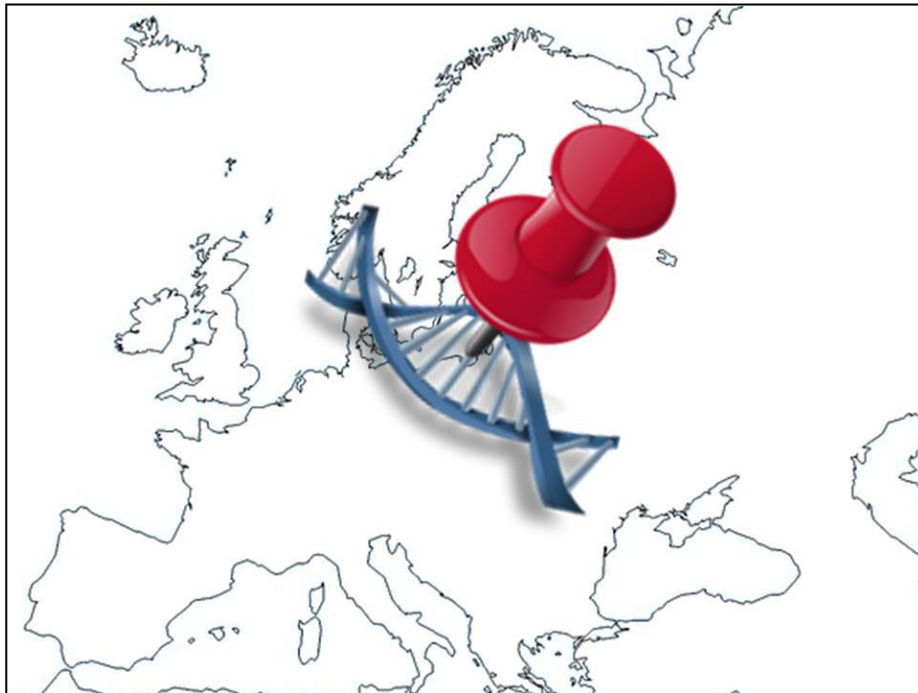


CONTACT IRISH ORIGENES
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CONSULTATION

Reconstructing Mr Hix's maternal Ancestral Journey

An Irish Origenes mtDNA Case Study

www.irishorigenes.com



Handwritten signature of Dr Tyrone Bowes

Dr Tyrone Bowes
23rd August 2026

INTRODUCTION

Mitochondrial DNA (mtDNA) is located in the mitochondrial organelles found within eukaryotic cells. Human mtDNA consists of 16,569 DNA base pairs that encode 37 genes that produce proteins essential in converting the chemical energy stored in food into a form that our cells can use. Millions of years ago the mitochondria were prokaryotic cells (bacteria), capable of implementing oxidative mechanisms (that were not possible for eukaryotic cells) which became endosymbionts; literally living within the eukaryote cell. As extrachromosomal DNA, the mtDNA is only passed from a mother to his offspring and hence it can be used to explore one's maternal ancestral journey. Science has revealed that there are approximately 4,000 known mutations associated with mtDNA. Each mutation (Haplogroup) represents an 'Eve' that the whole of humanity can link back to.

INTERPRETING THE MITOCHONDRIAL DNA RESULTS

In commercial ancestral DNA testing the same golden rule applies; the more genetic markers or mutations that two people share the more recent their shared ancestor once lived. Hence the people that one matches upon commercial ancestral mtDNA testing will share a common female ancestor from various locations and time points over potentially many tens of thousands of years. In addition, many of these mtDNA genetic relatives reveal details of earliest known maternal ancestors (surnames and locations). By examining the ancestral detail revealed among one's mtDNA matches, graded according to genetic distance, one can potentially reconstruct a maternal ancestral journey and identify an origin for one's maternal Eve.

A Viking-Scandinavian origin for the test subject's W3a1 Eve

The test subject's FTDNA full sequence mtDNA results reveal that his maternal 'Eve' is designated as 'W3a1,' and that his mtDNA matches all share his W3a1 Haplogroup, see **Figure 1**. Scientific findings reveal that W3a1 arose within Eastern Europe, see **Figure 2**. An examination of the locations where W3a1 human remains have been recovered confirms that the earliest are associated with Eastern Europe confirming its origin, see **Figure 3**. However, a closer examination of the test subject's closest mtDNA matches together with the locations where the most recent W3a1 remains were recovered reveal a more recent link for his W2a1 branch within Viking-Scandinavia, see **Figures 1 and 3**. Remarkably, four of the test subject's closest Scandinavian-associated mtDNA genetic relatives reveal most recent maternal links with the area that lies between the town of Hallsberg and the sea in Southern Sweden, see **Figure 3**.

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Coding Region (57) Hypervariable Region 2 (21) Hypervariable Region 1 (33) Filter Sort by Export CSV				
Genetic Distance 2 steps Link on Family Tree	mtDNA Haplogroup W3a1	Mitotree Haplogroup W3a1a1 F5544520	Maternal Country of Origin Sweden	Maternal Earliest Known Ancestor Stina Henriksson b1761, d1858 Match date: December 07 2023
Genetic Distance 1 step Link on Family Tree	mtDNA Haplogroup W3a1	Mitotree Haplogroup W3a1a1 F3717687	Maternal Country of Origin Unknown Origin	Maternal Earliest Known Ancestor Smith Match date: December 07 2023
Genetic Distance 3 steps Link on Family Tree	mtDNA Haplogroup W3a1	Mitotree Haplogroup W3a1 F5645980	Maternal Country of Origin Turkey	Maternal Earliest Known Ancestor Salih Kallali Match date: December 07 2023
Genetic Distance Exact Match Link on Family Tree	mtDNA Haplogroup W3a1	Mitotree Haplogroup W3a1a1a F8940420	Maternal Country of Origin Ireland	Maternal Earliest Known Ancestor Ruhama Downs Gary, b.1838 and d.1926 Match date: December 07 2023
Genetic Distance Exact Match Link on Family Tree	mtDNA Haplogroup W3a1	Mitotree Haplogroup W3a1a1a F8940420	Maternal Country of Origin Unknown Origin	Maternal Earliest Known Ancestor Richard Franklin, b. 1807 Elbert/GA, d... Match date: December 07 2023
Genetic Distance Exact Match Link on Family Tree	mtDNA Haplogroup W3a1	Mitotree Haplogroup W3a1a1a F8940420	Maternal Country of Origin United States	Maternal Earliest Known Ancestor Rachel Frakes b.1812 d. unk Match date: December 15 2023
Genetic Distance 3 steps Link on Family Tree	mtDNA Haplogroup W3a1	Mitotree Haplogroup W3a1 F4946658	Maternal Country of Origin United States	Maternal Earliest Known Ancestor Mrs. Susanna Adams Bentley Match date: December 07 2023
Genetic Distance 2 steps Link on Family Tree	mtDNA Haplogroup W3a1	Mitotree Haplogroup W3a1a1 F5544520	Maternal Country of Origin Sweden	Maternal Earliest Known Ancestor Mrs. Katarina Andersdotter, b. 1758 an... Match date: December 07 2023
Genetic Distance 3 steps Link on Family Tree	mtDNA Haplogroup W3a1	Mitotree Haplogroup W3a1 F4946658	Maternal Country of Origin United Kingdom	Maternal Earliest Known Ancestor Mary Ann Holland Match date: December 07 2023
Genetic Distance 1 step Link on Family Tree	mtDNA Haplogroup W3a1	Mitotree Haplogroup W3a1a1 F3717687	Maternal Country of Origin Sweden	Maternal Earliest Known Ancestor Maria Bengtsson b.1759 d.1836 Match date: December 07 2023
Genetic Distance 3 steps Link on Family Tree	mtDNA Haplogroup W3a1	Mitotree Haplogroup W3a1 F4946658	Maternal Country of Origin Canada	Maternal Earliest Known Ancestor Margaret McMahon, b. 1838? Match date: December 07 2023
Genetic Distance 3 steps Link on Family Tree	mtDNA Haplogroup W3a1	Mitotree Haplogroup W3a1 F4946658	Maternal Country of Origin Ireland	Maternal Earliest Known Ancestor Margaret Devlin b.1835 d.1902 Match date: December 07 2023
Genetic Distance 3 steps Link on Family Tree	mtDNA Haplogroup W3a1	Mitotree Haplogroup W3a1 F5645980	Maternal Country of Origin Unknown Origin	Maternal Earliest Known Ancestor Josephine Conway, b. 1912 and d. 1985 Match date: December 07 2023
Genetic Distance 3 steps Link on Family Tree	mtDNA Haplogroup W3a1	Mitotree Haplogroup W3a1 F4946658	Maternal Country of Origin Ireland	Maternal Earliest Known Ancestor John Murphy c.1800 Match date: December 07 2023
Genetic Distance 1 step Link on Family Tree	mtDNA Haplogroup W3a1	Mitotree Haplogroup W3a1a1a F9767601	Maternal Country of Origin United States	Maternal Earliest Known Ancestor Jacob Burnett, b. 1790 Match date: December 07 2023
Genetic Distance 3 steps Link on Family Tree	mtDNA Haplogroup W3a1	Mitotree Haplogroup W3a1 F4946658	Maternal Country of Origin United States	Maternal Earliest Known Ancestor Hannah Hathaway 1640 Match date: December 07 2023
Genetic Distance 3 steps Link on Family Tree	mtDNA Haplogroup W3a1	Mitotree Haplogroup W3a1 F4946658	Maternal Country of Origin Unknown Origin	Maternal Earliest Known Ancestor Glenda Shramek Match date: December 07 2023

Figure 1: Snapshot of test subject Hix's closest genetic matches as revealed in the full sequence FTDNA mtDNA database. The test subject had 57 genetic relatives upon full sequence mtDNA testing with whom he shares a common 'W3a1' maternal ancestor (red arrow); some of whom reveal earliest known ancestral surnames and locations associated with Scandinavian (violet arrows) or Ireland (green arrows).

‘Hix’ an Irish Origenes mtDNA Case Study

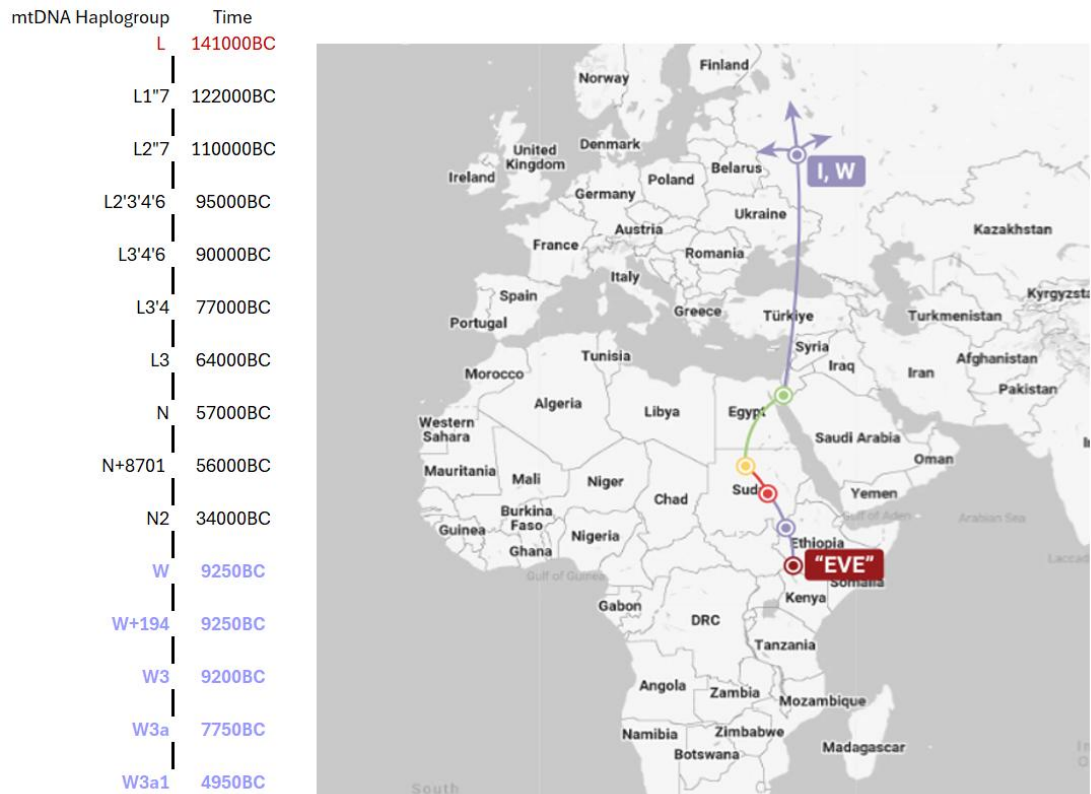


Figure 2: Mr Hix’s branch of the mtDNA evolutionary tree. The mitochondrial DNA (mtDNA) tree is a chart of human maternal relatedness showing how everyone’s mitochondria stem from an ancient female ‘Eve’ ancestor (**L**) in Africa. Since then, her billions of descendants have spread throughout the world while accumulating novel mutations in their mtDNA. The test subject’s **W3a1** Haplogroup is the result of a new mutation (**left panel**) which is predominantly associated with European populations and hence has an Eastern European origin (**right panel**).

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Object-ID	FTDNA-mt-Haplotree	Date	Simplified Culture	Location	Country
I4087	N>N2>W>W-C194T>W3>W3a>W3a1	-3500	Turan_EN	Turkestan, Tepe Anau	Turkmenistan
I7207	N>N2>W>W-C194T>W3>W3a>W3a1	-2420	Corded_Ware	Radovesice XVIII	Czech Republic
I3607	N>N2>W>W-C194T>W3>W3a>W3a1	-2250	Bell_Beaker	zing-Bruck, Lkr. Deggenndorf, Bav	Germany
MX275	N>N2>W>W-C194T>W3>W3a>W3a1	-2048	CEU_EBA	Singen (D)	Germany
I0116	N>N2>W>W-C194T>W3>W3a>W3a1	-2028	Unetice	Esperstedt	Germany
QLB 41	N>N2>W>W-C194T>W3>W3a>W3a1	-1975	Unetice	Quedlinburg	Germany
MX270	N>N2>W>W-C194T>W3>W3a>W3a1	-1950	CEU_EBA	Singen (D)	Germany
QLB 39	N>N2>W>W-C194T>W3>W3a>W3a1	-1925	Unetice	Quedlinburg	Germany
I7420	N>N2>W>W-C194T>W3>W3a>W3a1	-1800	BMAC	Sappali Tepe	Uzbekistan
I4332	N>N2>W>W-C194T>W3>W3a>W3a1	-1558	Balkans_BA	Veliki Vanik	Croatia
poz675	N>N2>W>W-C194T>W3>W3a>W3a1	-1500	Poland_MLBA	Żerniki Górne 1	Poland
poz550	N>N2>W>W-C194T>W3>W3a>W3a1	-1384.5	Poland_MLBA	Nowa Huta - Mogiła 55	Poland
poz715	N>N2>W>W-C194T>W3>W3a>W3a1	-1325	Poland_MLBA	Pielgrzymowice 9	Poland
I12457	N>N2>W>W-C194T>W3>W3a>W3a1	-978	SPGT	Swat Valley, Loebanr	Pakistan
I1994	N>N2>W>W-C194T>W3>W3a>W3a1	-971	SPGT	Swat Valley, Udegram	Pakistan
I3772	N>N2>W>W-C194T>W3>W3a>W3a1	-961	Steppe_LBA	Zevakinskiy stone fence	Kazakhstan
I12477	N>N2>W>W-C194T>W3>W3a>W3a1	-900	SPGT	Swat Valley, Katelai	Pakistan
I13219	N>N2>W>W-C194T>W3>W3a>W3a1	-900	SPGT	Swat Valley, Butkara II	Pakistan
NUL001	N>N2>W>W-C194T>W3>W3a>W3a1	-627	Saka	Nurly object 6, mound 1	Kazakhstan
JK2165	N>N2>W>W-C194T>W3>W3a>W3a1	-287.5	Egypt_Ptolemaic	Abusir el-Meleq	Egypt
MJ-34	N>N2>W>W-C194T>W3>W3a>W3a1	-281	Scythian	Kolomak hillfort	Ukraine
AMV-CO_5	N>N2>W>W-C194T>W3>W3a>W3a1	-220	Greece_Ancient	Ancient Ambracia	Greece
KNT003	N>N2>W>W-C194T>W3>W3a>W3a1	300	Steppe_Central_Nomad	K1/17m	Kazakhstan
BRE011	N>N2>W>W-C194T>W3>W3a>W3a1	331	Hun	Berel 2018_90	Kazakhstan
BZL_M37A-17	N>N2>W>W-C194T>W3>W3a>W3a1	479.5	Xinjiang_South_Hist	Bizili (BZL), Luopo County.	China
VK338	N>N2>W>W-C194T>W3>W3a>W3a1	850	Viking	Langeland	Denmark
VK459	N>N2>W>W-C194T>W3>W3a>W3a1	975	Viking	Gotland	Sweden
G669	N>N2>W>W-C194T>W3>W3a>W3a1	1403	Nordic_MA	St. Jorgen	Denmark
G669	N>N2>W>W-C194T>W3>W3a>W3a1	1403	Nordic_MA	St. Jorgen	Denmark

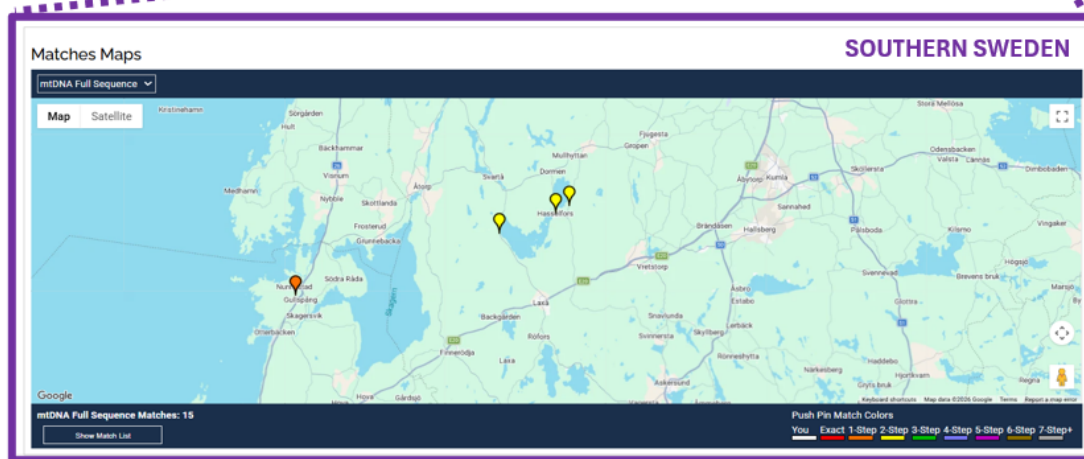


Figure 3: Mr Hix's Maternal Viking-Scandinavian origins. An examination of the locations where W3a1 ancient human remains were recovered reveals an origin for W2a1-Eve within Eastern Europe (top panel) with the most recent samples recovered from Viking-associated remains from Scandinavia (top panel). These results indicate that the test subject's branch of W3a1 spread from Eastern Europe to Scandinavia where four of his closest full sequence mtDNA matches in the FTDNA database (bottom panel) record ancestral links in Southern Sweden between Hallsberg and the sea (bottom panel).

Irish 'Cassel'

The Scandinavian Vikings that fanned out across Britain, Ireland, and Mainland Europe at the end of the 8th Century left a legacy in the DNA of the inhabitants in the areas that they settled permanently. The appearance of mtDNA genetic relatives with earliest recorded maternal ancestors with notable Irish surnames and earliest recorded links with Ireland indicate that the test subject's Scandinavian Viking maternal ancestor settled in Ireland at some point after 800AD, see **Figure 1**.

The test subject's earliest maternal ancestor was a Lavinia 'Casteel' born in Ohio, USA in 1822. All Gaelic Irish surnames have been extensively anglicised, a process that also results in many spelling variations. The spelling also changes as one moves further from the place of origin and usually at the whim of an administrator who

unfamiliar with a surname records it phonetically. The 1911 census of Ireland reveals the similar Cassel/Cassels/Cassells surname which over time and distance could have been corrupted to 'Casteel.' Irish surnames arose in an agricultural society, and as a result, farmers in early census data still concentrated in the area where their surname first appeared or in an area where one's ancestors first settled. An examination of the distribution of Irish farmers named Cassel/Cassels/Cassells reveals at least 4 distinct groups spread throughout Ireland, see **Figure 4**.

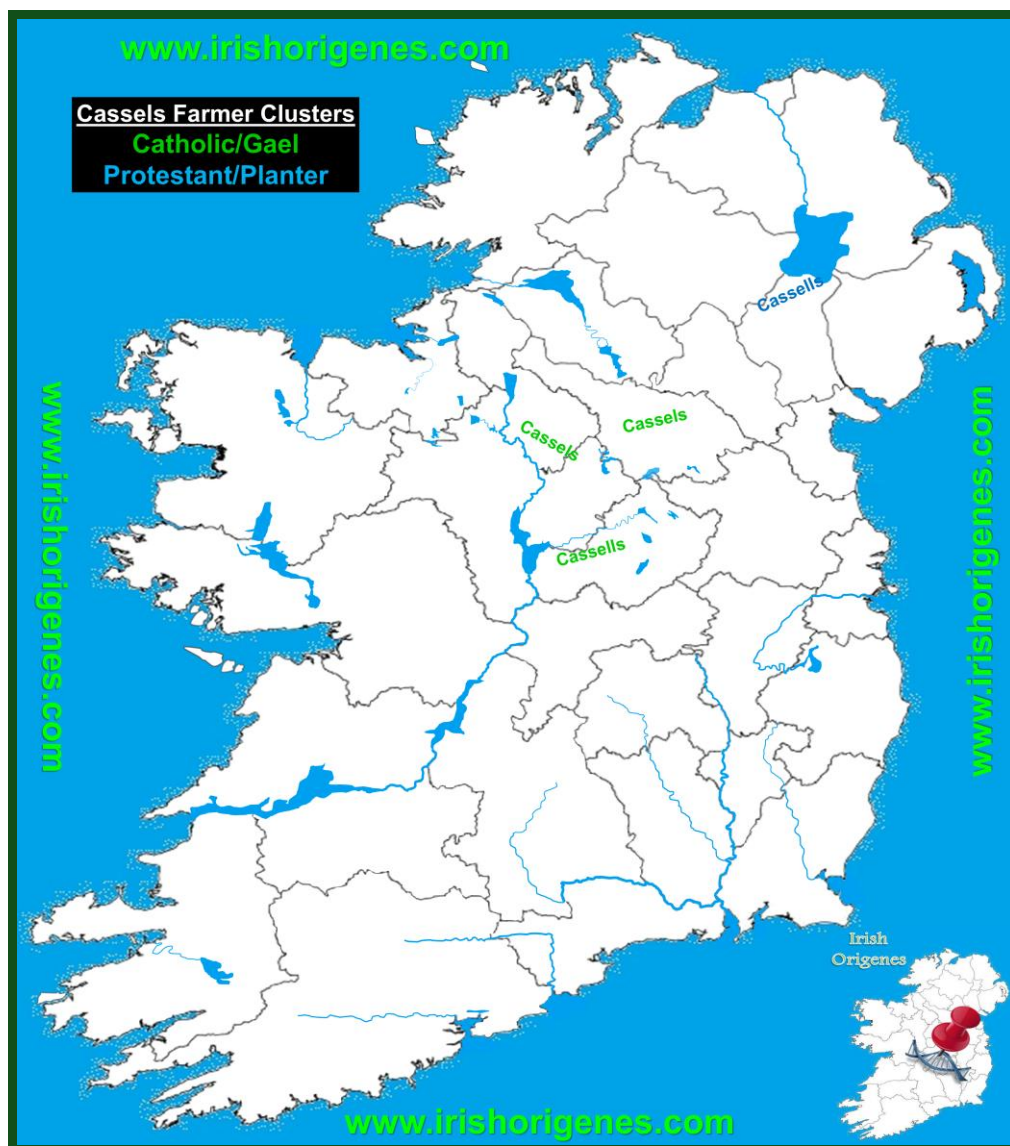


Figure 4: The Irish Cassel/Cassels/Cassells farming community. Irish census data reveals that the descendants of Gaelic Irish, Normans, and mercenary Scottish Gallowglass were overwhelmingly Catholic while those of 16th and 17th Century Plantation settlement were overwhelmingly Protestant. Census data reveals that the Cassel/Cassels/Cassells surname is associated with Gaelic and Plantation Ireland. Distribution mapping of Irish farmers named Cassel/Cassels/Cassells reveals at least 4 distinct groups in Ireland. Each surname has been placed on the map in the area where farmers (male, heads of household) with that surname concentrate in early census data. The most common spelling is detailed in each location. Surnames are positioned as they appear on the Irish Origenes Medieval and Plantation Surnames of Ireland maps, digital copies of which is free to explore online at www.origenesmaps.com a surname search function is available at <https://analysis.irishorigenes.com/surnames>

A most recent Maternal origin within Gaelic Southern Ulster

An examination of the Irish-associated surnames recorded by the test subject's closest full sequence mtDNA matches reveals that they are dominated by Gaelic-associated surnames which indicates that his Scandinavian female ancestor arrived with the Vikings who first appeared in Gaelic Ireland in the late 8th Century AD, see **Figure 5**. An examination of the distribution of the mtDNA-linked Irish-associated surnames reveals that they occur together within parts of Ulster and bordering Leinster where one also finds the Cassells surname, see **Figure 6**. An examination of the Medieval surnames associated with County Cavan in Southern Ulster reveals both the Cassells and Costello surnames which could have given rise to the test subject's Casteel surname, see **Figure 7**. In the surrounding area one finds a scattering of Viking-associated surnames together with other surnames that appear among the test subject's mtDNA results, see **Figure 7**. These results indicate that the test subject's maternal ancestor settled among the Gaels of County Cavan in Southern Ulster.

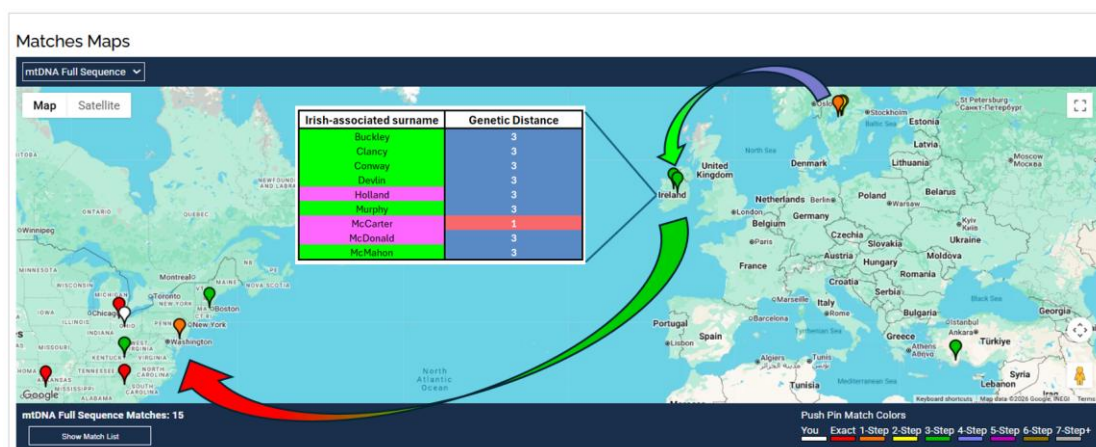


Figure 5: Mr Hix's maternal ancestral journey from Viking Scandinavia to Gaelic Ireland and the Americas. Commercial full sequence mtDNA testing with FTDNA reveals that the test subject's Viking maternal ancestor migrated from Southern Sweden to Gaelic Ireland and later to the Americas. Several of the test subject's closest mtDNA genetic relatives record their earliest Irish maternal ancestors with Gaelic Irish-associated surnames (inset) which indicates that his maternal ancestor settled in Ireland post Viking invasion (8th Century AD) rather than among later Norman or Plantation settlers.

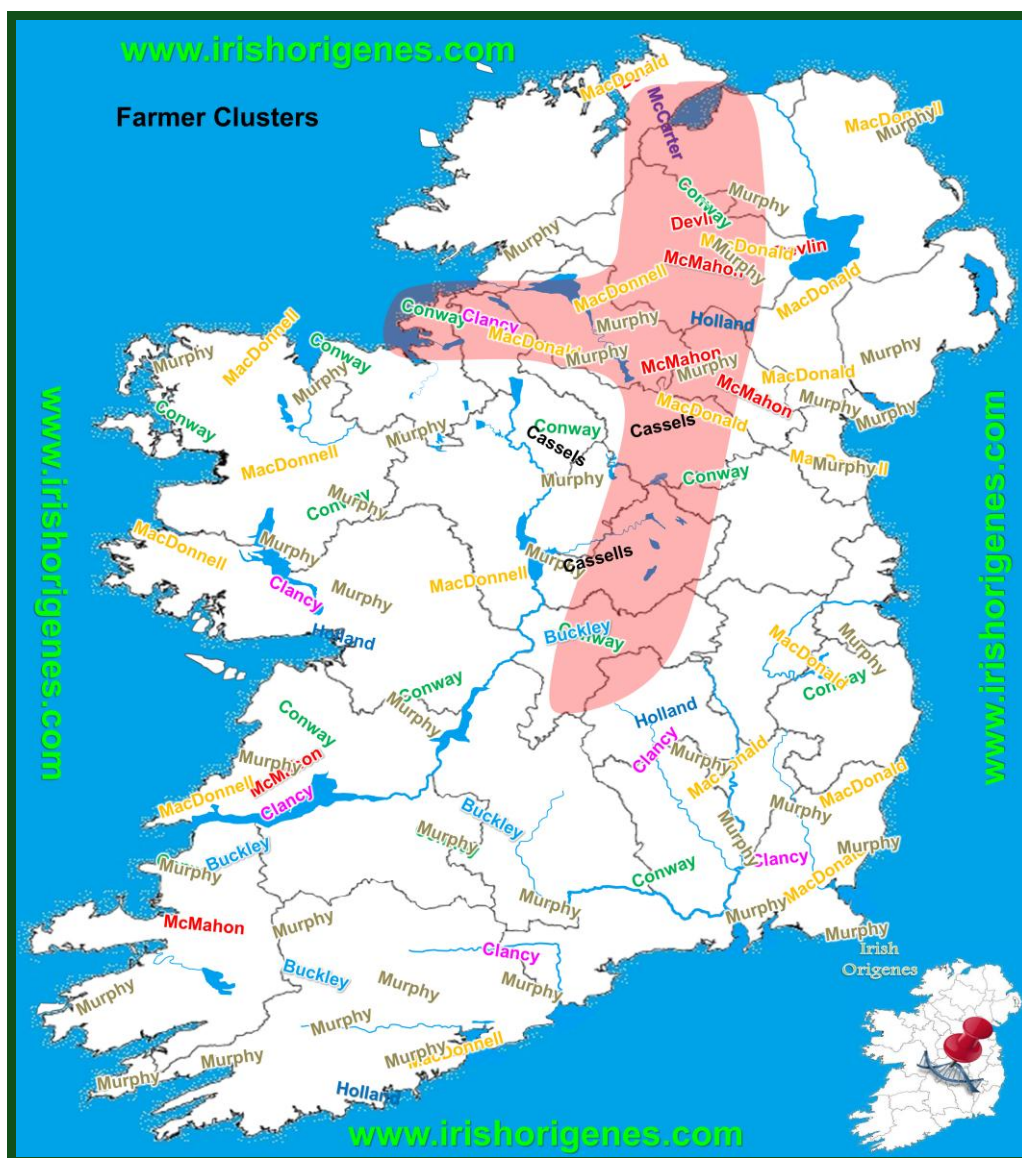


Figure 6: Distribution mapping of the Buckley, Clancy, Conway, Devlin, Holland, Murphy, McCarter, McDonald, and McMahon surnames in Ireland. Commercial ancestral full sequence mtDNA testing reveals the Irish-associated Buckley, Clancy, Conway, Devlin, Holland, Murphy, McCarter, McDonald, and McMahon surnames among the ancestral detail recorded by the test subject's closest maternal genetic relatives. Overlaying mapping reveals that those surnames occur together within parts of Ulster and bordering Leinster (**shaded red**). Each surname is positioned in the area where farmers (Catholic, male, heads of household) with that surname concentrate in early census data. The most common spelling is detailed in each location. Surnames are positioned as they appear on the New Updated Irish Origenes Medieval Surnames map a digital copy of which is free to explore online at www.origenesmaps.com. A surname search function is available at <https://analysis.irishorigenes.com/surnames>

'Hix' an Irish Origenes mtDNA Case Study

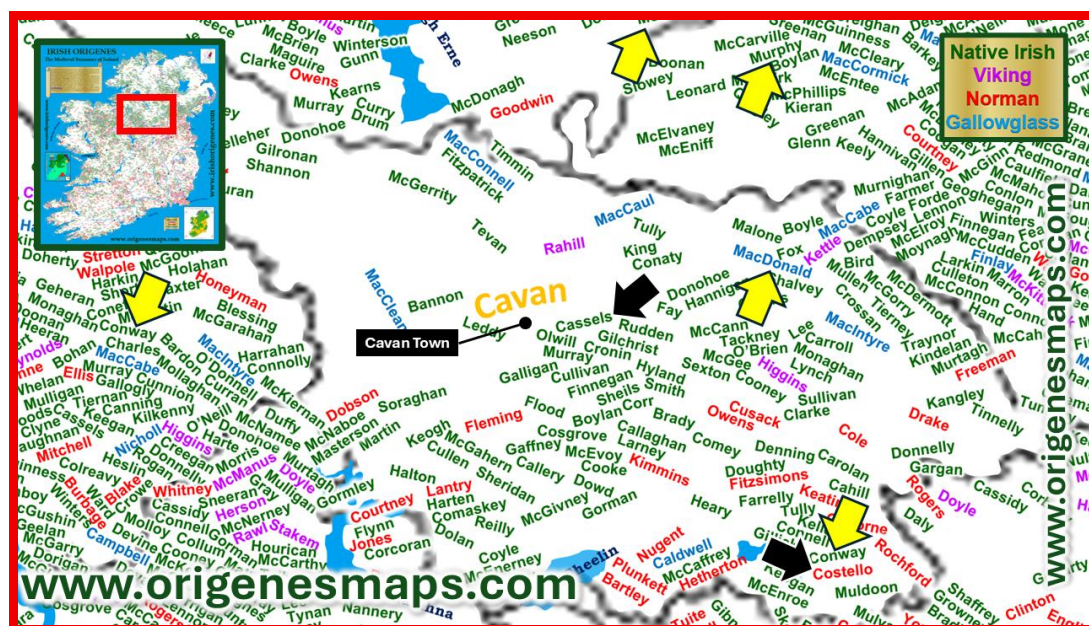


Figure 7: The Medieval Surnames of County Cavan and its borderlands. Irish farmers still concentrate in the area where their surnames first appeared (Gaelic Irish) or in the area where one's ancestors first settled (Viking/Norman/Planter). An examination of County Cavan as it appears on the Irish Origenes Medieval Surnames of Ireland map reveals both the Cassells and Costello surnames (**black arrows**) that could have given rise to the Casteel surname. In the surrounding area one finds other surnames (**yellow arrows**) that are recorded by the test subject's mtDNA matches. Each surname is positioned in the location where farmers (Catholic/male/heads of household) with each surname concentrated in early census data. The most common spelling is detailed in each location. Detail taken from the Irish Origenes Medieval Surnames map a digital copy of which is free to explore online at www.origenesmaps.com. A surname search function is available at <https://analysis.irishorigenes.com/surnames>

How to confirm the Hix maternal Genetic Homeland

One must keep in mind that this is a scientific 'DNA' approach. The DNA does not lie, and the maternal origin within Southern Ulster can be confirmed by mtDNA testing individuals who farm the lands that surround Cavan town. In addition, autosomal DNA testing (with Ancestry.com) could confirm the link with the Cassells or Costellos of Southern Ulster.