0	0	25	38	0	0
Robinson	46	53	20	17	144	38	1	9
Harrison	8	18	1	18	137	30	0	0
Price	13	20	0	0	54	21	54	32
Thomas	8	24	10	19	134	40	96	38
Ferguson	27	29	129	868	6	17	1	12
Scott	49	28	128	36	97	37	0	0
Campbell	119	33	324	96	19	24	0	0
McFarland	11	17	24	28	0	0	0	0
McFarlane	2	9	23	19	0	0	0	0
MacFarlane	2	22	15	17	1	11	0	0
McFarlan	0	0	4	13	0	0	0	0
MacFarland	0	0	2	10	0	0	0	0
Skillen	9	868	1	8	0	0	0	0
Daugherty	23	21	1	8	2	15	0	0
Doherty	28	17	1	10	1	11	0	0
Hanley	10	33	1	8	4	12	0	0
O'Hanley	0	0	4	868	0	0	0	0
Ohenly	0	0	2	14	0	0	0	0

Figure 7: *Autosomal blast search results for Ancestral Surnames and common variants within Britain and Ireland. The ancestral locations revealed by one's autosomal genetic relatives are not random, reflecting the relationships that developed among the test subject's various ancestral lines living in specific areas. Blast searching for ancestral surnames and common variants within Britain and Ireland, graded according to maximum shared DNA (cM) reveals an Irish origin for Skillen and Daugherty/Doherty (**green arrows**), Scottish links for the Campbells, Fergusons, McFarlanes and Scotts (**blue arrows**), and both Scottish and Irish links for O'Hanley and similar surnames (**green** and **blue arrows**). Autosomal blast searching also reveals English origins for the test subject's Dents, Robinsons, and Harrisons (**red arrows**), and origins within the English/Welsh borderlands for her Price and Thomas ancestral lines (**red** and **orange arrows**).*

Autosomal Blast Search Results						
County	Skillen		Daugherty/Doherty		Hanley	
	Frequency	Max. DNA/cMs	Frequency	Max. DNA/cMs	Frequency	Max. DNA/cMs
Roscommon	0	0	0	0	1	11
Sligo	0	0	0	0	1	12
Mayo	0	0	3	11	0	0
Galway	0	0	1	11	0	0
Clare	0	0	0	0	0	0
Kerry	0	0	2	19	0	0
Cork	0	0	3	14	0	0
Limerick	0	0	2	21	1	11
Waterford	0	0	0	0	1	9
Tipperary	0	0	0	0	0	0
Kilkenny	0	0	1	16	0	0
Offaly	0	0	1	11	0	0
Laois	0	0	0	0	0	0
Kildare	0	0	0	0	0	0
Dublin	0	0	0	0	0	0
Wicklow	0	0	0	0	0	0
Carlow	0	0	0	0	0	0
Wexford	0	0	0	0	0	0
Longford	0	0	0	0	1	13
Louth	0	0	0	0	0	0
Westmeath	0	0	0	0	0	0
Meath	0	0	0	0	0	0
Leitrim	0	0	1	10	1	17
Cavan	0	0	1	8	0	0
Monaghan	0	0	0	0	0	0
Fermanagh	0	0	0	0	0	0
Donegal	0	0	27	17	1	8
Tyrone	0	0	0	0	0	0
Derry	0	0	0	0	0	0
Antrim	0	0	0	0	0	0
Down	0	0	3	15	0	0
Armagh	0	0	0	0	0	0

Figure 8: *Autosomal blast search results for Irish ancestral surnames in association with each of the 32 counties of Ireland. The counties recorded by autosomal genetic relatives for each Irish county are not random and reveal a Donegal origin for the Daughertys (**green arrow**). In contrast, Skillen is a rare surname and no links with Ireland could be established among the test subject's autosomal genetic relatives. Autosomal blast search results also rule out an Irish origin for the test subject's O'Hanleys.*

Figure 9: *The Plantation Surnames of Southwest County Down. Irish farmers with each surname still concentrated in early census data in the area where their surname first appeared or in the area where one's ancestors first settled. An examination of Southwest County Down reveals the test subject's ancestral Skillens (**red arrow**) near Annalong. The Skillens were originally Vikings, with the majority converting to Protestantism after the Plantation of Ulster in 1610AD. 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. Each surname is positioned as it appears on the Irish Origenes Plantation Surnames map, free to view: https://www.origenesmaps.com/*

Figure 10: *The Medieval Surnames of Inishowen in North Donegal. Irish farmers with each surname still concentrated in early census data in the area where their surname first appeared or in the area where one's ancestors first settled. An examination of Inishowen reveals the ultimate origin of the test subject's Daughertys/Dohertys near Carndonagh (**yellow arrow**). Each surname is positioned as it appears on the Irish Origenes Medieval Surnames of Ireland map, free to view: https://www.origenesmaps.com. Surname search function available at: https://analysis.irishorigenes.com/surnames*

Autosomal Blast Search Results								
County	Ferguson		Campbell		McFarland/McFarlane		Scott	
	Frequency	Max. DNA/cMs	Frequency	Max. DNA/cMs	Frequency	Max. DNA/cMs	Frequency	Max. DNA/cMs
Shetland	0	0	0	0	0	0	3	11
Orkney	2	8	0	0	0	0	2	11
Caithness	0	0	0	0	0	0	0	0
Sutherland	0	0	2	9	0	0	0	0
Ross and Cromarty	3	13	9	49	0	0	0	0
Dunbartonshire	2	11	9	17	13	20	5	13
Argyllshire	9	15	109	49	7	17	1	8
Invernesshire	34	34	53	49	1	10	0	0
Perthshire	15	17	37	96	10	16	10	13
Stirlingshire	9	18	5	21	5	15	3	15
Buteshire	1	11	4	11	0	0	0	0
Nairn	0	0	6	23	0	0	2	9
Morayshire	0	0	3	15	0	0	4	25
Banffshire	0	0	3	20	6	38	0	0
Aberdeenshire	5	15	4	17	0	0	9	21
Kincardineshire	0	0	0	0	0	0	2	8
Angus	4	34	4	11	0	0	14	21
Fife	1	13	12	21	1	12	7	13
Clackmannanshire	0	0	1	13	0	0	1	9
Kinrosshire	1	9	0	0	0	0	0	0
Mid Lothian	7	12	44	49	0	0	17	24
East Lothian	1	6	1	13	0	0	5	21
West Lothian	0	0	5	17	1	17	0	0
Lanarkshire	21	34	32	21	10	19	22	21
Ayrshire	12	20	17	31	0	0	4	20
Renfrewshire	3	21	7	14	4	13	3	22
Roxburghshire	1	14	1	14	0	0	21	24
Dumfriesshire	7	16	3	14	0	0	5	17
Kirkcudbrightshire	1	13	2	11	0	0	0	0
Wigtownshire	0	0	2	8	0	0	0	0
Berwickshire	0	0	1	31	0	0	1	12
Selkirkshire	0	0	0	0	0	0	3	25
Peebleshire	0	0	0	0	0	0	0	0

Figure 11: *Autosomal blast search results for Scottish ancestral surnames in association with the 1841 counties of Scotland. The Scottish counties recorded in association with ancestral surnames by the test subject's autosomal genetic relatives are not random and reveal origins for each Scottish ancestral line (**blue arrows**).*

Figure 12: *The Surnames of the Western Isles. Scottish farmers with each surname still concentrated in early census data in the area where their surname first appeared or in the area where one's ancestors first settled, and an examination of the Western Isles of Invernesshire reveals 2 groups of Fergusons on North Uist and the Isle of Skye (**red arrows**). Blast searching of the autosomal ancestral detail reveals that it is among the Fergusons of North Uist that the test subject's ancestral papertrail will lead back to. The Scottish Origenes surnames map also reveals the 'Ohenly' surname (**yellow arrow**) which is associated exclusively with South Uist, from which her ancestral 'O'Hanley' surname has evolved. Surnames in **red font** are associated with a single Scottish location. Each surname is positioned as it appears on the Scottish Origenes Surnames of Scotland map, free to view: https://www.origenesmaps.com/*

Surname	Earliest Recorded Ancestral Location	Autosomal DNA Predicted Origins
Dent	England	England
Scott	?	Hawick, Roxburghshire, Scottish Borders????
Harrison	?	England
Price	?	English/Welsh borderlands
Daugherty	Ireland	Inishowen, Donegal
Thomas	Wales	English/Welsh borderlands
Ferguson	Argyll, Scotland	North Uist, Invernesshire, Scotland
Robinson	?	England
MacFarlane	Argyll, Scotland	Gare Loch, Dunbartonshire, Scotland
Campbell	Argyll, Scotland	Argyllshire, Scotland
Skillen	Down, Ireland	Pre-Plantation 'Viking,' Annalong, County Down, Ireland
O'Hanley	Scotland	Ohenly,' South Uist, Inverness-shire, Scotland

Figure 13: *Ancestral surnames, earliest recorded ancestral locations, and Autosomal DNA revealed origins. Highlighted font indicates each surnames associated ethnicity or location: Scottish/Scotland, English/England, Irish/Ireland, Multiple-associated ethnicities/locations.*

Confirming an ancestral link to an identified area

One must keep in mind that this is a scientific 'DNA' approach. The DNA does not lie, and commercial ancestral DNA testing of individuals (farmers) with the surnames of interest from the ancestral DNA hotspots would confirm the ancestral link to that location.

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