

Contact Scottish Origenes for a FREE CONSULTATION!

Email: info@scottishorigenes.com

YOUNG

Reconstructing the Ancient Paternal Ancestral Journey

A Scottish Case Study

www.Scottishorigenes.com



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

Dr Tyrone Bowes

04/10/23

Determining a Timeframe to a Shared Paternal Ancestor

Introduction

In 2011 a Scottish male name 'Valentine' was Y-DNA STR tested and was revealed to be a close genetic match (sharing 64/67 STR markers) to the current Chief of Clan MacGregor, and to have surname matches that linked his paternal origin to the 'Trossachs' heartlands of Clan MacGregor at the dawn of the appearance of surnames an estimated 1,000 years ago, far removed from his modern Aberdeenshire homeland. The DNA results uncovered a fascinating family history which involved his ancestor, a close relative of the MacGregor chiefly line, discarding his Gaelic language and Highland heritage and adopting a new Lowlander surname (Valentine) soon after the MacGregors slaughtered the Colquhouns at the battle of Fruin Glen in 1603AD, which led to the MacGregors being outlawed and banished by James VI of Scotland in 1604AD, an act that led to Alasdair MacGregor and 19 of his clansmen being hanged in Edinburgh (www.britishexecutions.co.uk/execution-content.php?key=135). From a research perspective, the genetic distance (3 of 67 Y-DNA STR markers) between Mr Valentine and the current Clan Chief of the MacGregors together with the timeframe (400 years) provided a template for estimating a time to a shared paternal ancestor based on commercial Y-DNA STR differences, see **Figure 1**.

www.irishorigenes.com			
YDNA67			
Genetic distance	Estimated time to a shared paternal ancestor/years	AD	
0	0-100	1900-	
1	100-200	1800-	
2	200-300	1700-	
3	300-400	1600-	
4	400-500	1500-	
5	500-600	1400-	
6	600-700	1300-	
7	700-800	1200-	
8	800-900	1100-	
9	900-1000	1000-	
10	1,000-1,100	900-	
15	1,500-1,600	400-	
20	2,000-2,100	100BC - 0AD	
25	2,500-2,600	600 BC-	
30	3,000-3,100	1100 BC -	

Figure 1: Timeframe to a shared paternal ancestor based on Y-DNA STR differences.

The STRs examined in the Y-DNA111, 67 and 37 tests are short repetitive sequences of DNA that can be amplified or deleted with each generation. In contrast, SNPs are far more permanent mutations. SNP testing offers a more accurate glimpse of the precise chronological development of surnames among related males. In 2018 Irish Origenes was commissioned to do a Y-DNA Case Study report for a Mr David McGinnis from Oregon in the USA. That report pinpointed an origin for his McGinnis

paternal ancestors within the farmland that lies to the east of the modern City of Derry/Londonderry in Northern Ireland an estimated 1,000 years ago (www.irishorigenes.com/content/putting-timeframe-bigy-snp-mutations). Irish Origenes encourages customers to recruit locals (with the surname of interest) from the identified area to participate in commercial DNA testing to confirm the ancestral origin and to reconnect with distant relatives. David successfully recruited a Patrick T. McGinnis from the Greysteel area of County Derry/Londonderry to participate in commercial Y-DNA testing, the results of which confirmed their shared paternal ancestry, and conclusively pinpointed the origin of their McGinnis clan within County Derry. Both David and Patrick have done extensive Y-DNA testing (Y-DNA111 STR and BigY SNP). By using the Scottish Origenes estimated 'timeframe' to a shared paternal ancestor based on genetic distance upon Y-DNA STR testing' (**Fig1**), and by comparing David and Patrick's Y-DNA STR and SNP results, it allows one to estimate the frequency with which Y-DNA SNP mutations appear. All 7 BigY testing McGinnis males share the BY48888 mutation and differ on average in approximately 5 SNP mutations which according to the Scottish Origenes STR timetable have appeared within the last 300 years. This would indicate that each Y-DNA SNP mutation occurs on average every 60 years. However, for the vast majority of human history life expectancy was short, averaging around 30 years (https://en.wikipedia.org/wiki/Life_expectancy), which means that Y-DNA SNP mutations have been rare, appearing in every 3rd generation. In medieval times this would mean that a grandson would expect to differ from his grandfather in a single SNP mutation. But the relationships explored in commercial Y-DNA testing are not linear, potentially representing innumerable branches of the same paternal tree, meaning that each SNP difference in commercial DNA databases can at a minimum represent a generational (25 year) difference, see **Figure 2**.

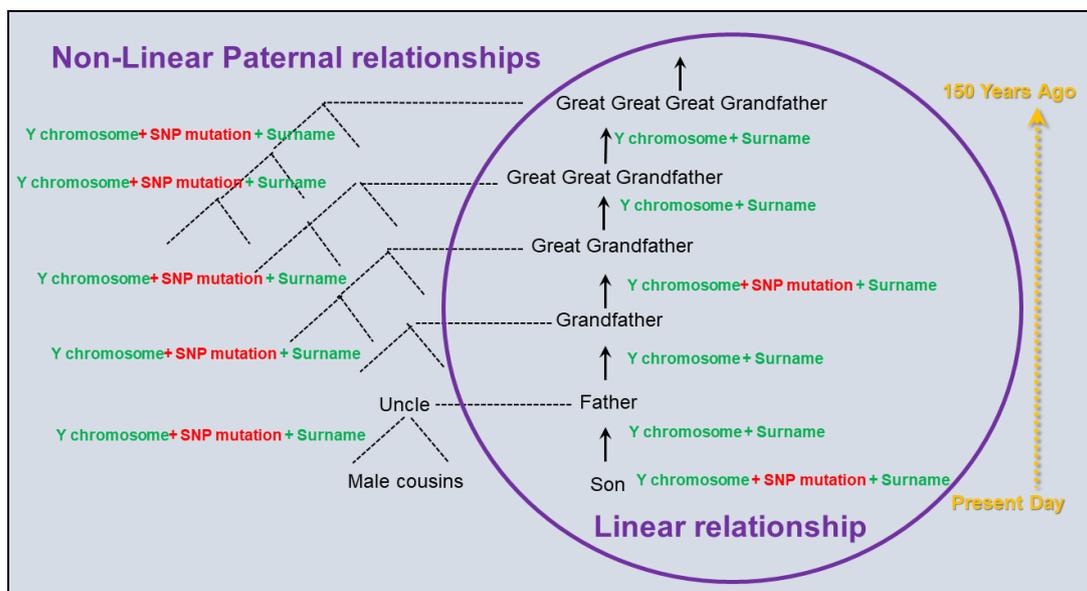


Figure 2: SNP mutation rates in in Linear and Non-Linear Paternal Trees.

Putting 'Origenes' SNP mutation rates to the test

The paternal relationships explored in commercial ancestral SNP testing are non-linear, and therefore each SNP mutation can at most represent a generation (25 years) time difference. Using that timeframe one can explore specific branch points in the test subject's SNP matches/block display and see how they compare to well established historical events. This is easily demonstrated by examining the locations recorded by the test subject's closest Y-DNA SNP matches which reveal a shared paternal ancestor within 'Scotland' an estimated 675 years ago, see **Figure 3**.

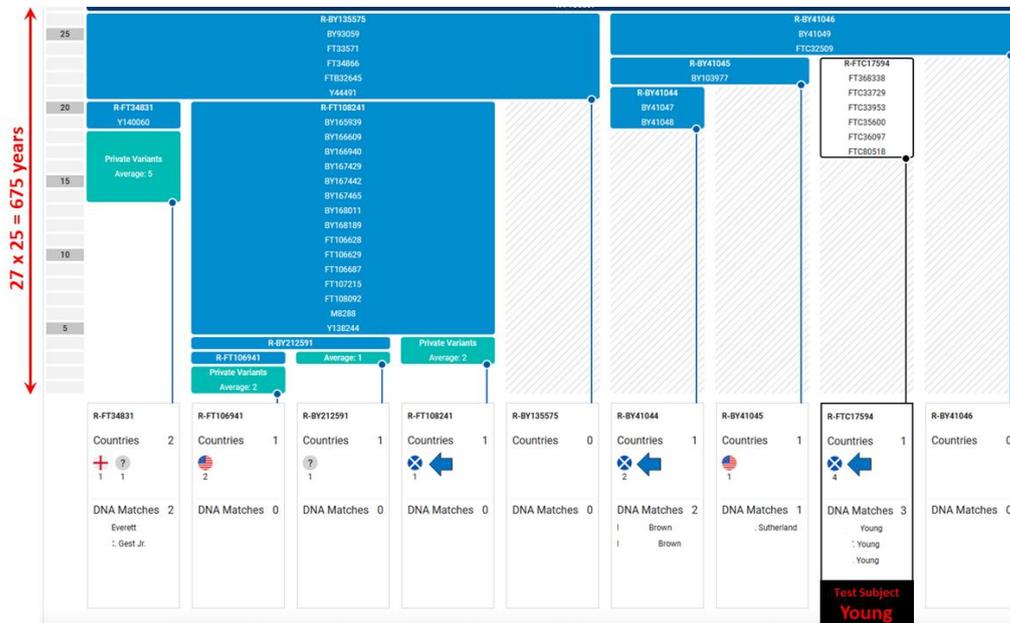


Figure 3: Terminal block display reveals a Scottish origin 675 years ago. A previous Y-DNA Case study identified an origin for the test subject's paternal ancestor within Northern Scotland approximately 675 years ago. That link with Scotland is evident from the test subject's terminal SNP matches (pictured) where most of the test subject's genetic relatives reveal a Scottish origin (blue arrows).

An examination of the recorded ancestral locations revealed by the test subject's SNP matches reveals a clear shift from Britain to Mainland European locations that are associated with the 'CTS12684' mutation which at 73 SNP mutations removed from the test subject indicates a shared paternal ancestry with Mainland European Celts/Gauls a minimum of 1,825 years ago, see **Figure 4**. In 125AD the Roman Empire was at its peak with Hadrian's Wall marking its northern most limit (https://en.wikipedia.org/wiki/Hadrian's_Wall). The SNP results indicate that Mr Young's paternal ancestor was a Gaulish refugee from the Roman Conquest of Gaul that had occurred over a century and a half earlier.

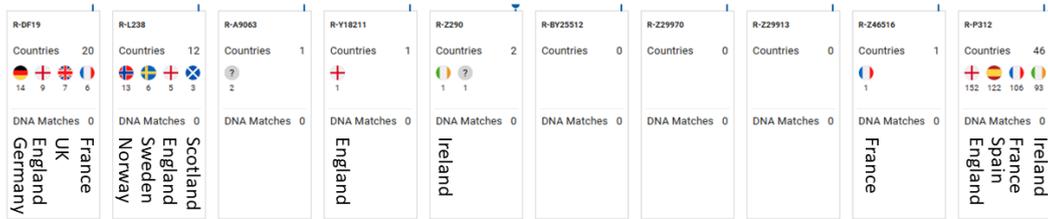


Figure 4: A Celtic Central European origin is revealed by more distant SNP matches. Central and Western European locations dominate at the appearance of the CTS12684 mutation which at 73 SNP indicates a shared paternal ancestry with Mainland European Celts/Gauls a minimum of 1,825 years ago.

The test subject's most notable SNP mutation is R-M269 which is the dominant paternal marker of Western European males, which Ancient DNA studies has revealed was introduced by the 'Yamnaya' Culture that emerged from the Eurasian Steppe between 3300BC and 2600BC (<https://castbox.fm/channel/id2678680?country=gb>). An examination of the test subject's Y-DNA block matches reveals that the shared paternal link with males recording links with the Eurasian Steppe (Russia/Uzbekistan) appear with the YSC0000269 SNP mutation and differ from the test subject in 181 SNPs which equates to a shared paternal ancestor who lived at the earliest in 2502BC (181x25 = 4,525 years ago), see **Figure 5**. The Yamnaya who migrated into Western Europe brought plague, warfare, and the pre-cursor of the modern Indo-European languages, and in time would result in the test subject's R-M269 Y-DNA marker dominating Western Europe (<https://castbox.fm/channel/id2678680?country=gb>). By approximately 800BC the descendants of the R-M269 Yamnaya had given rise to what the Ancients Greeks described as the 'Celts' and the Romans as 'Gauls.'

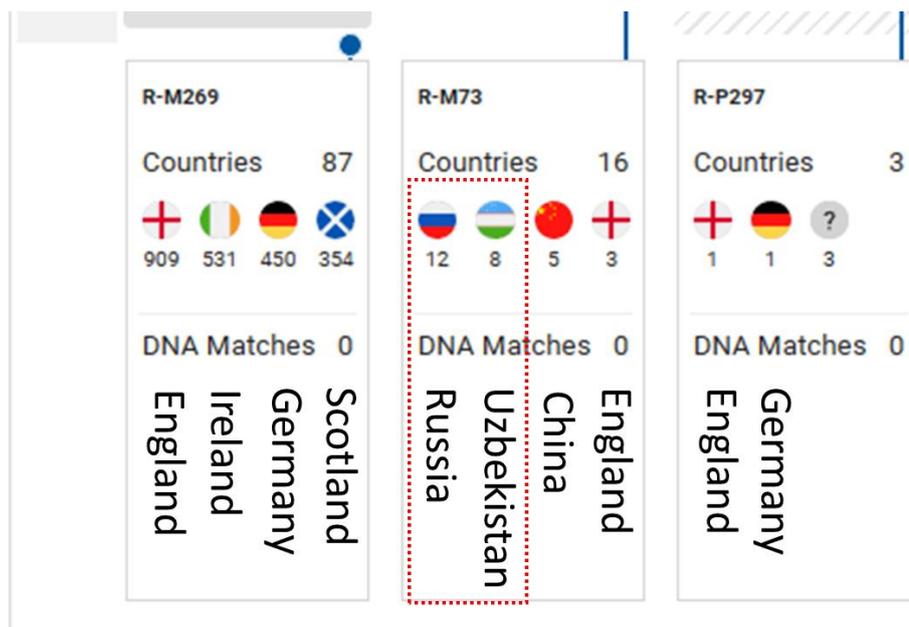


Figure 5: A more distant Eurasian Steppe origin is revealed by deeper SNP matches. The test subject's R-M269 Haplogroup was introduced into Western Europe by the Yamaya culture from the Eurasian Steppe. An examination of the test subject's Y-DNA SNP display reveals that Steppe-associated Russian and Uzbekistan (red broken line) genetic relatives appear at a distant of 181 SNP mutations which equates to a shared paternal ancestor in around 2500BC.

Strikingly, Ancient DNA research has revealed that Western Europeans (R-M269) and Native Americans (QM242) share an ancient common paternal ancestor who carried the 'YSC0000227' mutation which lies 443 SNPs distant from the test subject, and using the Origenes timeframe equates to a shared ancestor who lived in Eurasia a minimum of 11,075 years ago, see **Figure 6**. However, recent research indicates that males carrying the Q-M242 mutation entered the Americas between 15,300 and 14,300 years ago (<https://castbox.fm/channel/id2678680?country=gb>). This under estimation (11,075 compared to 14,300) is due to the differences in modern and ancient human populations, while today there are 8 billion humans, in 10,000BC there were an estimated 3 million (https://en.wikipedia.org/wiki/Estimates_of_historical_world_population). This indicates that a more accurate time to *Ancient* shared paternal ancestors must factor in ancient human population history and life expectancy.

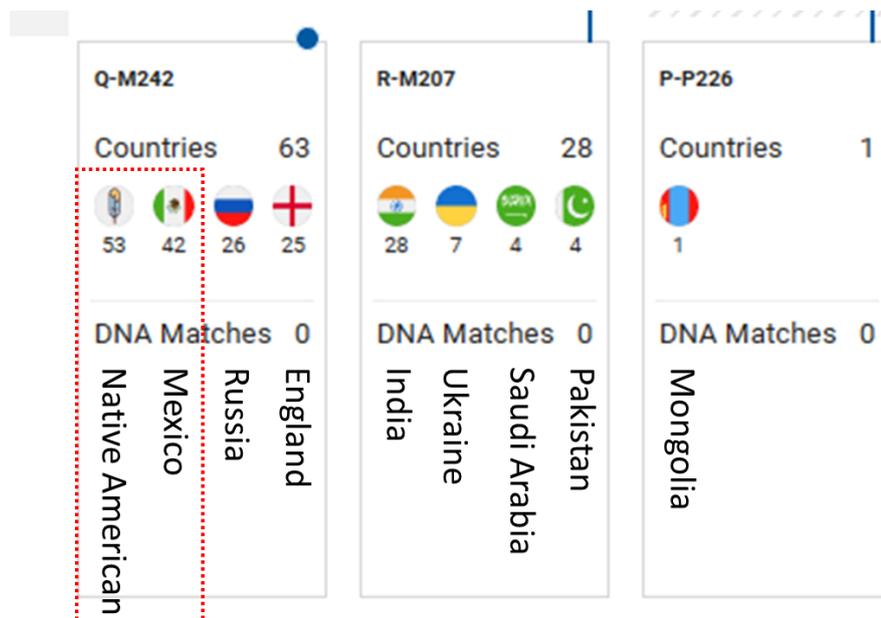


Figure 6: Western Europeans and Native Americans share a common ancestor from the Eurasian Steppe. The most distant SNP matches demonstrate a shared origin for Western Europeans and Native Americans (red broken line) at a distant of 443 SNP mutations which (using the Origenes timeframe) equates to approximately 11,000 years ago, short of the estimated 14,300-year timeframe. The discrepancy is a result of ancient human population traits.

SUMMARY

The Origenes timeframe to a shared paternal ancestor provides a date to shared paternal ancestry at the lower end of historical events, this under-estimation is also amplified as one goes further back in human history, see **Figure 7**. A more accurate estimation must factor in both human population and life expectancy throughout human history.

Mr Young's Paternal Ancestral Journey			
Historical Timeframe	Origenes Timeframe	Region	Ethnicity
-	-	Scotland	Pictish
>800BC	<200AD	Central Europe	Celts/Gauls
3300BC - 2600BC	2502BC	Eurasia	Yamnaya
15300BC - 14300BC	11075BC	Eurasia	Hunter Gathers

Figure 7: Human historical timepoints and Origenes timeframes compared.

Contact Scottish Origenes for a FREE CONSULTATION!

Email: info@scottishorigenes.com