FIG. 4. ANCESTRAL HAPLOTYPES FOR McCARTHY R-L21 GROUPS A-H, J-L, AND FOR McCARTHYS IN THE HAPLOGROUPS OF R-BY3540 and R-DF89

			R-L21 Group	A	B	C	D1	D2	E1	E2	F1	F2	F3	F4	G1	H	J	K	L		
				R-P312>L21>DF13..																	
	SNP Path (Note 1)		R-L21 (reference)	..CTS4466>S1115>A541	..DF21>...>Z16526>P314.2>...>L362>ZS4606	..Z39589>DF49>...>M222	..L513>...>Z16372 et alii	..L513>...>CTS3087 et alii	..ZZ10>Z255>...>Z16437/39	..ZZ10>Z255>...>Z16434	..ZZ10>Z253>...>S15280	..ZZ10>Z253>...>S845?	..ZZ10>Z253>...>L226	..ZZ10>Z253>...>L1066>...>?	..ZZ10>CTS3386>Z17970>A7297>BY81142 et alii	..FGC35995	..Z39589>S1051	..DF21>Z30233>...>DF25>DF5	..DF21>Z3017>...>Z3000>...>Z16270	R-P312>U152>BY3550>...>BY3540 (Note 5)	R-U106>...U198>...>DF89 (Note 5)
	Haplotype aka		SWAMH	Irish Type II		Irish Type I			Irish Sea				Irish Type III								
FTDNA Seq. No.	STR Label	Mutation Rate Category (Note 2)		Likely haplotype of ancestor common to all McCarthys in the group (Note 3)																	
1	DYS393	S	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13	14
2	DYS390	M	24	24	23	25	24	23	24	24	24	24	24	23	24	24	24	24	24	23	23
3	DYS19/394	S	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	14	15	14
4	DYS391	S	11	10	11	11	11	10	11	11	10	11	11	11	10	11	11	11	11	11	11
5	DYS385a	S	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
6	DYS385b	M	14	15	14	13	14	14	14	14	13	14	14	15	14	15	14	14	15	14	14
7	DYS426	VS	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
8	DYS388	VS	12	12	13	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
9	DYS439	M	12	11	12	12	11	12	13	12	12	12	11	12	11	12	12	12	13	12	12
10	DYS389i	M	13	13	13	13	13	13	14	14	13	13	13	13	13	13	13	13	13	13	13
11	DYS392	S	13	13	13	14	13	13	13	13	13	13	13	13	13	13	13	13	13	13	13
12	DYS389-2 - DYS389-1	S	16	16	15	16	16	15	16	16	16	16	29	16	16	17	16	16	16	16	16
13	DYS458	F	17	17	17	17	17	16	16	17	17	18	17	17	18	18	16	17	17	16	18
14	DYS459a	VS	9	9	9	9	9	9	9	9	9	9	8	9	9	9	9	9	9	9	9
15	DYS459b	S	10	10	10	10	10	10	10	10	10	10	9	10	10	10	9	10	10	9	10
16	DYS455	VS	11	11	11	11	11	11	11	11	11	11	11	11	11	10	11	11	11	11	11
17	DYS454	VS	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	12	11
18	DYS447	M	25	24	25 (26)	25	25	26	25	25	25	25	25	25	25	25	25	25	25	25	25
19	DYS437	S	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15	15
20	DYS448	S	19	19	19	18	19	19	19	18	19	19	19	19	19	19	19	19	19	19	19
21	DYS449	F	29	29	29	30	28	29	30	30	31 (32)	30	29	30	29	30	29	29	29	30 (31)	29
22	DYS464a	M	15	15	15	15	15	15	15	15	15	14	13	15	15	15	15	15	15	15	15
23	DYS464b	M	15	15	15	16	15	15	15	15	15	14	13	15	15	15	15	15	15	16	15
24	DYS464c	M	17	17	16	16	17	17	17	17	15	16	15	17	17	16	17	17	17	17	17
25	DYS464d	M	17	17	17	17	18	17	17	17	17	17	17	17	17	17	17	17	17	18	17
26	DYS460	M	11	11	10	11	11	11	11	11	10	11	11	11	10	11	11	11	11	11	11
27	Y-GATA-H4	M	11	11	11	11	11	11	11	11	10	11	11	10	11	11	11	11	11	11	11
28	YCAIIa	VS	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19	19
29	YCAIIb	S	23	23	23	23	23	23	23	23	23	23	23	23	23	23	19 (n. 4)	23	23	23	22
30	DYS456	M	16	15	16	17	16	16	16	16	17	17	15	15	15	15	17	16	16	15	15
31	DYS607	M	15	15	15	16	15	15	15	15	15	15	15	17	14	15	15	15	15	15	14
32	DYS576	VF	18	18	18	18	17	18	18	18	18	19	18	18	20 (21)	21	19	18	17	19 (18)	16
33	DYS570	F	17	17	18	17	16	16	17	16	18	17	17	17	19	18	17	17	18	16	16
34	CDYa	VF	36	36	37	38	36	35	39	39	36	37	36	36	36 (35)	37	38	36	36	35	37
35	CDYb	VF	38	37	38	39	37	40	40	40	37	38	38	38	37	39	38	38	38	36	38
36	DYS442	M	12	13	12	12	12	12	11	11	12	13	12	12	11	12	12	12	12	12	12
37	DYS438	S	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12	12
38	DYS531	VS	11	11	11	11	11	11	11	11			11	11	11	11	11	11	11	11	11
39	DYS578	VS	9	9	9	9	9	9	9	9			9	9	9	9	9	9	9	9	9
40	DYF395S1a	S	15	15	16	15	15	15	15	15			15	15	15	15	16	15	15	15	15
41	DYF395S1b	VS	16	16	16	16	16	16	16	16			16	16	16	16	17	16	16	16	16
42	DYS590	VS	8	8	8	8	8	8	8	8			8	8	8	8	8	8	8	8	8
43	DYS537	S	10	10	10	10	10	10	10	10			10	10	11	10	10	10	10	10	10
44	DYS641	VS	10	10	10	10	10	10	10	10			10	10	10	10	10	10	10	10	10
45	DYS472	VS	8	8	8	8	8	8	8	8			8	8	8	8	8	8	8	8	8
46	DYF406S1	S	10	10	11	10	12	11	10	10			10	10	9	10	10	10	10	10	10
47	DYS511	S	10	10	10	10	10	10	10	10			10	10	10	10	10	10	9	10	10
48	DYS425	VS	12	12	12	12	12	12	12	12			12	12	12	12	12	12	0	12	12
49	DYS413a	M	23	23	23	21 (n. 4)	23	22	23	23			23	23	23	21 (n. 4)	23	23	23	21 (n. 4)	23
50	DYS413b	M	23	23	23	23	23	23	23	23			23	24	24	23	23	23	23	23	23
51	DYS557	M	16	16	16 (17)	16	16	16	17	17			15	15	16	16	16	16	16	17	16
52	DYS594	VS	10	10	10	10	10	10	10	10			10	10	10	10	10	10	10	10	10
53	DYS436	VS	12	12	12	12	12	12	12	12			12	12	12	12	12	12	12	12	12
54	DYS490	VS	12	12	12	12	12	12	12	12			12	12	12	12	12	12	12	12	12
55	DYS534	F	15	15	15	16	16	17	15	15			15	14	16	16	14	15	17	15	15
56	DYS450	VS	8	8	8	8	8	8	8	8			8	8	8	8	8	8	8	8	8
57	DYS444	M	12	12	12	12	12	12	12	12			12	13	12	12	13	12	12	12	12
58	DYS481	M	22	22	22	25	22	22	22	22			22	22	23	23	24	22	22	24	23
59	DYS520	S	20	20	20	20	20	20	20	20			20	20	20	20	22	20	20	20	20
60	DYS446	M	13	13	13	13	13	13	14	14			13	13	13	13	13	13	13	15	13
61	DYS617	VS	12	12	13	12	13	13	12	12			12	12	12	12	12	12	12	10	12
62	DYS568	VS	11	11	11	11	11	11	11	11			11	11	11	11	11	11	11	11	11
63	DYS487	S	13	13	13	13	13	13	13	13			13	13	13	13	13	13	13	13	13
64	DYS572	S	11	11	11	11	11	11	11	11			11	11	11	11	11	11	11	11	11
65	DYS640	VS	11	11	11	11	11	11	11	11			11	11	11	11	12	11	11	11	11
66	DYS492	VS	12	12	12	12	12	12	12	12			12	12	12	12	12	12	12	12	13
67	DYS565	S	12	11	12	12	12	11	12	12			12	12	12	12	12	12	12	12 (13)	11
68	DYS710	VF	35	35	36	35	36	36	36	36			34	33				35	35	33	34
69	DYS485	S	15	15	15	15	15	15	15	15			15	15				15	15	15	14
70	DYS632	VS	9	9	9	9	9	9	9	9			9	9				9	9	9	9
71	DYS495	S	16	16	16	16	16	16	16	16			16	16				16	16	17	16
72	DYS540	S	12	12	12	12	12	12	12	12			12	12				12	12	11	12
73	DYS714	F	25	25	25	24	25	25	25	25			25	25				25	26	26	25
74	DYS716	S	26	26	26	26	26	26	26	26			24	26				26	26	26	26
75	DYS717	S	19	19	19	19	19	19	19	19			19	19				20	19	19	19
76	DYS505	M	12	12	12	12	12	12	12	12			12	12				12	9	12	12
77	DYS556	S	11	11	11	11	11	11	11	11			11	11				11	11	11	11
78	DYS549	F	13	13	13	12	13	13	12	13			13	14				11	13	14	13
79	DYS589	S	12	12	12	12	12	12	12	12			12	12				12	12	12	12
80	DYS522	S	11	11	11	11	11	11	12	12			11	10				11	11	10	10
81	DYS494	VS	9	9	9	9	9	9	9	9			9	9				9	9	9	9
82	DYS533	F	13	13	13	13	13	12	13	13			13	12				13	12	12	12
83	DYS636	VS	12	11	12	12	12	12	12	12			12	12				12	12	12	12
84	DYS575	VS	10	10	10	10	10	10	10	10			10	10				10	10	10	10
85	DYS638	S	11	11	11	11	11	11	11	11			11	11				11	11	11	11
86	DYS462	S	11	11	11	11	11	11	11	11			11	11				11	11	11	11
87	DYS452	M	30	30	30	30	30	31	30	30			30	30				30	30	30	30
88	DYS445	S	12	12	12	12	12	12	12	12			12	12				12	12	12	12
89	Y-GATA-A10	M	13	13	13	13	13	13	13	13			13	13				13	13	14	12
90	DYS463	S	24	24	24	24	24	24	23	23			25	24				24	24	24	25
91	DYS441	S	13	13	13	13	13	13	13	13			13	13				13	12	13	13
92	Y-GGAAT-1B07	S	10	10	10	10	10	10	10	10			10	10				10	10	10	10
93	DYS525	S	10	10	10	10	11 (10)	11	11	11			10	10				10	11	10	10
94	DYS712	VF	20	21	20	22	20	20	20	20			21	20				20	22	19	20
95	DYS593	V	15	15	15	15	15	15	15	15			15	15				15	15	15	15
96	DYS650	F	19	19	18	19	17	19	19	19			19	19				19	19	18	19
97	DYS532	F	13	14	13	13	13	13	14	13			13	12				13	13	13	14
98	DYS715	F	24	24	24	24	24	24	24	24			24	24				24	24	24	24
99	DYS504	M	17	16	15	17	16	16	17	17			17	16				16	17	16	16
100	DYS513	M	12	12	13	13	12	12	13	13			12	12				12	12	12	12
101	DYS561	S	15	15	15	15	15	15	15	15			15	15				15	17	15	15
102	DYS552	M	24	24	25	24	24	24	24	24			24	24				24	24	25	24
103	DYS726	VS	12	12	12	12	12	12	12	12			12	12				12	12	12	12
104	DYS635	M	23	24	23	23	23	23	23	23			23	23				23	23	23	25
105	DYS587	S	18	18	18	18	18	18	18	18			18	19				18	18	18	18
106	DYS643	S	10	10	10	10	10	10	10	10			10	10				9	10	10	10
107	DYS497	S	14	14	14	14	14	14	14	14			14	14				14	14	14	14
108	DYS510	M	17	18	17	17	17	17	17	17			18	17				17	17	18	17
109	DYS434	VS	9	9	9	9	9	9	9	9			9	9				9	9	9	9
110	DYS461	S	12	12	12	12	12	12	12	12			12	12				12	12	12	12
111	DYS435	VS	11	11	11	11	11	11	11	11			11	11				11	11	11	11

-3 or more	-2	-1	Genetic Difference from SWAMH	+1	+2	+3

Notes:

1 Probably to the most recent SNP common to all in the group. This may not be the ancestral haplotype for all surnames found under the terminal SNP indicated.

2 VS = Very slow mutating; VF = Very fast; M = Medium mutation rate. These revised categories are based on counts of mutation occurrences made at the end of January 2020 on the Irish Type II tree (which also serves McCarthy R-L21 Group A) and the R-Z16526 tree (which also serves McCarthy R-L21 Group B). The counts for each tree were weighted in consideration of the varying number of markers tested by different participants (normally 37, 67 or 111, occasionally 25, 43). The combined count was then similarly weighted in favour of the Irish Type II tree (935 tests vs 300 for the Z16526 tree). See Fig. 4a for an ordered list of mutation rates at all 111 STR sites. Revisions to colour highlighting for Very Slow and Slow mutating markers will appear on all trees published from February 2020 onwards.

3 Alternative value in parenthesis is also frequently seen in McCarthys.

4 This 23>19 or 23>21 mutation is considered a single event.

5 SNPs BY3540 and DF89 are in parallel haplogroups to that of L21, but their ancestral McCarthy haplotypes are compared with SWAMH for reference.

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