

Aetiology of Colla 9-0-9 Configuration

It is almost certain that the values of 9-0-9 for markers DYS 511, 425, 505 are stable and defining for the Colla population (with a couple of exceptions). In order to explore the variability of these markers, I

SNPs	Core Value	511,425,505 Single step Mutants (forward & reverse from core)										Non Colla		Colla			Totals		
		10-12-12	10-12-13	10-12-11	11-12-12	9-12-12	9-12-13	11-12-13	12-12-12	8-12-12	10-13-12	10-12-10	11-12-11	10-0-12	10-0-13	9-0-9		9-0-10	10-0-9
L21 and Descendant SNPs																			
L21+	96	12	5	13	1	1	1	2	1										150
DF63+ (L21>DF63)	9				4														13
DF13+ (L21>DF13)	70	11	12	8	4	1	1		1							3			111
DF21+ (L21>DF13>DF21)	14	6		1	1		2						1				1	1	45
Z246+ (L21>DF13>DF21>Z246)	1		1																2
DF25+, DF5- (L21>DF13>DF21>Z246>DF25)	2																		2
DF5+ (L21>DF13>DF21>Z246>DF25>DF5)	18				1														19
P314.2+ (L21>DF13>DF21>P314.2)	5																		5
L362+ (L21>DF13>DF21>P314.2>L362)						1													1
L720+ (L21>DF13>DF21>L720)	3																		3
DF41+ (L21>DF13>DF41)	12																		12
L744/L746+, L745- (L21>DF13>DF41>L744/L746)	1																		1
L745+ (L21>DF13>DF41>L744/L746>L745)	7																		7
L563+ (L21>DF13>DF41>L563)	1																		1
DF49+ (L21>DF13>DF49)	3																		3
DF23+, M222- (L21>DF13>DF49>DF23)	7			1															8
M222+ (L21>DF13>DF49>DF23>M222)	38	2	2								1			1					44
L144+ (L21>DF13>L144)	7																		7
L371+ (L21>DF13>L371)	4																		4
L513+, P66-, L193- (L21>DF13>L513)	23	16	1			1	3												44
L706.2+, L705.2- (L21>DF13>L513>L706.2)	1																		1
L705.2+ (L21>DF13>L513>L706.2>L705.2)	6																		6
L193+ (L21>DF13>L513>L193)	37	1								1				1					40
P66+ (L21>DF13>L513>P66)	2																		2
L555+ (L21>DF13>L555)	4																		4
L1335+ (L21>DF13>L1335)	22										2								24
Z253+, L226- (L21>DF13>Z253)	9	1	2	6															18
L226+ (L21>DF13>Z253>L226; Irish Type III)	12		1																13
L554+ (L21>DF13>Z253>L554)	1																		1
L643+ (L21>DF13>Z253>L643)	1																		1
Z2185+ L1066- (L21>DF13>Z253>Z2185)	3			1															4
L1066+ (L21>DF13>Z253>Z2185>L1066)	9	1									1								11
Z255+, L159.2- (L21>DF13>Z255)	2																		2
L159.2+ (L21>DF13>Z255>L159.2)	17																		17
Totals	445	52	24	32	10	3	9	2	1	2	1	1	2	1	39	1	1		626

Table 1. Distribution of R-L21 by haplogroup and values for markers 511, 425, 505.

examined all R-L21 (from the L21 Project as at Dec 2012) that had tested to 111 markers. In all 626 testers qualified of whom 445 (71%) had values of 10-12-12 for these three markers (Table 1). I have termed these 'core values' on account of their frequency.

R-L21 tested to 111 markers

The testers in the R-L21 Project are ordered by the SNPs they have tested for; this layout is reproduced in Table 1. The distribution of 'three marker' configurations for each haplogroup is shown horizontally across Table 1. These variants (from the core values) are attributable to single (or more than one cumulatively) step mutation(s) occurring at meiosis. These have occurred in both forward and reverse directions from the core values for 511 and 505, mostly 11 and 9 for 511 and 13 and 11 for 505 (Table 2).

DYS 511	Repeats	No.	DYS 505	Repeats	No.
Core	10	524	Core	12	492
Var	11	42	Var	13	64
Var	9	13	Var	11	25
Var	12	2	Var	10	1
Var	8	1			
10% variability			15% variability		

Table 2. Number of variants from core values for DYS 511 and 505 among 582 Non-null Testers.

There are no values of nine repeats for 505 which is not surprising as the above distribution would predict that three sequential mutations would be extremely rare, probably so rare as not to survive to the present day. Nevertheless, such an event must have occurred to give 9-12-9 (or close to this) prior to the 425 null event. The remarkable stability of the 9-0-9 configuration might be attributable to the coincidental occurrence of the 425 deletion. Its present day high proportion in the L21 population is attributable to its early amplification due to high fecundity and low attrition, a situation which history suggests applied to the early Collas.

The Colla configuration of 9-0-9 is clear-cut and its most downstream haplogroup is DF21 (amber in Table 1), the assumption being that the earlier occurrences simply hadn't tested for DF21. The two exceptions (light amber) are probably single step mutants from 9-0-9; less likely, is that one of them (but not both) could have been the Colla precursor. The evidence suggests that three additional null events (pink in Table 1) occurred in the L21 population (in addition to the Colla null).

There are five examples of null configurations other than 9-0-9 (Table 3). The first two can be accounted for by subsequent single step mutations in 511 and 505 respectively. The three remaining nulls occurred in haplogroups DF21, R-M222 and R-L193. As none of these null configurations show any significant relationships to each other (in McGee), it is probable that all five configurations arose independently.

Configuration	Haplogroup	ID	Name	Key Marker Matches (excl nulls)	GD to DURRQ @ 67 mrks	Derivation	Classification
10-0-9	DF21	21971	McDougall	3	8	Single-step	Colla
9-0-10	DF21	156013	Glennon	2	11	Single-step	Colla
10-0-13	DF21	208397	McCloud	1	20	Independent Null	Non-Colla
10-0-12	M222	30771	Burns	0	23	Independent Null	Non-Colla
10-0-12	L193	144090	Little	0	22	Independent Null	Non-Colla

Table 3. Null configurations other than 9-0-9

A combination of a high number of key matches and low GD values (to DURRQ) distinguishes Colla nulls from the opposite which indicates non-Colla nulls (Table 3). Haplogroups can be a contributory identifier.

R-L21 tested to 67 markers

It was quickly realized that among the 111 testers who were non-Colla, there were no obvious Colla precursors; the closest any of them came to 9-0-9 was four steps away. Consequently, 67 marker non-Colla data was examined on the basis of the Colla key markers (385, 511, 413, 534) and GD to the DURRQ modal. The data was sorted by the number of key marker matches and by GD values (Table 4).

There were no incidences of four marker matches but four 3 marker and a large number of 2 and 1 marker matches were found; only those having 3, 2 and 1 matches are shown in Table 4. GDs ranged from 9 to 30. Where available, values for 505 and the number of steps needed to become 9-0-9, were filled-in.

			DYS	385	511	425	413	534	505	Key markers	Steps to 9-0-9
	DURRQ	GD Modal	11-15	9	0	22-23	16				
McBroom	England	R1b1a2	12 158115	11-15	9	12	21-23	16		3	
John Brinkley McBroom 1813 TN - 1898 OK	Unknown Origin	R1b1a2	12 171640	11-15	9	12	21-23	16		3	
JOSHUA JONES b. 1748 Albemarle Co, VA, USA d. 183	Unknown Origin	R1b1a2a1a1b4	19 100192	11-15	10	12	22-23	16		3	
William Allan, b. ?, m. 1760 Kilconquhar Fife	Scotland	R1b1a2a1a1b4	24 208171	11-15	9	12	20-23	16		3	
Francis Corbitt,b.c.1790,Ballymena,Antrim,Ireland	Ireland	R1b1a2a1a1b4	9 134487	11-14	9	12	23-23	16		2	
William Long, b 1740, d 1800 Penn	Ireland	R1b1a2a1a1b4	10 78252	11-15	9	12	23-23	16		2	
William Broom b abt 1800>Daniel Broom, b.1822 S.C.	United States	R1b1a2	11 156866	11-15	9	12	21-23	15		2	
Thomas BROOM d.1830 Beech Is.Twp,Edgefield Co.,SC	Unknown Origin	R1b1a2a1a1b4	12 14194	11-15	9	12	21-23	15		2	
Wm.Broom b.1810-20 SC (1860 in Pickens Co.SC)	Unknown Origin	R1b1a2	12 47769	11-15	9	12	21-23	15		2	
Angus Boyd, Argyllshire, Scotland	Scotland	R1b1a2a1a1b4	12 85278	11-15	10	12	23-23	16		2	
Burrell Broom b.c.1740 Halifax Co. NC	England	R1b1a2	13 15536	11-15	9	12	21-23	15		2	
Luke Broom b.1740+/-SC	Scotland	R1b1a2	13 34193	11-15	9	12	21-23	15		2	
Cornelius Erwin, b. c. 1780 Ireland	Ireland	R1b1a2a1a1b4	13 42048	11-15	10	12	23-23	16		2	
William Hendrix d1834Newberry SC m Rebecca Boozer	United States	R1b1a2	13 208546	11-15	9	12	21-23	15		2	
James Alexander Gammie b. 1858	Scotland	R1b1a2	13 230380	11-14	9	12	23-23	16	12	2	4
JOHN WILLIAM BROOM, SLIDELL, LA.	Scotland	R1b1a2a1a1b4	13 N11946	11-15	9	12	21-23	15		2	
Chas.Broom b.1784 FairfdCoSC >> Chas.Broom b.-~1720	United Kingdom	R1b1a2a1a1b4	14 12311	11-15	9	12	23-23	15		2	
Daniel Leahy,b abt 1810 Co Tipperary Ireland	Ireland	R1b1a2	14 50471	11-14	10	12	22-23	16		2	
William Jackson MCBROOM (1842 MS - 1900 LA)	Scotland	R1b1a2	14 112070	11-15	9	12	21-23	15		2	
John Broom b. 1763	United Kingdom	R1b1a2	14 154024	11-15	9	12	21-23	15		2	
Edward Lunney, b. 1810 Co. Fermanagh; d. 1872 ON	Ireland	R1b1a2a1a1b4	14 159824	11-15	10	12	23-23	16	11	2	4
William Orton, 1808-1877	England	R1b1a2a1a1b4	14 193942	15-16	10	12	22-23	16		2	
Solomon Broome b.c.1772 Halifax? Co., NC	England	R1b1a2	15 12380	11-15	9	12	21-23	15		2	
Robert Christy, Derry Ireland, DOB 1700	Unknown Origin	R1b1a2a1a1b4	15 46135	11-15	10	12	22-23	15		2	
Calvin Gross, born 1 Jan 1854 in North Carolina	Unknown Origin	R1b1a2a1a1b4	15 60726	11-15	10	12	23-23	16		2	
Champagne Gibson 1746 VA-1820 Rockingham NC	Unknown Origin	R1b1a2a1a1b4	15 152435	11-14	10	12	22-23	16		2	
Jeremiah Bell 1806-1890, Monaghan, Ireland	Ireland	R1b1a2a1a1b4	15 B1215	11-14	10	12	23-23	16		2	
William Burden, 1780-1855	England	R1b1a2a1a1b4	16 24467	11-15	9	12	23-23	15		2	
Northern Ireland	Ireland	R1b1a2a1a1b4	16 65222	11-14	10	12	22-23	16		2	
Samuel Gilbert b. 1788 Bucks Co., PA (Poss. Wils	Unknown Origin	R1b1a2a1a1b4	16 106326	11-15	10	12	23-23	16		2	
Owen Lunney, abt 1820-1890, Co. Fermanagh, NI	Ireland	R1b1a2a1a1b4	16 159823	11-15	10	12	23-23	16		2	
	England	R1b1a2	16 167477	11-14	9	12	23-23	16		2	
	Unknown Origin	R1b1a2a1a1b4	16 177709	11-15	10	12	23-23	16		2	
John Isaac McCormick	Northern Ireland	R1b1a2a1a1b4	16 N20887	11-14	10	12	22-23	16		2	
William Curren--born in Ireland (possibly Fermanag	Ireland	R1b1a2a1a1b4	16 N44961	11-14	10	12	22-23	16	13	2	6
Timothy OShea, Kerry	Ireland	R1b1a2a1a1b4	17 89170	11-15	10	12	23-23	16		2	
David Owens, b 1831, Rutherford, NC	Unknown Origin	R1b1a2a1a1b4	17 94458	11-13	10	12	22-23	16		2	
Joseph Williamson b 1817, Ashby de la Launde	United Kingdom	R1b1a2a1a1b4	17 158652	11-14	10	12	22-23	16		2	
John McCaw, ca 1798 County Antrim	Ireland	R1b1a2a1a1b4	18 77876	11-14	10	12	22-23	16		2	
William Mears of Bertie Co, NC(?) USA, 1700s	Unknown Origin	R1b1a2a1a1b4	18 85112	11-14	9	12	23-23	16		2	
Black	Unknown Origin	R1b1a2a1a1b4	18 132684	11-13	10	12	22-23	16		2	
Bartley S Clancy, b 1797, SC d c 1857, Pike co AL	Ireland	R1b1a2a1a1b4	18 135994	11-15	10	12	22-23	15		2	
Francis Wisdom 1775 - 1835	England	R1b1a2a1a1b4	18 171106	11-15	10	12	22-23	15		2	
Andritsopoulos adopted, Scots origin	United Kingdom	R1b1a2a1a1b4	18 N32433	11-14	10	12	22-23	16		2	
archibald mcdonald,b 1763 Scotland	Scotland	R1b1a2a1a1b4	19 12836	11-15	10	12	22-23	16		2	
Levi Mears 1820 NC	England	R1b1a2a1a1b4	19 103935	11-14	9	12	23-23	16		2	
Unknown,but very likely from Wales late 1800s	Wales	R1b1a2a1a1b4	19 168439	11-15	10	12	22-23	15		2	
Unknown	United Kingdom	R1b1a2a1a1b4	19 N76898	11-15	9	12	23-23	15	12	2	4
John Campbell (???? – c. 1774 New Cumberland, VAW	Scotland	R1b1a2a1a1b4	20 14922	11-15	10	12	22-23	15		2	
James Berry Roberts, b,1843, Alabama	Unknown Origin	R1b1a2a1a1b4	20 42106	12-14	10	12	22-23	16		2	
	Unknown Origin	R1b1a2	20 50462	11-14	10	12	22-23	16		2	
James Boyd b ~1801 Ireland lived Gore QC Canada	Ireland	R1b1a2a1a1b4	20 84782	11-14	10	12	22-23	16		2	
Hugh Heffernan, b. 1757, Ahoghill, Co. Antrim, IRE	Northern Ireland	R1b1a2a1a1b4	20 88489	11-15	10	12	23-23	16		2	
Thomas Blowgatt 1490-1560 Haughley, Suffolk, ,	England	R1b1a2a1a1b4	20 176282	11-15	10	12	22-23	15		2	
John McCroskey 1680-1757	Scotland	R1b1a2a1a1b4	20 180800	11-15	10	12	23-23	16		2	
James H. McEwen, 1820-1861	Unknown Origin	R1b1a2a1a1b4	20 237385	11-14	9	12	22-23	15		2	
Adrian Anglin, b. 1692	Unknown Origin	R1b1a2a1a1b4	21 130411	10-14	10	12	22-23	16		2	
Juan Antonio Escalante, 1737, Arizpe, Sonora, Mexi	Spain	R1b1a2a1a1b4	21 N10695	11-14	8	12	22-23	16		2	
Walter Sims, b. ca. 1760 GB d. 1820 TN, USA	United Kingdom	R1b1a2a1a1b4	22 8042	11-14	9	12	20-23	16		2	
William Duncan, b. 1824, Cumberland Cty. PA	Scotland	R1b1a2a1a1b4	22 82157	12-14	9	12	22-23	15		2	
Thomas Sherwood b.1586 d.1655 Nottinghamshire, Eng	Unknown Origin	R1b1a2a1a1b4	22 136381	11-15	10	12	22-23	17		2	
	Unknown Origin	R1b1a2a1a1b4	22 171447	11-15	10	12	22-23	15		2	
John Campbell (1800?) of Glasgow, Scotland, United	Scotland	R1b1a2a1a1b4	23 39864	11-15	10	12	22-23	15		2	
	Ireland	R1b1a2a1a1b4	23 96442	11-16	10	12	22-23	16	13	2	6
James OConnor, 1790, Limerick - 1850	Ireland	R1b1a2a1a1b4	23 156833	11-14	10	12	22-23	16		2	
Thomas Brazill 1753 Ballylongford KER >Abbeyliex	Ireland	R1b1a2a1a1b4	24 12652	11-15	10	12	22-23	18		2	
Thomas Babson d.1630 Somersetshire, England	England	R1b1a2a1a1b4	24 131060	11-15	10	12	22-23	15		2	
John Rogers Sr., 16 Apr 1611, Warwick, England	United Kingdom	R1b1a2a1a1b4	28 37495	11-14	9	12	23-25	16		2	
Michael Madden, bc1725. Lived: Rathbarry, Co. Cork	Ireland	R1b1a2a1a1b4	12 168525	11-13	10	12	22-23	15		1	
Niel MacPherson b1713 d1795 Cawdor/Calder SCT	Scotland	R1b1a2a1a1b4	13 87585	11-14	10	12	22-23	15		1	
Philip Murphy, b late 1700s, Beara, Cork, Ireland	Ireland	R1b1a2a1a1b4	13 91505	11-15	10	12	23-23	15		1	
Hiram Smith, b c1812 VT	United Kingdom	R1b1a2a1a1b4	13 99851	11-14	10	12	22-23	15		1	
Samuel Henderson	Scotland	R1b1a2a1a1b4	13 102517	11-15	10	12	23-23	18		1	
John Halliday, b. 1821, Dublin, Ireland	Ireland	R1b1a2a1a1b4	13 113896	11-14	10	12	23-23	16		1	
Pierre Coitou St-Jean 1585 Nantes, Brittany	France	R1b1a2a1a1b4	14 82681	10-14	10	12	23-23	16		1	
Thomas Pelham, Barren County, KY	Unknown Origin	R1b1a2a1a1b4	14 84443	12-15	10	12	23-23	16		1	
George Franklin King, d. Missouri 1895	Unknown Origin	R1b1a2a1a1b4	14 96000	11-14	10	12	23-25	16		1	
	Germany	R1b1a2a1a1b4	14 102379	11-16	10	12	22-23	15		1	
Thomas B.Moore b. c. 1810 Beaver Co.,? PA	Unknown Origin	R1b1a2a1a1b4	14 131835	10-14	10	12	23-23	16		1	
Rev. Robert Huey, b. near Kilrea, IRL d. 1807 PA	Ireland	R1b1a2a1a1b4	14 132318	11-15	10	12	23-23	14		1	
Johan Eriksson b. 1728 Ahlainen, Finland	Finland	R1b1a2a1a1b4	14 161355	11-14	10	12	23-23	16		1	
?Griffeth bc1567Stepney-London;son Joshua	United Kingdom	R1b1a2a1a1b4	14 182210	11-14	10	12	23-23	16		1	
Conchobar Ua Donnchadha, Glenflesk, d1178	Ireland	R1b1a2a1a1b4	14 183411	11-15	10	12	23-23	15		1	

Robert Mudie, 1510 - 1585	Scotland	R1b1a2a1a1b4	14	201989	11-14	10	12	23-23	16	1
Mikkel Romundstad b1610-d1675,Rindal,Møre,Norway	Norway	R1b1a2a1a1b4	14	H1944	11-15	10	12	23-23	15	1
George Kimball, Dixmont, Maine	England	R1b1a2a1a1b4	14	N23815	11-13	10	12	22-23	15	1
Conchobar Ua Donnchadha Glenflesk, Killarney d1178	Ireland	R1b1a2a1a1b4	15	11211	11-15	10	12	23-23	15	1
John d bef 12/12/1836 Beaver County PA m Mary	Scotland	R1b1a2a1a1b4	15	36308	11-15	10	12	22-23	15	1
George W DeHart, born 8 April 1768, Ireland	Ireland	R1b1a2a1a1b4	15	47408	11-15	10	12	23-23	15	1
William Anglin, d. 1803, Caswell Co., NC	Unknown Origin	R1b1a2a1a1b4	15	52030	11-11	10	12	23-23	16	1
Thomas Delaney, 1842, Ireland	Ireland	R1b1a2a1a1b4	15	56363	11-15	10	12	23-23	15	1
Joseph Hatton	Ireland	R1b1a2a1a1b4	15	58253	11-15	10	12	23-23	15	1
William Churchman, b. c. 1750, Cambridgeshire, ENG	United Kingdom	R1b1a2a1a1b4	15	116944	11-14	10	12	24-24	16	1
Michael Finn, b. c. 1810, Ireland	Ireland	R1b1a2a1a1b4	15	129421	11-15	10	12	23-23	15	1
Thomas Jefferson Youngs (c1810-1873) KY	Unknown Origin	R1b1a2a1a1b4	15	133827	11-14	10	12	23-23	16	1
Joseph Williams Prince Georges Co, MD early 1800's	United States	R1b1a2a1a1b4	15	138967	14-14	9	12	23-24	15	1
John Healy, 1836 Massachusetts of Irish parents	Ireland	R1b1a2a1a1b4	15	166686	11-14	10	12	23-23	16	1
Alexander Stuart, Augusta VA 1740-1822	Unknown Origin	R1b1a2a1a1b4	15	190435	10-14	10	12	22-23	15	1
Timothy Collins, c 1758 - c 1821	Unknown Origin	R1b1a2a1a1b4	15	206354	11-14	9	12	23-23	15	1
William D. Dunagan b. 1660 - 1689 d.? Limerick	Ireland	R1b1a2a1a1b4	15	229526	11-15	10	12	23-23	15	1
Lewis Simmons, b. 1801, NC	England	R1b1a2a1a1b4	16	10505	11-15	10	12	23-23	14	1
Pruner	Unknown Origin	R1b1a2a1a1b4	16	24520	11-14	10	12	21-23	16	1
Hugh Warren, b. c. 1830, d. 1893	United Kingdom	R1b1a2a1a1b4	16	36951	11-15	10	12	23-23	15	1
Richard Davis	United Kingdom	R1b1a2a1a1b4	16	58796	11-14	10	12	23-23	16	1
William b 1764 d 1846 Lewis KY	Unknown Origin	R1b1a2a1a1b4	16	84808	11-16	10	12	22-23	15	1
Christopher Hevey, b1838 or 48 Meath, Ireland	Ireland	R1b1a2a1a1b4	16	88229	11-14	10	12	23-23	16	1
John Reed (c1696-1764)Netherwitton, Northumberland	England	R1b1a2a1a1b4	16	118639	11-12	10	12	22-23	17	1
Charlie Connor 1914 -1975	Ireland	R1b1a2a1a1b4	16	145459	11-15	10	12	22-23	17	1
Jerome Wilson b.1836, Gaila, Fair Isle SI	United Kingdom	R1b1a2a1a1b4	16	149620	11-14	10	12	22-23	15	13
Hendrik Janse Woertman, b.c. 1723, Menne	Germany	R1b1a2a1a1b4	16	179252	11-14	10	12	21-21	16	1
Sutherland Ross, b. 1794 and d. 1870, Virginia	Unknown Origin	R1b1a2a1a1b4	16	221638	11-14	10	12	22-23	15	1
Peter Cross , b. 1653	Unknown Origin	R1b1a2a1a1b4	16	N33346	11-13	10	12	23-23	16	1
John Bowden, 1563 - 1638	United Kingdom	R1b1a2a1a1b4	16	N36716	11-14	10	12	23-23	16	1
William Byers, b1738, Dumfriesshire, Scotland	Scotland	R1b1a2	16	N41928	11-15	10	12	23-23	15	1
Jacob Eisenmann	Germany	R1b1a2a1a1b4	16	N42297	11-14	10	12	22-23	15	1
Albert Patrick Cunningham, 1887 - 1976	Northern Ireland	R1b1a2a1a1b4	16	N78670	10-15	10	12	23-25	16	1
Francis Rocks, Cladymore, County Armagh, 1817	Ireland	R1b1a2a1a1b4	17	21482	11-14	10	12	22-23	15	1
Alexander McLay/McLean, b.c. 1655 m. 1674 Fife, Sc	Scotland	R1b1a2a1a1b4	17	28652	11-14	10	12	22-23	15	1
William Bush, b.c. 1655 Engl d. 1739 Talbot Co. MD	Unknown Origin	R1b1a2a1a1b4	17	31903	11-14	9	12	20-23	15	1
Robert Gordon, Scotland	Scotland	R1b1a2a1a1b4	17	40174	11-15	10	12	23-23	15	1
participant is a Park	Unknown Origin	R1b1a2a1a1b4	17	40730	11-14	10	12	22-23	15	1
Isaac Mason, 1753-1832	Unknown Origin	R1b1a2a1a1b4	17	49718	11-15	10	12	23-23	14	1
Robert Taylor 1665, b.in Ireland, d. Aft. 1701, Va	Ireland	R1b1a2a1a1b4	17	58798	11-14	10	12	23-23	16	1
John Cox, b.c. 1790, unknown - maybe Kentucky.	Unknown Origin	R1b1a2a1a1b4	17	85185	11-14	9	12	23-23	15	1
Tobias Harp B. Circa 1760 S. C. Died 1845 Knox,	Unknown Origin	R1b1a2a1a1b4	17	95553	12-15	10	12	23-23	16	1
Francis Diamond, Skreen, Co.Sligo, Ireland d c1830	Ireland	R1b1a2a1a1b4	17	147680	11-15	10	12	23-23	15	1
Richard P. Johnston born 1799 Smythe County, Virgi	Scotland	R1b1a2a1a1b4	17	153269	11-14	10	12	22-23	15	1
Mayer	Unknown Origin	R1b1a2a1a1b4	17	159185	11-14	10	12	22-23	15	1
Alexander Matheson--1771-1845	Scotland	R1b1a2a1a1b4	17	167431	11-14	10	12	22-23	14	1
George Horwill bef. 1665 - 1677, Devon,UK	England	R1b1a2a1a1b4	17	168477	11-14	9	12	23-23	15	1
James Hall bc1760 Pennsylvania, USA d1836	Unknown Origin	R1b1a2a1a1b4	17	172600	11-14	10	12	22-23	15	13
William Roberts __?__ (Mack is adopted last name),	Unknown Origin	R1b1a2a1a1b4	17	173850	11-15	10	12	23-23	15	1
William Simons, ca. 1659 - 1738	England	R1b1a2a1a1b4	17	174521	12-15	9	12	23-23	15	1
john eddy, circa 1680, circa 1751	Unknown Origin	R1b1a2a1a1b4	17	192172	11-14	10	12	21-23	16	1
Thomas Conaway, 1798 - 1850	United Kingdom	R1b1a2a1a1b4	17	199254	11-14	10	12	23-24	16	1
James Kirby 1815 Caherconlish, Limerick, Ireland	Ireland	R1b1a2a1a1b4	17	208185	11-15	10	12	23-23	15	1
George McKay born about 1800	Ireland	R1b1a2a1a1b4	17	210015	11-14	10	12	22-23	15	1
Garrett Dempsey, b. u/k and d. prior to 1871	Ireland	R1b1a2a1a1b4	17	232198	11-14	10	12	23-25	16	1
Ole Engelsing Øyjorden b1808 Fusa, Hordaland	Norway	R1b1a2a1a1b4	17	E2711	11-14	10	12	21-23	16	1
Thomas Chambers, b. c1620, Moosesome, Yorkshire N	England	R1b1a2a1a1b4	17	N22147	11-14	10	12	22-23	15	13
James Jamison & Sarah Bumgardner, 1848, Kentucky	Unknown Origin	R1b1a2a1a1b4	17	N26096	11-14	10	12	22-23	15	1
William Hall b1779 NBL UK d1843 Newcastle/T NBL	United Kingdom	R1b1a2a1a1b4	17	N36228	11-14	10	12	22-23	15	1
Robert Kursiter, b.c. 1750 Orkney Islands, Scotlan	Scotland	R1b1a2a1a1b4	18	2132	11-11	10	12	23-23	16	1
Thomas Kincaid, b. 1755, PA	Scotland	R1b1a2a1a1b4	18	16491	11-14	10	12	22-23	14	1
John William McAulay, b.c 1816 NC	Scotland	R1b1a2a1a1b4	18	41613	11-15	10	12	23-23	15	1
John Willcockson (m.1742 to Sarah Boone in PA)	Unknown Origin	R1b1a2a1a1b4	18	54502	11-14	10	12	22-23	15	1
Lawson Lyons, b. 1868, LA	Unknown Origin	R1b1a2a1a1b4	18	97313	11-13	9	12	20-23	14	1
George Keyser, born 1575, Leighton Buzzard, England	England	R1b1a2a1a1b4	18	113986	11-15	10	12	23-23	15	1
Gregor MacKinnon, born 1749, Skye, Scotland, died	Scotland	R1b1a2a1a1b4	18	117764	11-14	10	12	22-23	15	1
Charles Hall bc1630 UK? d1695 Maryland USA	Unknown Origin	R1b1a2a1a1b4	18	124777	11-14	10	12	22-23	15	13
Michael Griffy, Shandrum, Clare Ire. m. 1841	Ireland	R1b1a2a1a1b4	18	128753	11-15	10	12	23-23	15	1
Wallace McKenzie, 1919, Ninga, Manitoba, Canada	Unknown Origin	R1b1a2a1a1b4	18	137406	11-14	9	12	20-23	15	1
	Wales	R1b1a2a1a1b4	18	139021	11-14	9	12	23-23	17	12
Nathan Godwin b 1807 NC d Lowndes Co AL	United Kingdom	R1b1a2a1a1	18	139697	11-14	9	12	23-24	15	1
	England	R1b1a2a1a1b4	18	147071	11-15	10	12	23-23	15	1
Joseph Williams, b. 1660 Anne Arundel Co., MD	Unknown Origin	R1b1a2a1a1b4	18	147837	14-14	9	12	23-25	15	1
James McCan b. c. 1800, d. ca. 1838	Unknown Origin	R1b1a2a1a1b4	18	148352	11-14	10	12	22-23	15	1
Hans Christoph Imler13 Feb. 1653 -15 March, 1725	Germany	R1b1a2a1a1b4	18	148632	11-15	10	12	23-23	15	1
Paterick Manion 1800	Ireland	R1b1a2a1a1b4	18	158189	12-14	10	12	23-24	16	1
Wm. Adams, jr. b. 1750 N. Carolina	Unknown Origin	R1b1a2a1a1b4	18	166395	11-13	10	12	22-23	15	1
Martin MacDonald, ca 1755 Inverness, Scotland	Scotland	R1b1a2a1a1b4	18	167382	11-14	10	12	22-23	15	1
Adam Doggart, b. 1785 and d. 1892	Northern Ireland	R1b1a2a1a1b4	18	237552	11-14	10	12	22-23	15	13
Lucus Taylor, b. 1816 and d. abt 1887	Unknown Origin	R1b1a2a1a1	18	258447	11-14	10	12	23-23	16	1
Jonathan Moore, b. Aug 2, 1754, New York	United Kingdom	R1b1a2a1a1b4	18	N24555	11-14	10	12	22-23	15	1
William Francis Davey b.c. 1805 Co.Sligo, Irealand	Ireland	R1b1a2a1a1b4	18	N36948	11-15	10	12	23-24	14	1
Patrick Graham (Grimes) b. c1795, VA	Unknown Origin	R1b1a2a1a1b4	18	N49608	11-14	10	12	23-23	16	1
Rees Thomas, b. 1690 and d. 1759 Augusta co., VA	Wales	R1b1a2a1a1b4	18	N5410	14-14	9	12	23-23	14	1
Allen Jeff Young, 1861-1913	Unknown Origin	R1b1a2a1a1b4	18	N79717	11-15	10	12	23-23	14	1
William Campbell (1773-1863) of Indiana County, PA	Scotland	R1b1a2	19	4401	11-15	10	12	22-23	15	1
Elisha Lambert, maybe NJ, b. 1759	Unknown Origin	R1b1a2a1a1b4	19	31399	11-14	10	12	23-23	16	1

William Bush, b. c. 1655, England; d. 1739, MD	England	R1b1a2a1a1b4	19 36886	11-14	9	12	20-23	15	1
Fred House 1900 - 1970	Unknown Origin	R1b1a2a1a1b4	19 48292	11-13	10	12	22-23	14	1
Nathan Arnett, b.c. 1760, Kent Co. Del.	Unknown Origin	R1b1a2a1a1b4	19 51353	11-14	10	12	22-23	14	1
Unknown	Unknown Origin	R1b1a2a1a1b4	19 53904	11-15	10	12	23-23	15	1
John Hamilton, b.c. 1634, Scotland	Scotland	R1b1a2a1a1b4	19 64670	11-14	10	12	22-23	15	1
Hugh Boyd, Patrick Cnty. VA USA late 1700's	Unknown Origin	R1b1a2a1a1b4	19 78805	11-14	10	12	22-23	14	1
Guillaume Hamon b: ca 1666, Mayenne, FR	France	R1b1a2a1a1b4	19 84034	11-16	9	12	23-23	15	13
john lawrie 1580 Fife scotland	Scotland	R1b1a2a1a1b4	19 93409	11-14	10	12	22-23	15	1
John Watkins b 1694-1763,. d. Halifax County	Unknown Origin	R1b1a2a1a1b4	19 102970	13-14	10	12	23-23	16	1
Alexander McMillan, b.1819, Carsphairn, Kirkcudbri	Scotland	R1b1a2a1a1b4	19 104203	11-14	10	12	22-23	15	1
Alexander MacGruar b.10/7/1706 Boleskine Scotland	Ireland	R1b1a2a1a1b4	19 114664	11-15	10	12	23-23	15	1
Patrick Feeney B1790-Maureen,Gorumna Island Galway	Ireland	R1b1a2a1a1b4	19 124898	10-11	10	12	21-23	16	1
Leysmill, Angus, Scotland	United Kingdom	R1b1a2a1a1b4	19 125139	11-14	10	12	22-23	15	1
James McCarthy b c 1782 COR IRL	Ireland	R1b1a2a1a1b4	19 128856	11-15	8	12	23-23	15	1
John of Nuide>Donald 1614>William 1638>Blairgowrie	Scotland	R1b1a2a1a1b4	19 132463	11-14	10	12	22-23	15	1
Richard White, 1710 - 1757	England	R1b1a2a1a1b4	19 138906	12-15	10	12	23-23	16	1
Walter Matheson, 1770-1861	Scotland	R1b1a2a1a1b4	19 144926	11-14	10	12	22-23	14	1
John Gibbons 1780-1855, Louisburgh, Co Mayo	Ireland	R1b1a2a1a1b4	19 167144	11-14	9	12	23-23	15	1
Adam Cunningham b.1713 Ireland(of Scotland)	Ireland	R1b1a2	19 173987	11-14	10	12	22-23	15	1
John Sorley b. 1776 Fowles Wester PerthshireScotla	Scotland	R1b1a2a1a1b4	19 174145	11-14	10	12	22-23	15	13
Henrik Magnusson Jukonen,1789-1842,Johannes,Finlan	Finland	R1b1a2a1a1b4	19 176545	11-14	10	12	23-24	16	1
Oluf Aase 1537-1601 Kvam, Hordaland	Norway	R1b1a2a1a1b4	19 200859	11-14	10	12	21-23	16	1
Michael Lynch, born 1820 County Clare	Ireland	R1b1a2a1a1b4	19 213449	11-15	10	12	23-23	15	1
Thomas Watson,c1690	Scotland	R1b1a2a1a1b4	19 E2651	11-14	10	12	22-23	15	1
William McKee, b.c. 1835, Pomeroy, Co. Tyrone, Ir	Ireland	R1b1a2a1a1b4	19 N2261	11-14	10	12	22-23	15	1
Christopher Lenares, born c. 1911, Spain	Spain	R1b1a2a1a1b4	19 N43805	11-14	10	12	23-23	16	1
Laban C. Marsh, b. abt 1790, Edgefield Co. SC	United Kingdom	R1b1a2a1a1b4	19 N61764	11-14	10	12	23-23	16	1
	Ireland	R1b1a2a1a1b4	19 N65235	11-14	10	12	23-23	16	1
Austin Shipp Price, b. 26 Jun 1840, Johnson Co, IN	United Kingdom	R1b1a2a1a1b4	20 9452	11-14	9	12	23-24	15	12
Andrew Lamont Young, b 1646 Dunoon, Scotland	Scotland	R1b1a2a1a1b4	20 10429	11-14	10	12	22-23	15	1
John Harvey, b. abt. 1615, Warwickshire, England	England	R1b1a2a1a1b4	20 21011	11-14	10	12	23-24	16	1
Lachlan Macdonald, born abt 1740 North Uist	Scotland	R1b1a2a1a1b4	20 26569	11-14	10	12	22-23	15	1
Donald McComas/McGregor, b.c. 1720 Brig o' Turk	Scotland	R1b1a2a1a1b4	20 28296	11-14	10	12	22-23	15	1
Neil Mathesonb1823LochAlshSCT>CAN Z2534+L643+ 111p	Scotland	R1b1a2a1a1b4	20 57521	11-14	10	12	23-23	16	1
James Moore, ca.1650-1694, b.UK, d.PA, USA; Scotti	United Kingdom	R1b1a2a1a1b4	20 67708	11-14	10	12	21-23	16	1
John Woods, b. c 1720, Ireland; d. 13 Nov 1813, NC	Ireland	R1b1a2a1a1b4	20 76375	11-14	10	12	22-23	11	1
Elijah Campbell (b.1833) Drumgoon, Cavan, Ireland	Ireland	R1b1a2a1a1b4	20 82992	12-14	10	12	22-23	15	1
John Phillips d:1801 Rowan Co. NC	Unknown Origin	R1b1a2a1a1b4	20 84729	11-13	9	12	21-24	15	1
Thomas Griffin, b c1765 NC, d 1812 Tattnall Co, GA	Unknown Origin	R1b1a2a1a1b4	20 96772	11-15	10	12	23-23	17	1
James D Robinson III, 1935, Atlanta, GA	Unknown Origin	R1b1a2a1a1b4	20 103494	11-14	10	12	23-23	16	1
George Thomas Hamilton, (1844-1914)	Unknown Origin	R1b1a2a1a1b4	20 112391	11-14	10	12	22-23	14	1
James RODDY b 1784 Gamaliel, KY poss Cork ancest	Ireland	R1b1a2a1a1b4	20 140532	11-15	10	12	23-23	15	1
Zedekiah Morgan, 1795-after 1860	Unknown Origin	R1b1a2a1a1b4	20 173316	11-14	9	12	23-23	18	1
James Robertson b.1850, Ball Play, Cherokee Co, AL	Scotland	R1b1a2	20 193641	11-14	10	12	21-23	16	1
Jeremie(?) Onfray, b. 1620 in Fresnes (Normandy)	France	R1b1a2a1a1b4	20 E15470	11-14	10	12	23-23	16	1
James Sutherland, b.1755c Unknown Scotland	Scotland	R1b1a2a1a1b4	20 N25121	11-15	10	12	22-23	15	1
James Diver, b.c. 1824, Kilmacrennan, Donegal, Ire	Ireland	R1b1a2a1a1b4	21 10800	10-14	10	12	22-23	17	1
Edward Baker c.1610-1687; d. Lynn, MA, USA	England	R1b1a2a1a1b4	21 12539	11-15	10	12	23-23	15	1
James Guthrie c1720-1800, IRL/MD/NC (Elizabeth)	Northern Ireland	R1b1a2a1a1b4	21 24607	11-14	9	12	23-23	14	12
	Scotland	R1b1a2a1a1b4	21 42875	11-14	9	12	23-24	17	1
William Addison, unkn- 1811	United Kingdom	R1b1a2a1a1b4	21 85688	11-14	10	12	23-24	16	1
David Enix, b.c. 1750, Albemarle Co. VA	Scotland	R1b1a2a1a1b4	21 102770	11-13	10	12	22-23	15	1
Michael Byrne, 1818 - 1871	Ireland	R1b1a2a1a1b4	21 127795	11-16	10	12	22-23	16	1
Walter Kelly, b.c.1730, Timahoe, Kildare, Ireland	Ireland	R1b1a2a1a1b4	21 129844	11-14	10	12	23-23	16	1
Stephen Harding b 1623 MA d 1698 RI	England	R1b1a2a1a1b4	21 132486	11-15	10	12	21-23	15	1
Jeffrey Robertson, b. 1654, Scotland	Scotland	R1b1a2a1a1b4	21 134396	11-14	10	12	21-23	16	1
John Woods, b. c 1720, Ireland; d. 13 Nov 1813, NC	Ireland	R1b1a2a1a1b4	21 152967	11-14	10	12	22-23	11	1
Edward Culver 1600-1685 Colonial MA and CT	United Kingdom	R1b1a2a1a1b4	21 205239	11-13	10	12	23-23	16	1
Pere ROMA, b. 1500, Borredà (Catalonia)	Spain	R1b1a2a1a1b4	21 232541	11-14	9	12	20-23	15	1
George Brown, 1816 - 1892	England	R1b1a2a1a1b4	21 N18363	11-14	10	12	22-23	15	1
Richard Harvey b @ 1642 prob. Warwickshire, UK	United Kingdom	R1b1a2a1a1b4	21 N40691	11-14	10	12	23-24	16	1
Dougald Matheson, born Lochalsh, Wester Ross, Scot	Scotland	R1b1a2a1a1b4	21 N68552	12-14	10	12	22-23	15	1
Patrick Dalton born 1841 Ballyknockane, Kilcash	Ireland	R1b1a2a1a1b4	22 8211	11-14	10	12	23-23	16	1
William White b. 1792, West Twp. Huntingdon County	Unknown Origin	R1b1a2	22 18569	11-15	10	12	23-23	15	1
	Unknown Origin	R1b1a2a1a1b4	22 28460	11-14	10	12	23-23	16	1
	Unknown Origin	R1b1a2a1a1b4	22 35786	11-14	10	12	23-23	16	1
John J Barrett 1908-1985 Proctor,MN. U.S.A.	Unknown Origin	R1b1a2a1a1b4	22 43096	11-14	10	12	22-23	14	1
William Harley 1830 - 1900	Ireland	R1b1a2a1a1b4	22 52460	12-14	10	12	22-23	19	1
John Anderson ca.1706 Scot/Ire -1787VA	Scotland	R1b1a2a1a1b4	22 56732	11-16	9	12	23-23	15	13
William Center, bc. 1782, NC; d. 1839, SC	Unknown Origin	R1b1a2a1a1b4	22 82080	11-14	10	12	22-23	11	1
Benjamin W. Elliott b. c. 1812 NC d. c. 1865 AL	Ireland	R1b1a2a1a1b4	22 100202	11-15	10	12	21-23	14	1
Jack Fields, b.1859, Tishomingo, MS	Unknown Origin	R1b1a2a1a1b4	22 103139	11-13	10	12	23-23	14	1
	United Kingdom	R1b1a2a1a1b4	22 140003	11-13	9	12	23-23	15	1
Alexander McLachlan b1790 St Ninians, Scot.	Scotland	R1b1a2a1a1b4	22 147767	11-14	10	12	22-23	15	1
John Etherington, 1763-1838	England	R1b1a2a1a1b4	22 155793	11-14	10	12	22-23	15	1
Jean Bodin, 1645	France	R1b1a2a1a1b4	22 160587	11-13	9	12	23-23	14	1
Andrew Bryant, 1825-1864	Unknown Origin	R1b1a2a1a1b4	22 169471	12-15	10	12	23-23	16	1
Lauchlan Rose, 15 Oct 1723, Cawdor, Nairnshire, Sc	Scotland	R1b1a2a1a1b4	22 183786	11-14	10	12	22-24	16	1
Jared McDonald, 1740 - 1808	Scotland	R1b1a2a1a1b4	22 188279	11-15	10	12	23-23	15	1
Alexander Thomson, born 1819, Lesmahagow, Scotland	Scotland	R1b1a2a1a1b4	22 189779	11-15	10	12	23-23	17	1
James MacGregor alias Drummond b 1760 Comrie	Scotland	R1b1a2a1a1b4	22 213368	11-17	10	11	23-23	16	1
Breen	Ireland	R1b1a2a1a1b4	22 251976	11-14	10	12	22-23	17	1
Laverty	Ireland	R1b1a2a1a1b4	22 254744	11-15	10	12	23-23	15	1
Joseph Griffith b. 1875 MO d.1904 KY	Wales	R1b1a2	22 259187	11-14	9	12	23-23	14	1
Henry Ferguson, b.1807 and d. 1891	Canada	R1b1a2a1a1b4	22 B2715	11-14	10	12	23-23	16	1
Anders Nielsen of Vejle Amt, DK	Denmark	R1b1a2a1a1b4	22 N29988	11-15	10	12	17-21	13	1

Lauritz Lasseson Heihiller b c1630 Fusa, Hordaland	Norway	R1b1a2a1a1b4	22 N36461	11-14	10	12	21-23	16	1
Gaetano C. Basil, b. 1845 Sicily - d.13 Jan. 1903	Italy	R1b1a2a1a1b4	23 11217	11-14	9	12	23-23	14	1
James H. Mitchell b. c1810 TN, prob. Bedford Co.	United Kingdom	R1b1a2a1a1b4	23 14517	11-14	10	12	22-23	15	1
George McCracken, Born: abt 1725 Scotland moved to	Northern Ireland	R1b1a2a1a1b4	23 14749	11-14	10	12	23-23	16	1
Charles P. Lewis (John LEWIS of Wales)	Wales	R1b1a2a1a1b4	23 44100	11-15	10	12	23-23	15	1
Benjamin Jones, 1762 - 1844	Unknown Origin	R1b1a2a1a1b4	23 95968	11-14	9	12	23-23	15	1
James Downie b. ca 1614 Fife Scotland	Scotland	R1b1a2a1a1b4	23 186668	11-14	10	12	22-23	17	1
Archibald or Alexander McLaren, c1785	Scotland	R1b1a2a1a1b4	23 230581	11-14	10	12	22-23	15	1
John Leonard Marth, b 1854, Baden, Germany	Germany	R1b1a2a1a1b4	23 N66020	11-14	10	12	22-23	18	1
Philippe Sebille 1570-1662 Quemper-Guezennec (Brit	Unknown Origin	R1b1a2a1a1b4	23 N81310	11-14	9	12	23-25	15	1
Edmund Dalton, b c1840, Newcastle, Co. Tipperary	Ireland	R1b1a2a1a1b4	24 24123	11-14	10	12	23-23	16	1
Edmund Moore, ?-1689	United Kingdom	R1b1a2a1a1b4	24 81136	11-15	10	12	23-23	15	1
William Denson (b.1620,Westminster;d.1676,VA)	England	R1b1a2a1a1b4	24 95499	11-14	10	12	22-23	17	1
Archibald Harvey Johnston, Scotland to Ire 1700s	Scotland	R1b1a2a1a1b4	24 125553	11-14	10	12	22-23	17	1
William Adams Sr. b. abt. 1750 Mullavilly, Armagh	Northern Ireland	R1b1a2a1a1b4	24 191515	11-15	10	12	23-23	15	1
Lemoine	France	R1b1a2a1a1b4	24 224274	11-15	10	12	23-23	15	1
John Elliott, 1878-1947, born in County Donegal	Ireland	R1b1a2a1a1b4	25 11435	11-15	10	12	23-23	14	1
	Unknown Origin	R1b1a2a1a1b4	25 53579	11-14	9	12	23-23	18	1
Benjamin McCullar, 1790 - 1863	Northern Ireland	R1b1a2a1a1b4	25 121376	11-15	10	12	23-23	15	1
JohnCouncil POOL, bc.1825 NC s/o Samuel&Lucretia	Wales	R1b1a2a1a1b4	25 133436	11-16	10	12	24-25	16	1
John Hight, c1757-1824, m. FranklinCo, NC, d. WilsonC, TN	Unknown Origin	R1b1a2a1a1b4	25 133988	11-15	10	12	23-24	15	1
William Grannum b.c.1700 unkn, d.c.1750 Barbados	United Kingdom	R1b1a2a1a1b4	25 147534	11-14	10	12	23-23	16	1
George Stoney, b 1793, Yorkshire, England	England	R1b1a2a1a1b4	25 147536	11-14	9	12	21-23	13	1
Thomas Cross Christmas, 1689-1769	United Kingdom	R1b1a2a1a1b4	25 200075	11-14	10	12	22-23	14	1
Daniel Martin born Galway, died 1847 Dublin, Irela	Ireland	R1b1a2a1a1b4	25 206262	11-14	10	12	22-23	18	1
charles raymond b. c.1850 Massachusetts	Ireland	R1b1a2a1a1b4	26 30889	11-15	10	12	23-23	15	1
y-DNA John Hoyt, James Hight, 1835-98, CampbellCo.VA	Unknown Origin	R1b1a2a1a1b4	26 87805	11-15	10	12	23-25	15	1
	France	R1b1a2a1a1b4	26 182980	12-14	10	12	23-23	16	1
William C. Walker b ca 1836/37 d 1886	Ireland	R1b1a2a1a1b4	27 18396	11-16	10	12	23-23	16	1
Richard Sambell, c 19.07.1661 d. poss 18.08.1695	England	R1b1a2a1a1b4	27 234946	11-14	10	12	22-23	15	1
Thomas Rogers, b 1740, Virginia	United Kingdom	R1b1a2a1a1b4	28 173673	11-14	9	12	23-25	15	1
unknown	Unknown Origin	R1b1a2a1a1b4	30 230096	11-14	9	12	23-23	13	1

Table 4. Colla key marker matches to R-L21 non-Collas.

It is surprising that so many Colla Key marker matches were found among the R-L21 non-Collas (Table 5). With as many as 13% having 2 key marker matches and 44% having one match, it would appear that these key marker values are a property of R-L21/DF21 as a whole rather than being specific for Colla exclusively. They indicate the most likely ‘stock’ from which Colla arose.

Key Markers	No.	%
4	0	0
3	4	1
2	64	13
1	220	44
0	206	42

Table 5. Distribution of Key Matches

Relationships

The first 68 testers (cut-off at two marker matches) from Table 4 were compared with 103 known Collas in McGee (with 425 disabled) to identify any significant relationships between Colla and non-Colla. The significance level @67 markers is GD values of 9 or less.

Table 6 shows the relationships identified. The two non-Collas with the lowest GD to DURRQ, Corbitt and Long, exhibited most relationships with Collas. There is always the possibility, although unlikely, that some or all of these non-Collas were misclassified by FTDNA.

ID	Non-Colla	GD	DURRQ	Related to Collas	at GD of
134487	Francis Corbitt, b.c. 1790, Ballymena, Antrim, Ireland	9	412	Peden	9
			112	Walker	7
			173	Calkins	9
			930	Calkins	8
			N16	Calkins	8
			150	Calkins	9
			401	McDaniel	9
			167	O'Carroll	8
			306	Carroll	9
			N41	Carroll	7
			146	Mahan*	6
78252	William Long, b 1740, d 1800 Penn	10	166	Beggan	9
			334	Carroll	9
			100	McKenna	9
			171	McKenna	9
			146	Mahan*	7
156866	William Broom b abt 1800>Daniel Broom, b.1822 S.C.	11	829	McQuillen	9
			368	Paden	9
42048	Cornelius Erwin, b. c. 1780 Ireland	13	150	Calkins	9

* Representative of a non-Colla cluster

Table 6. Relationships of R-L21 non-Collas to Collas at GDs of 9 or less at 67 markers.

Not a lot can be deduced from these relationships other than a suggestion that these non-Collas were from the same 'stock' as the Collas and evolved independently in parallel with the Collas. High GD relationships would be expected for those branching early in the evolutionary tree.

Conclusions

From this examination of the R-L21 population, the following conclusions were drawn:

- The distinguishing Colla values of 9-0-9 for markers 511, 425, 505 are a unique part of the larger L21/DF21 population. The most common values for these markers are 10-12-12 (core values) accounting for 71% of the L21 and descendant SNP populations.
- Markers 511 and 505 have exhibited the expected variability across the spectrum, showing increased number of copies (forward mutation) and decreased number of copies (reverse mutation) from the core values.
- It is proposed that the occurrence of a Colla precursor such as 9-12-9 would have been a rare event. The configuration of 9-0-9, following a deletion at 425, must have been amplified early in the L21 population in order to achieve its present day high representation in L21,
- Within the wider L21 population, two groups were identified carrying a null value for marker 425. The main one was Colla with a 9-0-9 configuration together with two variants, 9-0-10 and 10-0-9, attributable to single step mutations in 505 and 511. The second group consisted of three independently arisen non-Collas carrying the 425 null.
- Colla key markers are a good indicator of Colla when accompanied by the null value at 425. Otherwise, they only indicate the background population from which Colla arose. 58% of non-null L21 had between 1 and 3 key marker matches.
- A limited number of non-Collas had distant relationships (around GD of 9) with some Collas. These non-Collas were probably representatives of Colla kinsmen who evolved in parallel with them. It was not possible to identify any obvious non-null Colla precursor.