

Supplementary Online Material for Karafet et al.

As a worked example, we calculate the time to the most recent common ancestor of all lineages in F (including F*, F1-F4, G, H, IJ and K) denoted as MRCA-F in this section. In the path going from MRCA-CT to a sample in R1b there are 20 mutations between MRCA-CT and MRCA-F, and 48 mutations between MRCA-F and the present. We find that

$$\begin{cases} P(M \leq 48 \mid N = 68, p_{\max} = 0.7958) \cong 0.05 \\ P(M \geq 48 \mid N = 68, p_{\min} = 0.6020) \cong 0.05 \end{cases}$$

In the path going from MRCA-CT to a sample in I1, there are 20 mutations between MRCA-CT and MRCA-F, and 40 mutations between MRCA-F and the present. We find that

$$\begin{cases} P(M \leq 40 \mid N = 60, p_{\max} = 0.7670) \cong 0.05 \\ P(M \geq 40 \mid N = 60, p_{\min} = 0.5535) \cong 0.05 \end{cases}$$

Therefore, our confidence interval for the age of MRCA-F relative to the age of MRCA-CR is (0.5535, 0.7958). Assuming that the age of MRCA-CT is 70,000 years, we obtain a confidence interval of 38,700 - 55,700 years. To obtain the maximum likelihood estimate for the age of this node, we calculate

$$MLE_{age\ MRCA-F} = \left(\frac{48}{68} \cdot 0.5 + \frac{40}{60} \cdot 0.5 \right) \cdot 70,000 \text{ years} = 48,039 \text{ years}$$

Supplementary Table 1. List of all markers, primer information, reference SNP ID, and Y-position ¹ included in this survey											
	SNP	Haplogroup (YCC2008)	Haplogroup (YCC2002)	RefSNP ID	Y-position	Forward Primer	Reverse Primer	PCR Size(bp)	Mutation	Site	Reference
1	M2=SY81	E1b1a	E3a	rs3893	12606580	aagcactggtcagaatgaag	aataaaaaatacaactcccc	209	A->G	168	Seielstad et al. 1994
2	M3	O1a3a	O3	rs3894	17605757	taatcagttctctccacga	aaaattgtgaactgaaatttaagg	241	C->T	181	Underhill et al. 1996
3	M4	M1	M	rs3895	2804628	tcctgaattatgaattacaagac	acgtcttataaactacagaacag	273	A->G	88	Underhill et al. 1997
4	M5=P73	M1	M	rs3896	20069334	gaattttatactgaactccaattt	ttatttgaagactttcaagag	322	C->T	73	Underhill et al. 1997
5	M6	A2	A2	rs3897	17080420	cactaccacattttctatga	cactgaactcattttctga	218	T->C	37	Underhill et al. 1997
6	M7	O3a3b	O3d	rs3898	4138217	actatgaacgaactgaataat	gaacactgtgaacacatta	300	C->G	236	Underhill et al. 1997
7	M8	C1	C1	rs3899	7351534	cccacccattcagatga	agactgacagacaaagtcac	267	G->T	137	Underhill et al. 1997
8	M9	K-R	K-R	rs3900	20189645	cgaacataaaactttcag	gcttgaacaaagttaagtttt	340	C->G	68	Underhill et al. 1997
9	M10	E1b1a6	E3a6	rs3901	20182386	gcatttctataaattactctc	taataaaaaattgaatcacc	343	T->C	156	Underhill et al. 1997
10	M11	L	L	rs3902	20190035	ttctctgtctgtctctccctc	gaacataaacaagaacttctgaac	222	A->G	44	Underhill et al. 1997
11	M12	J2b	J2e	rs3903	7643480	actaaaacaccattagaacaaag	ctgaacacacatagatccccc	309	G->T	286	Underhill et al. 1997
12	M13	A3b2	A3b2	rs3904	20181486	ttctaactctgagtgtcttc	taagcctgatttttatccaac	233	G->C	157	Underhill et al. 1997
13	M14	A2	A2	rs3905	20181656	agacggttagatcagttctctg	tagataaaagcacattgacacc	287	T->C	180	Underhill et al. 1997
14	M15	D1	D1	rs3906	20184087-20184088	acaaatcctgaacaatcgc	tcgatgtggttaaaatttcc	295	9 bp insertion	304	Underhill et al. 1997
15	M16	M1b1a	M2a	rs3907	20069689	tatttatctattgaacccaag	ccatgtattctgaagctgt	266	C->A	38	Underhill et al. 1997
16	M17	R1a1	R1a1	rs3908	20192556	ctggtcataacactgaataac	tgaactcacaagtgaataac	333	4G->3G	68	Underhill et al. 1997
17	M18	R1b1a	R1b1	rs3909	20192551-20192550	ctggtcataacactgaataac	tgaactcacaagtgaataac	333	2 bp insertion	62	Underhill et al. 1997
18	M19	O1a3a1	O3a	rs3910	20192619	ctggtcataacactgaataac	tgaactcacaagtgaataac	333	T->A	131	Underhill et al. 1997
19	M20	L	L	rs3911	20192842	gattggtgtcttcaatgc	cacacacaagaacacatt	413	A->G	118	Underhill et al. 1997
20	M21	I1a	I1a2	rs3912	20191727	ctttttatttctgaactgaag	aacagcaatttgaagcag	415	A->T	357	Underhill et al. 1997
21	M22	L	L	rs3913	13299557	agaagaggtcgaacaaacag	gcctactactgaagagctt	327	A->G	129	Underhill et al. 1997
22	M23	A2	A2		20195627	ttcttaactctgtgaacac	gaaaaaaactaactcctaattctt	327	A->G	159	Underhill et al. 2001
23	M25	O1a2	O2		20326052	aaaagcaagattcaatccag	ttttgacaagttaagtaccac	340	G->C	121	Underhill et al. 2001
24	M26	I2a2	I1b2	rs2032629	20325209	ccatggtgaagttttatcaattt	ttcacagtaagcagacacatcc	321	G->A	68	Underhill et al. 2001
25	M27	L1	L1		20199034	cgaagtcacaaattatagtactg	cactgtattctgtaccaca	526	C->G	398	Underhill et al. 2001
26	M28	A3a	A3a		20189227	gcttacttgaacacagct	agagaatttgcatacagataatg	332	T->G	277	Underhill et al. 2001
27	M30	B2b3	B2b3		20199203	gaacacagacatacgaataagaag	tttagcgcttactctcattacc	486	G->A	132	Underhill et al. 2001
28	M31	A1a	A1		20199142	gaacacagacatacgaataagaag	tttagcgcttactctcattacc	486	G->C	71	Underhill et al. 2001
29	M32	A3	A3		20199824	ttgaaaaaatcacatgaac	caagtgtttaaagatcacga	370	T->C	166	Underhill et al. 2001
30	M33	E1a	E1		20199838	ttgaaaaaatcacatgaac	caagtgtttaaagatcacga	370	A->C	180	Underhill et al. 2001
31	M34	E1b1b1c1	E3b3a		20200104	cacttcacatttttttgaag	agtcaattttgaatttccag	372	G->T	131	Underhill et al. 2001
32	M35	E1b1b1	E3b		20201091	taagcctaaagacagtcagag	agaaggaagcaatgaagaca	513	G->C	168	Underhill et al. 2001
33	M36	H1a1	H1a		20210397	agatcatcccaaacatcataa	aaagctcgaataatccaatctg	436	T->G	74	Underhill et al. 2001
34	M37	R1b1b2a	R1b2		20210939	caagattgaattgaattcagctt	agcatacaaaaaaaaactgac	422	C->T	203	Underhill et al. 2001
35	M38	C2	C2		20201546	caagttttgaagaataatgtctt	ttaaagaaaaagaaagcaagat	337	T->G	146	Underhill et al. 2001
36	M39	H1a3	H1c		20201636	caagttttgaagaataatgtctt	ttaaagaaaaagaaagcaagat	337	C deletion	236	Underhill et al. 2001
37	M41=P210	E2a	E2a		2723889	gtataatagcctgaatgctc	catgaatttcaaatgattctt	218	G->T	117	Underhill et al. 2001
38	M42	BR	BR	rs2032630	20326228	aaagcgagagattcaatccag	ttttgacaagtttaagtaccacg	340	A->T	297	Underhill et al. 2001
39	M43	B2a2a	B2a2a		7643271	actaaaacaccattagaacaaag	ctgaacacacatagtcacccc	309	A->G	77	Underhill et al. 2001
40	M44	E1a1	E1a		20212032	ctgacaccttctgaattttgag	tatgaatttctatgtttgaagac	389	G->C	263	Underhill et al. 2001
41	M45	P	P	rs2032631	20327175	gctgaacagacactcttgaag	aatatatttctgaacaccttc	352	G->A	109	Underhill et al. 2001
42	M47	J2a1	J2a		20210718	agatcatcccaaacatcataa	aaagctgaataatccaatctg	436	G->A	395	Underhill et al. 2001
43	M48	C3c	C3c		20209269	aaacataatgtatctaattttct	tcaatataaattgaatataagatg	240	A->G	160	Underhill et al. 2001
44	M49	A2	A2	rs2032633	20328114	cgacacacatgaagacagt	ttcttcaagaaatgaagagctc	354	T->C	229	Underhill et al. 2001
45	M50	O1a2	O1b	rs2032632	20328060	cgacacacatgaagacagt	ttcttcaagaaatgaagagctc	354	T->C	175	Underhill et al. 2001
46	M51	A3b1	A3b1	rs34078768	20328251	gaagctctatctctgaagc	taactctcttctgaacaca	339	G->A	33	Underhill et al. 2001
47	M52	H1	H		20212587	actataacatgacttaaggtg	gaacaaacacacatttcaagagag	534	A->C	477	Underhill et al. 2001
48	M54	E2b	E2b	rs2032620	20328652	ctctctgactgagttt	tatctcaggaactggtccat	360	G->A	164	Underhill et al. 2001
49	M55	D2	D2	rs2032621	20332126	catagacatttgaacagag	cccttctctgaactccccc	382	T->C	228	Underhill et al. 2001
50	M56	R1a1a	R1a1a	rs2032622	20332274	ccagaacacaaagtacaaatgc	ttctattgtcctctctttt	399	A->T	39	Underhill et al. 2001
51	M57	D2	D2		20211305	attgaagaaagattggtttctg	gttctgatacttttccattatttc	326	+1bp	133	Underhill et al. 2001
52	M58	E1b1a1	E3a1		20195692	ttcttaactctgtgaagcac	ggaaaaactaaactcctaattctt	327	G->A	224	Underhill et al. 2001
53	M59	A3a	A3a		20328164	cgacacacatgaagacagt	ttcttcaagaaatgaagagctc	354	A->C	179	Underhill et al. 2001
54	M60	B	B	rs2032623	20337461-20337460	gcactgacattcatct	atgttcttataagttcagagag	388	+1bp	242	Underhill et al. 2001
55	M61	L	L	rs34289137	20210837	attgaattgaattcaaccttc	atttttttctgtatcttctgc	190	C->T	98	Underhill et al. 2001
56	M62	J1a	J1		7643254	actaaaacaccattagaacaaag	ctgaacacacatagtcacccc	309	T->C	60	Underhill et al. 2001
57	M63	A3b2	A3b2	rs2032625	20330026	ctcttcccttgatttctattc	ttagcagaagacatccacc	308	G->A	43	Underhill et al. 2001
58	M64.1	D2	D2	rs2032626	20362771	tataagccctcactactcaagagaa	gtagagccctttccaactctg	325	A->G recurrent	279	Underhill et al. 2001
59	M64.2	R1a1c	R1a1c	rs2032626	20362771	tataagccctcactactcaagagaa	gtagagccctttccaactctg	325	A->G recurrent	279	Underhill et al. 2001
60	M65	R1b1b2b	R1b3		20365653	ttctgaacacattatttga	gctgaagaaatgaagacacttg	436	A->T	152	Underhill et al. 2001
61	M66	E1b1a6	E3a6	rs2032627	20340961	ctgtataacacatcaatgac	acatcttctgaagacatacttc	415	A->C	135	Underhill et al. 2001
62	M67	J2a2	J2f	rs2032628	20338197	ccatatttcttatacttctacgtc	gtcttttctactgttgagac	409	A->T	377	Underhill et al. 2001
63	M68	J2a3	J2b		20338088	ccatatttcttatacttctacgtc	gtcttttctactgttgagac	409	A->G	268	Underhill et al. 2001
64	M69	H	H	rs2032673	20353446	gattatcataagccactatcttga	atcttttattccctttgtctgtc	257	T->C	222	Underhill et al. 2001
65	M70	T	K2	rs2032672	20353269	gattatcataagccactatcttga	atcttttattccctttgtctgtc	257	A->C	45	Underhill et al. 2001
66	M71	A2	A2	rs2032638	20353835	ttgaattatagtccttccctc	gcttttttctgataagacta	328	C->T	197	Underhill et al. 2001
67	M72	I1b1	I1a3	rs2032637	20353795	ttgaattatagtccttccctc	gcttttttctgataagacta	328	A->G	157	Underhill et al. 2001
68	M73	R1b1b1	R1b4	rs2032634	20348262-20348263	cagaataataagaatttttga	atttttcttatttctaagcagc	361	2bp deletion	260	Underhill et al. 2001
69	M74=N12	P	P	rs2032635	20349155	atctataataactgaatttgaag	aattcagcttttaccattctga	385	G->A	195	Underhill et al. 2001
70	M75	E2	E2	rs2032639	20349565	gctaacaagaaataaattcagac	tattgaacagagcatttga	355	G->A	296	Underhill et al. 2001
71	M76	L1	L1		20216704	tagaataacagattggaagag	ctctataaaatgaaaaaatgac	493	T->G	339	Underhill et al. 2001
72	M77	C3c	C3c		20218526	cttttcttccctgaatttcc	gcaacacatgaacgtcacc	371	C->T	129	Underhill et al. 2001
73	M78	E1b1b1a	E3b1		20352691	cttcagacattatttttga	ataatgttcttccattcttctt	301	C->T	197	Underhill et al. 2001
74	M81	E1b1b1b	E3b2	rs2032640	20351960	acttaattatagtttcaatccctca	ttcatgaagatctgtatctga	422	C->T	147	Underhill et al. 2001
75	M82	H1a	H1	rs2032675	20353562-20353563	ctgtactcctgagtaactctg	agaacagattgaacacactaactc	328	-2bp	179	Underhill et al. 2001
76	M83	M1b1b	M2b	rs2032641	20332675	ggaagaaagatttccagaaa	aatgacccatgcttactgaac	503	C->T	120	Underhill et al. 2001
77	M84	E1b1b1c1a		rs2032642	20357751	gcaatatacgttttctgcttcca	cccatcccaactgaggttcaag	439	A del	48	Shen et al. 2000
78	M85	E2b1	E2b	rs2032616	20355604	aacaagaattatcagaagaaagttt	ttttacttattctgatactttcaa	568	C->A	437	Underhill et al. 2001
79	M86	C3c	C3c	rs2032643	20365305	ttccattatttactatatttct	tttctcatttttactatttcaacc	324	T->G	85	Underhill et al. 2001

	SNP	Haplogroup (YCC2008)	Haplogroup (YCC2002)	RefSNP ID	Y-position	Forward Primer	Reverse Primer	PCR Size(bp)	Mutation	Site	Reference
80	M87	R1a1c	R1a1c	rs2032644	20365497	tccattatttactatatttctt	tttctcatttaacttttctgacc	324	T->C	277	Underhill et al. 2001
81	M88	O2a1	O2a1	rs2032645	20360237	attctaaagatcaagcaactagg	tattttgtcttctatgactcttc	314	A->G	166	Underhill et al. 2001
82	M89	F-R	F-R	rs2032652	20376701	aaagcaagatgaatcccaact	tccaattgaagatccctcca	527	C->T	347	Underhill et al. 2001
83	M90	E2b	E2b	rs2032646	20383717	taagtgttcttcaatttttgaag	aaagataactctactaccacc	331	C->G	170	Underhill et al. 2001
84	M91	A	A	rs2032651	20366926	gaacttggaattgaagacag	aaactttgaagcactcttgac	495	9T->8 T	368	Underhill et al. 2001
85	M92	J2a2a	J2f1	rs2032648	20363411	ttgaatttcccaagaatttttc	ttcaaaaaactgatttttatgcc	470	T->C	340	Underhill et al. 2001
86	M93	C3a	C3a	rs2032647	20361893	aacaaaaaacaacaaaaactgaa	gatttctctgaagataatttaagta	504	C->T	459	Underhill et al. 2001
87	M94	BR	BR	rs2032647	20397546	cacatgaagaacacagaataatgc	ctttatgaataattatgaagaatgc	405	C->A	227	Underhill et al. 2001
88	M95	O2a	O2a	rs2032650	20397832	gaatgaagaatcaagatcccaag	gaactttcttataacttgagaa	480	C->T	172	Underhill et al. 2001
89	M96	E	E	rs9306841	20238386	attgccctctcacagaagcac	aaagctcactgaagaagattac	440	G->C	70	Underhill et al. 2001
90	M97	H1a2	H1b		20238101	attgccctctcacagaagcac	aaagctcactgaagaagattac	440	T->G	355	Underhill et al. 2001
91	M98	E2b	E2b		20238622	gaatgaagaattatcatgaaga	cctattatgaagaagcatttttcc	395	G->C	158	Underhill et al. 2001
92	M99	J2b2a	J2e1a		20238682-20238684	gaatgaagaattatcatgaaga	cctattatgaagaagcatttttcc	395	1 bp deletion	96-98	Underhill et al. 2001
93	M101	O1a1a	O1a		20176860	tcacagcaactctcaacaaa	cttttttgaatcatgattctt	460	C->T	154	Underhill et al. 2001
94	M102	J2b	J2e1	rs2032608	20385500	aaactgaagacactttataatgaat	gttttttgagctcttatttattctt	480	G->C	301	Underhill et al. 2001
95	M103	O1a2	O1b	rs2032609	20395526	cagtaagtgaactcacacataattcc	ccagttttatttcagtttccacagc	463	C->T	259	Underhill et al. 2001
96	M105	C1	C1	rs2032612	20325879	ggagggcaactcaagaaaaa	aggaagaacacattctgtcat	572	C->T	478	Underhill et al. 2001
97	M106	M1	M	rs2032611	20325812	ggagggcaactcaagaaaaa	aggaagaacacattctgtcat	572	A->G	411	Underhill et al. 2001
98	M107	E1b1b1b1	E3b2a	rs2032613	20391026	caaaaagcactcgatttctt	cttttacccttacttcaacaa	376	A->G	298	Underhill et al. 2001
99	M108.1	B2a2	B2a2	rs2032679	20392323	agatgaagccacagaagaa	acacagaatgaattgaatgatgt	321	T->C recurrent	40	Underhill et al. 2001
100	M108.2	B2b3a	B2b3a	rs2032679	20392323	agatgaagccacagaagaa	acacagaatgaattgaatgatgt	321	T->C recurrent	40	Underhill et al. 2001
101	M109	B2a1a	B2a1		20233568	ggatgtacaattgttctcaact	ggaattttctctactcttgc	312	C->T	264	Underhill et al. 2001
102	M110	O1a2	O1b		20366485	caggaagaagaccgtataaagg	aaactttactgcacatataaact	389	T->C	241	Underhill et al. 2001
103	M111	O2a1	O2a1		20226693-20226694	aaactttcacaagaaggttcc	caactcacaagaacaaatactgaac	393	2bp (TT) deletion	188-189	Underhill et al. 2001
104	M112	B2b	B2b		20227347	actttttccaacgaatttttga	tatatcttgaatgaagaccat	445	G->A	286	Underhill et al. 2001
105	M113	O3a3b1	O3d1		20227521	actttttccaacgaatttttga	tatatcttgaatgaagaccat	445	A->G	112	Underhill et al. 2001
106	M114	A2a	A2a		20225151	ttaccacagaattgaatgtctaaa	caataaaaattgaagcagta	434	T->C	387	Underhill et al. 2001
107	M115	B2b2	B2b2		20225698	aatttacaactcacatacaatttga	tcttttttaccatattcttctt	413	C->T	201	Underhill et al. 2001
108	M116.1	D2a	D2b		20224669	aaatgaacttataagatcaagaaaa	attcaattgaattttacaatgaaca	429	A -> T	176	Underhill et al. 2001
109	M116.2	E1b1a2	E3a2		20224669	aaatgaacttataagatcaagaaaa	attcaattgaattttacaatgaaca	429	A -> C	176	Underhill et al. 2001
110	M117	O3a3c1	O3e1		20224700-20224703	aaatgaacttataagatcaagaaaa	attcaattgaattttacaatgaaca	429	4bp deletion	142-145	Underhill et al. 2001
111	M118	A3b2b	A3b2b		20223353	atttcaatttctacttctgactc	taatttccctaaattacactactc	478	A->T	109	Underhill et al. 2001
112	M119	O1a	O1		20222073	gaatgtctataaattttccaga	ttcacacaatacaagaattatctt	330	A->C	224	Underhill et al. 2001
113	M120	O1a1	O1		20366782	gaacttggaattgaagacag	aaactttgaagcacttctgac	495	T->C	224	Underhill et al. 2001
114	M121	O3a1	O3a		20366741-20366745	gaacttggaattgaagacag	aaactttgaagcacttctgac	495	5 bp deletion	183-187	Underhill et al. 2001
115	M122	O3	O3		20224062	tgaataacttactaatttgccttt	caagcaaatgaatttttcttc	393	T->C	73	Underhill et al. 2001
116	M123	E1b1b1c	E3b3		20223974	tgaataacttactaatttgccttt	caagcaaatgaatttttcttc	393	G->A	161	Underhill et al. 2001
117	M124	R2	P1		20223889	tgaataacttactaatttgccttt	caagcaaatgaatttttcttc	393	C->T	246	Underhill et al. 2001
118	M125	D2a1	D2b1	rs2032614	20389674	qccaccccttatacctct	tcaggaattatgataagagacc	367	T->C	301	Underhill et al. 2001
119	M126	R1b1b2h1	R1b5	rs2032615	20389651-20389654	qccaccccttatacctct	tcaggaattatgataagagacc	367	4 bp deletion	277-280	Underhill et al. 2001
120	M127	A3b2	A3b2		20222661	tgaagaagaaatcagtgtaagagc	tgtaagggtgactgtatgtcagca	412	C->T	372	Underhill et al. 2001
121	M128	N1a	N1		20227316-20227317	actttttccaacgaatttttga	tatatcttgaatgaagaccat	445	-2bp	316-317	Underhill et al. 2001
122	M129	B2b3	B2b3		20177105	aaatgcttactacaagaacatttc	tacacagctctctacaagaagaa	255	G->A	221	Underhill et al. 2001
123	M131	C1	C1		20173766-20173774	cacacccaagaatacaataatttc	cttttttattctacaatgatactttc	306	9 bp deletion	93-101	Underhill et al. 2001
124	M132	E1a	E1	rs2032617	20355649	aaacagaattatcagaagaaggttt	ttttactgttctgatactttcaa	568	G->T	482	Underhill et al. 2001
125	M133	O3a3c1	O3e1		20175715	tgaataagaaatcaataaactcagt	cttttttttttttttaacccttc	211	1bp (T) deletion	116	Underhill et al. 2001
126	M134	O3a3c	O3e		20175606	agaatcatcaaacccaagaag	tctttgacttctctttaaaca	232	-1bp	54	Underhill et al. 2001
127	M135	A2	A2		20175681	tgaataagaaatcaataaactcagt	cttttttttttttttaacccttc	211	+1bp	150	Underhill et al. 2001
128	M136	E1b1b1c1a	E3b3a1	rs2032618	20353141	atgtgaagaacacatgataag	tttatgaattcttaatttctcatag	339	C->T	196	Underhill et al. 2001
129	M137	J2a4	J2c		20223846	tgaataaacttactaatttgccttt	caagcaaatgaatttttcttc	393	T->C	289	Underhill et al. 2001
130	M138	H1a3	H1c		20172243	aaactcacaacatgtaaaagatt	gaataaaacagcccttcaag	442	C->T	291	Underhill et al. 2001
131	M139	BR	BR		20165774	ttactgaataagccatatttttta	ttctcaagaccacaaatgctct	459	5G->4G	401	Underhill et al. 2001
132	M141	A2	A2		20165365	catcttaaaatacatttcatagcttt	gcttactattgaattctgaatcct	424	T->A	51	Underhill et al. 2001
133	M143	O1a2	O2		20349206	atgctataataactgaattttgaag	aaattcagcttttaccacttctgaa	385	G->T	246	Underhill et al. 2001
134	M144	A3b	A3b	rs2032619	20384888	agcacaagggatcacattgag	agacaagagctttttgattgt	452	T->C	342	Underhill et al. 2001
135	M145=P205	DE	DE	rs3848982	20176596	ttcaacaagaagataaacaagaag	cttttttgaattcatgattctt	208	G->A	166	Underhill et al. 2001
136	M146	B1a	B1		20238639	gaatagaagattatcatagaaga	cctattatgaagaagcatttttcc	395	A->C	141	Underhill et al. 2001
137	M147	K1	K3		20221470	gtatttcaagaagcattttaag	ttgaatacaagaagatttttaaga	439	1 bp insertion (extra T)	116	Underhill et al. 2001
138	M148	E1b1b1a3a	E3b1a		20355481	aaacagaattatcagaagaaggttt	ttttacttattcatgactttcaa	568	A->G	314	Underhill et al. 2001
139	M149	E1b1a3	E3a3		20355636	aaacagaattatcagaagaaggttt	ttttacttattcatgactttcaa	568	G->A	469	Underhill et al. 2001
140	M150	B2a	B2a		20328907	cgaatgaagaatgaagaagac	ctacttctcccccctcttga	289	C->T	146	Underhill et al. 2001
141	M151	D2a2	D2b2		20352022	acttaatttataatttcaactcctca	ttcatgaagaatgtctgatactga	422	G->A	209	Underhill et al. 2001
142	M152	B2a1a	B2a1		20327456	aaactattttgaatttcttttca	gccttatgagatgataatta	287	C->T	101	Underhill et al. 2001
143	M153	R1b1b2c	R1b6		20165748	ttactgaataagccatatttttta	ttctcaagaccacaaatgctct	459	T->A	427	Underhill et al. 2001
144	M154	E1b1a4	E3a4		20352065	acttaatttataatttcaactcctca	ttcatgaagaatgtctgatactga	422	T->C	252	Underhill et al. 2001
145	M155	E1b1a5	E3a5		20195719	ttcttaacttctgataagcac	ggaataaactaaacttaaatctct	327	G->A	251	Underhill et al. 2001
146	M156	E1b1a6	E3a6		20176615	ttcaacaagaatgaagaagagag	cttttttgaattcatgattctt	208	A->G	147	Underhill et al. 2001
147	M157	R1a1b	R1a1b		20327242	gctgaagaagacacttctga	aaatatttctgacacacttcc	352	A->C	176	Underhill et al. 2001
148	M158	J2a5	J2d		20175754	tgaataagaaatcaataaactcagt	cttttttttttttttaacccttc	211	G->A	77	Underhill et al. 2001
149	M159	O3a3a	O3c		20210828	attgagattgaatttcaagcttcc	attttatttttctgatttcttgc	190	A->C	89	Underhill et al. 2001
150	M160	R1b1b2h2	R1b7		20348253	cagaataaataaggaatttttgaat	atttctctatttttcaagcagc	361	A->C	251	Underhill et al. 2001
151	M161	J2a2a	J1b2a		20176903	tcacagcaactcacaacaa	cttttttgaattcatgattctt	460	C->A	111	Underhill et al. 2001
152	M162	O3a3c1a	O3e1a		8680323	gaactgtatgaagaagcaat	taatacacttctctttaaagga	288	C->C/T	202	Underhill et al. 2001
153	M163	J2a2b	J2f2		20189745	gcacacataaaacttttcaag	aaaacttaacttttactcaaac	340	A->C	168	Underhill et al. 2001
154	M164	O3a2	O3b		20216694	tgaataaataaggaatttgaagag	cctaataaataaataaataatgc	493	T->C	329	Underhill et al. 2001
155	M165	E1b1b1b2	E3b2b		20326047	aaaacagaagattcaactcac	ttttgacaattgaatcaccagc	340	A->G	132	Underhill et al. 2001
156	M166	J2a2b	J2f2		20224082	tgaataaacttactaatttgccttt	caagcaaatgaatttttctgc	393	G->A	53	Underhill et al. 2001
157	M168	CR	CR	rs2032595	13323385	aatttgaagatgaataactatttgc	aattcagaatgtctcaactgttc	473	C->T	371	Underhill et al. 2001
158	M169	B2b2	B2b2	rs2032594	13323111	aatttgaagatgaataactatttgc	ccaagacccccaaggaactctt	473	T->C	97	Underhill et al. 2001
159	M170	I	I	rs2032597	13357186	tacttcaacacattgactt	ccaattactttcaacatttaagacc	405	A->C	327	Underhill et al. 2001

	SNP	Haplogroup (YCC2008)	Haplogroup (YCC2002)	RefSNP ID	Y-position	Forward Primer	Reverse Primer	PCR Size(bp)	Mutation	Site	Reference
160	M171	A3b2a	A3b2a		13323454	aatttgaagatgaatattcttact	ccagagcccccaggaactctt	473	G->C	440	Underhill et al., 2001
161	M172	J2	J2	rs2032604	13479028	ttgaagttactttatataactaactctt	ataattattactttacagtcacagtga	345	T->G	197	Underhill et al., 2001
162	M173=P241	R1	R1	rs2032624	13535818	aagaaatattgaactgaagattgaat	aggttatctgaactcctcctta	417	A->C	191	Underhill et al., 2001
163	M174	D	D	rs2032602	13463674	acatctcgaatctcttatttgaat	aaaaagcactgacattactctg	348	T->C	219	Underhill et al., 2001
164	M175	O	O	rs2032678	14018100-14018104	ttgagcaagaagaaatagatcacca	cttcattcttcaactatctcaggga	444	-5bp	84-88	Underhill et al., 2001
165	M178	N1c1	N3a		20201143	taagcctaaagacacgtcacaag	caagaggaagcaatgaagagca	514	T->C	220	Underhill et al., 2001
166	M179	D2		rs2032596	13348094	attatcacaagaattacagatcacca	aqacagatttcacactcataatgg	426	C->T	316	Underhill et al., 2001
167	M180=P88	E1b1a		rs2032598	13359735	acactactatctatataatttataaa	taataaagattttctctacataaaca	447	T->C	430	Underhill et al., 2001
168	M181	B	B	rs2032599	13360948	gcctttattttactactttttttttt	aaacataaccaattctttttcat	294	T->C	132	Underhill et al., 2001
169	M182	B2	B2	rs2032601	13378470	tattcagaagacttaagacagatgata	ggaatcatctttataactaagttatcct	364	C->T	38	Underhill et al., 2001
170	M183	E1b1b1b2		rs2032600	13398177	actgagtaaatataactatgaattga	ttccttttaactattattactttcc	427	A->C	324	Underhill et al., 2001
171	M184=USP9Y _{A3178}	I		rs203230	13407557	cactttattttatctctatctctttttc	aaacttaagtaacatctattttctcct	305	G->A	62	Underhill et al., 2001
172	M185	L		rs2032607	13414253	qagatcactatcactgaatgtac	gtcattcattttctacttgaac	430	C->T	89	Underhill et al., 2001
173	M186	M1	M	rs2032681	13432855	ttgcatttactgttctagagagttct	gtacttacttttaagagattagcac	365	1 bp deletion	62	Underhill et al., 2001
174	M188	O3a3b1		rs2032605	13434263	gtattcccttttaagaaacatattga	aagtcctacacaaagtttaatttttc	401	C->T	185	Underhill et al., 2001
175	M189	M1	M	rs2032606	13455099	actctcagctatattttctcattg	gccttttaagcactctgctttt	378	G->T	191	Underhill et al., 2001
176	M190	A3b	A3b	rs2032603	13477921	ctctctcacaagaataagaaatgat	ctctcattgataagcctttt	346	A->G	73	Underhill et al., 2001
177	M191=P86	E1b1a7		rs2032590	13529007	ttgcattttatcagattgaat	gccaggaataattttttatattttc	429	T->G	342	Underhill et al., 2001
178	M192	B2b		rs2032662	13523656	catgagctcttaacattt	aaatccttttgaattttattttt	457	C->T	202	Underhill et al., 2001
179	M193	T		rs2032676	13523900-13523899	ccctgagtaagaaagatgaag	gcctttccattttttgaact	426	4 bp insertion	56	Underhill et al., 2001
180	M194	O1a3a2	O3b		13523944	gcctgagtaagaaagatgaag	gcctttccattttttgaact	426	T->C	101	Underhill et al., 2001
181	M195	E1b1a6		rs2032680	13525930	ccactcagctttctcctgaat	cattcattttatcataaagatca	515	A->G	430	Underhill et al., 2001
182	M196	A2	A2	rs2032591	13540076	taacacacttactactttgatatctct	taaacattacataagaaattctgat	445	C->G	330	Underhill et al., 2001
183	M197	H1a1		rs2032610	13534992	tcaagacatttaattgaattacttcc	aaacacacacctcaactaatcttt	408	T->C	105	Underhill et al., 2001
184	M198	R1a1		rs2020857	13540146	taagatgaaatgtatcatgataacc	taatttcaagaaatttgaattctt	444	C->T	45	Underhill et al., 2001
185	M199	O1a3a3	O3c	rs2032589	13540505-13540504	taagatgaaatgtatcatgataacc	taatttcaagaaatttgaattctt	444	1 bp insertion (extra G)	404	Underhill et al., 2001
186	M200	E2b1a		rs2032593	13540810	gccttcacacttcaagacttttg	qagagaaattatcaagaaacttaaac	429	G->A	318	Underhill et al., 2001
187	M201	G	G	rs2032636	13536923	tatgcatttgaattgaattatctc	gttctgaattgaaggttcaaacg	326	G->T	136	Underhill et al., 2001
188	M202	A3b2		rs2032649	13538886	qgaattcgaaggtttaaag	gccacccacctataatcc	392	T->G	259	Underhill et al., 2001
189	M203	DE	DE	rs2032653	14100931	gaatcccaagctgaagatga	aaattctctactactctcca	503	G->C	248	Underhill et al., 2001
190	M204	R1a1c		rs2032655	14100595	aaagggcgaagatttccag	taagaggaagacttattgaactc	286	T->G	234	Underhill et al., 2001
191	M205	J2b1		rs2032657	14096903	gtataactactatgattgaaagca	ccaaactatgataataaataagga	541	T->A	78	Underhill et al., 2001
192	M206	A2	A2	rs2032656	14096856	gtataactactatgattgaaagca	ccaaactatgataataaataagga	541	T->G	31	Underhill et al., 2001
193	M207	R	R	rs2032658	14091377	aqgaaaaatcaagaaatctccctg	caaaattccaccaagaaactcttg	423	A->G	79	Underhill et al., 2001
194	M208	C2a		rs2032659	14085597	ataaatacaaaaactcctgaatgat	ttaaacagcaaaattactaacaana	507	C->T	352	Underhill et al., 2001
195	M209	O3a3b1		rs2032661	14085184	cactgtcttccacaatgattg	aggtgaattttatattttatctccc	550	A->G	471	Underhill et al., 2001
196	M210	C4a		rs2032660	14085174	cactgtcttccacaatgattg	aggtgaattttatattttatctccc	550	A->T	361	Underhill et al., 2001
197	M211	B2b4b	B2b4b	rs2032663	14054008	caattcactatttgaagaaatcca	gaagctctgattttatttggcag	538	C->T	381	Underhill et al., 2001
198	M212	A2		rs2032664	14036089	tataatcaagttaccaattactgac	tttttaaacattgaattggcaaa	409	C->A	234	Underhill et al., 2001
199	M213=P137	F-R	F-R	rs2032665	14036145	tataatcaagttaccaattactgac	tttttaaacattgaattggcaaa	409	T->C	290	Underhill et al., 2001
200	M214	NO	O	rs2032674	13981319	tattacaaaatgaaacaaagccg	gaatatccacttctactcag	460	T->C	404	Underhill et al., 2001
201	M215	E1b1b		rs2032654	13977218	gtaaaactcaagatatataatccatg	aaaaaaaaaagaaactcactatttaacg	386	A->G	163	Underhill et al., 2001
202	M216	C	C	rs2032666	13946958	ctcaacagatttttataagactga	gaagactctgaactaatgtatcttat	557	C->T	54	Underhill et al., 2001
203	M217	C3	C3	rs2032668	13946727	gcctatttttgaatctcttccat	acctgttgaattttacattttctt	461	A->C	219	Underhill et al., 2001
204	M218	B2a1		rs2032671	13946457	ttgtgaatttttttccatcaatc	ttttataacagatgattagaagag	482	C->T	380	Underhill et al., 2001
205	M219	A3b2		rs2032669	13946309	ttgtgaatttttttccatcaatc	ttttataacagatgattagaagag	482	T->C	232	Underhill et al., 2001
206	M220	A3b	A3b	rs2032670	13946444	ttgtgaatttttttccatcaatc	ttttataacagatgattagaagag	482	A->G	367	Underhill et al., 2001
207	M221	J2b		rs2032667	13945710	qgaaaatgaaagaaagaaata	ttaaactttataacactgacagaaac	324	G->A	200	Underhill et al., 2001
208	M223	J2b			20176695	ttcagcaagaaataacaaagag	cctttttgaactcatgattctt	208	C->T	67	Underhill et al., 2001
209	M224	E1b1b1a1a			20352687	cttcagcaattatttttttgaat	ataatattcttctacaccttctt	301	T->C	193	Underhill et al., 2001
210	M226	S1d		rs9341275	14100841	gaatcccaagctgaagata	tccttcaagcactgaagag	380	C->T	158	Kayser et al., 2006
211	M227	I1b		rs9341274	14100840	gaatcccaagctgaagata	tccttcaagcactgaagag	380	C->G	157	Underhill et al., 2001
212	M230	S		rs9341277	13990766	gatttttaacaatatatacatggcca	acattattgaatgataaattcttcatgc	164	A->T	82	Kayser et al., 2003
213	M231	N		rs9341278	13979118	cctattatctctgaaatgaatga	attccgaattctcatcacttga	331	G->A	110	Cinnioli et al., 2004
214	M236	B1			2709696	taagcgaagatctcactctg	atgaatctcaggaactcaagact	329	G->C	108	Cruciani et al., 2002
215	M241	J2b2		rs8179022	13527853	aaactctgaataaaccatctg	tcaactctcaattcatcctc	366	G->A	57	Cinnioli et al., 2004
216	M242	O		rs8179021	13527976	aaactctgaataaaccatctg	tcaactctcaattcatcctc	366	C->T	180	Cinnioli et al., 2004
217	M253	J1		rs9341296	13532101	caacaataagaggtttttttt	caagctcacctctatgaagtt	400	C->T	283	Cinnioli et al., 2004
218	M254	S1		rs9341297	13532157-13532156	tccttttttataatgaattctac	caagctcacctctatgaagtt	92 or 110	18bp insertion	between 30/31	Kayser et al., 2006
219	M258	I		rs9341301	13532758	tataatgacatatttaaatattgaat	gaacttttgaataaattgacattctc	475	T->C	123	Roots et al., 2004
220	M267	J1		rs9341313	21151206	tatatctgagcgtgtgtccctg	ttatagagacaggtgtgacct	287	T->G	148	Cinnioli et al., 2004
221	M269	R1b1c		rs9786153	21148755	ctaaagatcaagatcttccctttg	aaatttttttcaatttaccag	379	C->T	358	Cruciani et al., 2002
222	M272	T		rs9341308	21148163	caagaggaagacattatgtt	caagcaagatttaagacattt	496	A->G	212	Shen et al., 2004
223	M274	L2b		rs9341310	21147189	qccatcccaagaataaag	ctaaacatgcttcaagcttc	457	C->T	47	Requiere et al., 2006
224	M280	J2b2b		rs13447367	20338150	ccatattctttactttctactctac	gtctttttcattttctatgaac	409	G->A	330	Semino et al., 2002
225	M281	E1b1b1d		rs13447370	20223888	taataaactctacttaattgacttt	caagcaaatgaattttcttgc	393	G->A	247	Semino et al., 2002
226	M284	J2b1			21159845-21159848	qacagtttttcatttaacaga	agcgaacatttcagcattc	399	ACAA deletion	104	Roots et al., 2004
227	M285	G1		rs13447378	21151128	ttatctgaacatttatccctg	tataagagacagatttataccct	287	G->C	70	Cinnioli et al., 2004
228	M286	G2a2		rs13447379	21151187	ttatctgaacatttatccctg	tataagagacagatttataccct	287	G->A	129	Cinnioli et al., 2004
229	M287	G2b		rs13447380	21151158	ttatctgaacatttatccctg	tataagagacagatttataccct	287	A->T	100	Cinnioli et al., 2004
230	M288	B1			2709694	taagcgaagatctcactctg	atgaatctcaggaactcaagact	329	C->A	110	Cruciani et al., 2002
231	M289	J2a6		rs13447368	20338096	ccactcagagatcaaaaattga	gcatttttttgaattagaagcaa	387	G->A	227	Shen et al., 2004
232	M290	E1b1b1c1b		rs13447369	20338213	ccactcagagatcaaaaattga	gcatttttttgaattagaagcaa	387	C->T	344	Shen et al., 2004
233	M294	CR		rs9341317	21154333	catggtccaaagcaattattttttg	gctggtcaaatcttccacagag	507	C->T	305	Shen et al., 2004
234	M295	L		rs9341318	21154439	catggtccaaagcaattattttttg	gctggtcaaatcttccacagag	507	T->C	411	Shen et al., 2004
235	M296	M1		rs9341319	21154509	atttgaaggaagaaatgaatttga	cactatgataagactaagccag	536	C->T	165	Kayser et al., 2006
236	M299	BR		rs13447347	21157894	caagactgaatctatcttttc	taactctacacatgaacat	483	T->G	127	Shen et al., 2004
237	M300	O3a5		rs13447348	21158586	caagcagatctactttcaactc	gtcaaacactcaattcaaaac	500	G->A	153	Shi et al., 2005
238	M304	J		rs13447352	21159241	caaaagtctgaattacag	cttctaaactctatctcattgt	527	A->C	421	Cinnioli et al., 2004
239	M305	A3b2		rs13447353	21159562	aactgtgaacacactgaatga	attacattttgttgcctctact	545	C->T	331	Shen et al., 2004

	SNP	Haplogroup (YCC2008)	Haplogroup (YCC2002)	RefSNP ID	Y-position	Forward Primer	Reverse Primer	PCR Size(bp)	Mutation	Site	Reference
240	M306	R		rs1558843	21159971	qacagttttctatgaacaga	aacaaaactttcagacattc	399	C->A	231	Requeiro et al., 2006
241	M307	I1		rs13447354	21160339	ctttcattactggggaataagc	gaacgaatgtgtgtattgtgc	307	G->A recurrent	202	Rootsi et al., 2004
242	M314	J2b		rs13447442	21162467	gttttcaagactgttcaaga	actttcaacaaatcaactttat	456	A->C	419	Shen et al., 2004
243	M317	L2		rs13447360	21164059	cttttcaactgtatgaacatc	ccttaataaccagagacacaa	292/290	GA del	168	Sendupat et al., 2006
244	M318	J2a7		rs13447372	21154381	catgtgtcaagcaactttattt	gctgtgtcaactcttccacaga	507	T->C	353	Shen et al., 2004
245	M319	J2a8		rs13447373	13977179	gtaaaaactcaagatatacatcccatg	aaaaaaaagaactcactatcttaacg	386	T->A	124	Shen et al., 2004
246	M320	T1		13540161	13540161	taaaatgaaatgtatcagatatacc	taattttcaagaatttttaagtctt	444	T->G	60	Shen et al., 2004
247	M321	J2b2c		rs13447375	13540272	taaaatgaaatgtatcagatatacc	taattttcaagaatttttaagtctt	444	C->T	176	Shen et al., 2004
248	M322	J2a1		rs13447376	13979134	cttattatctctgaaatgtatg	atttcaatttctatgactttg	331	C->A	121	Shen et al., 2004
249	M323	Q1a6		rs13447377	20327106	actgaagaagcactttctga	aataatgtttctgaacacttcc	352	C->T	40	Shen et al., 2004
250	M324	O3a		rs13447361	2881786	taataagaagcacaagaggaag	aacaagaattgtttccaggaat	418	G->C	379	Shi et al., 2005
251	M327	J2a2a1			20363475	ttgaatttcccaagaatttttc	ttcagaagaactgtttttgtatcc	470	T->C	404	Semino et al., 2004
252	M329	E1b1c			2935527	ccagtcttcaattccctctac	gctgtcaaggtgaatttttt	358	G->C	289	Semino et al., 2004
253	M333	O3a6			13356860-13356909	ttcttcacacaaatgccttt	ccaattactttcaacatttaagacc	405 or 406	G insertion	51	Shi et al., 2005
254	M335	R1b1c			13535789	aagaataattgaactgaagaattgat	aggtgttatctgacatccgtta	417	T->A	162	Cinnioglu et al., 2004
255	M339	J2a9			2941367	aggcaggacactgaagagca	caattcccaggatcaagcaat	517	T->G	285	Cinnioglu et al., 2004
256	M340	J2a10			20338087	ccagtcaagcagatcaaaaattg	gcattttctttgaattatagaacaa	386	G->C	218	Cinnioglu et al., 2004
257	M342	G1			21653330	agaagaatttttcaacagggc	tggaatcactttttgcaact	173	C->T	52	Cinnioglu et al., 2004
258	M343	R1b	rs9786184		2947824	tttaacctctcagctctgca	acccccacatctccaag	424	C->A	402	Cinnioglu et al., 2004
259	M346	Q1a3			2947155	agatggaagaagcagaccaa	ttctgtccacatgtgtccgtg	419	C->G	33	Sendupat et al., 2006
260	M347	C4			2937478	aagtgaaggtatatttcaacc	gqcaacaataagcagatagctc	558	A->G	374	Hudiashev, 2007
261	M349	L2a			2953277	tggaattaaaagtgtctcatg	caaaattgaataagcattagct	493	G->T	209	Cinnioglu et al., 2004
262	M353	M2			15818661	gaatgactcatgtgtaact	tactatcagaaccaccaag	215	G->A	131	Kayser et al., 2006
263	M356	C5			2948203	ccccgtttttctctctgcc	cacataactggaatgtatcata	459	C->G	185	Hudiashev, 2007
264	M357	L3			2948252	ccccgtttttctctctgcc	cacataactggaatgtatcata	459	C->A	234	Sendupat et al., 2006
265	M365	J1b			2948678	ccttcattgaagctgtactac	tatatctttgaatgaagatg	274	A->G	246	Cinnioglu et al., 2004
266	M367	J1e1			2948628	ccttcattgaagctgtactac	tatatctttgaatgaagatg	274	A->G	196	Cinnioglu et al., 2004
267	M368	J1e1			2948632	ccttcattgaagctgtactac	tatatctttgaatgaagatg	274	A->C	200	Cinnioglu et al., 2004
268	M369	J1e2			2948477	ccttcattgaagctgtactac	tatatctttgaatgaagatg	274	G->C	45	Cinnioglu et al., 2004
269	M370	H1b			2948598	ccttcattgaagctgtactac	tatatctttgaatgaagatg	274	C->G	166	Cinnioglu et al., 2004
270	M377	G2c			13536827	tatgacttttgaatgaatg	gtttcgaatgaagaattcaaacg	326	A->G	40	Sendupat et al., 2006
271	M378	O1b			13536901	tatgacttttgaatgaatg	gtttcgaatgaagaattcaaacg	326	A->G	114	Sendupat et al., 2006
272	M379	J2b2			13536923-13536924	tatgacttttgaatgaatg	gtttcgaatgaagaattcaaacg	326	GT del	136-137	Sendupat et al., 2006
273	M387	M2			2800274	gataaacttctcactcagatc	tatgaatttcaaggaatgag	459	T->G	138	Kayser et al., 2006
274	M390	J1c			2948678	ccttcattgaagctgtactac	tatatctttgaatgaagatg	275	A ins	246	Semino et al., 2004
275	M407	C3d			2810408	gttataccctgctctaaagtactc	gtagaagatggaacttccacatgtac	418	A->G	149	Sendupat et al., 2006
276	M410	J2a			2811678	caatcattgaacttaagtctgaatccc	actggaactcttttgaagaagaattg	395	A->G	115	Sendupat et al., 2006
277	M419	J2a11			13977300-13977304	caaaaactcaagatatacatcccatg	aaaaaaaagaactcactatcttaacg	386/381	AAAAG del	244	Sendupat et al., 2006
278	M427	F2			17601991	ccttcacttcaagaactgtctc	taagaagaacaaaatgtctctatg	400	C->T	229	Sendupat et al., 2006
279	M428	F2			17601953	ccttcacttcaagaactgtctc	taagaagaacaaaatgtctctatg	400	G->A	267	Sendupat et al., 2006
280	M450	I1	rs17316597		7608915	aggtctggcattgagcttcc	agtgatgcaagagattgagcc	341	G->A	193	Underhill et al. 2007
281	YAP	DE	DE			cagggaagataaaagaata	aagccactattgaacacact	599(Alu+)	Alu- -->Alu+		Hammer and Horai 1995
282	P1	E1b1a	E3a		20071555	aggaagaatggaagataaga	actctaaaaggggaatggaat	858	C->T	230	Hammer et al. 1998
283	P2	E1b1	E3		20070219	gatacaaatggaagaacact	ctaaaaactggaaggaagaaa	536	C->T	153	Hammer et al. 1998
284	P3	A2	A2		20069973	gatacaaatggaagaacact	ctaaaaactggaaggaagaaa	536	G->A	397	Hammer et al. 1998
285	P4	A2	A2		21907102	taattctcagaagaatttttgc	gaagatcataatccgaagct	160	C->T	108	Hammer et al. 2001
286	P5	A2	A2		20303745	aacccctgccacaataacat	tctgaacccctgagaagaatc	624	C->T	36	YCC, 2002
287	P6	B2b1	B2b1		6828265	ctgaagaatgacattttcta	ccatctggtcctaatgttga	122	G->C	83	Hammer et al. 2001
288	P7	B2b4	B2b4	25750998; 25030181; 23396433		atgcctacaaaatgacac	ccaacaatattgcacaaatctc	327	T->C	60	Hammer et al. 2001
289	P8	B2b4a	B2b4a	22456047; 22720971; 21958753		aggaagaatggaagaacac	catgacattctgtcatgtct	661	G->A	461	Hammer et al. 2001
290	P9.1	CR	CR		13435843	tatgataaatataatttcaa	tctgaactggaacacataa	475	C->A	319	Hammer et al. 2001
291	P9.2	E1b1a7a1			13435843	tatgataaatataatttcaa	tctgaactggaacacataa	475	A->C	319	present paper
292	P12	D2a1a1	D2a		25030206, 23396458	atgcctacaaaatgacac	ccaacaatattgcacaaatctc	327	A->G	84	YCC, 2002
293	P14	F-R	F-R		15907992	tttcagaattttctctact	tttttttttaatatagaag	741	C->T	361	Hammer et al. 2000
294	P15	G2a	G2		21653414	agaagaatttttcaacagggcg	tggaatcacttttgcaact	191	C->T	138	Hammer et al. 2000
295	P16	G2a1	G2a		19434578; 19128376	aaqctcctcatgtacacac	taactcttataagcaaccccg	169	A->T	105	Hammer et al. 2000
296	P18	G2a1a	G2a1		25751219; 25029753; 23396005	tgaaatcgaattcagaagtaq	ccaacaatattgcacaaatctc	697	C->T	208	YCC, 2002
297	P19	I	I		22456063; 22720988; 21958769	aggaagaatggaagaacac	catgacattctgtatgtct	661	T->G	478	Hammer et al. 2001
298	P20	G1a	G1		25029911; 23396163	tgaaatcgaattcagaagtaq	ccaacaatattgcacaaatctc	697	C del	158	YCC, 2002
299	P21	N1c1a	N3a1		25031163; 23397415	taagcctttatctgaattacag	gtgctgaagttccaaatata	819	C->A	759	YCC, 2002
300	P22=M104	M1b1	M2		8679592	ccttcagaagactgtatcga	aggaacccaattattgcacac	369	G/A->A	169	Hammer et al. 2001
301	P25	R1b1	R1b	rs150173	23396703; 25030451; 25751227	atgcctacaaaatgacac	ccaacaatattgcacaaatctc	327	C->A	79	Hammer et al. 2001
302	P27.1	P	P	rs9786896	8680377; 8679538	ccttcagaagactgtatcga	aggaacccaattattgcacac	369	G/G->G/A	115	Hammer et al. 2001
303	P27.2=DYS257	O3a1		rs9786896	8680377; 8679538	ccttcagaagactgtatcga	aggaacccaattattgcacac	369	G/G->G/A	115	Shi et al., 2005
304	P28	A2b	A2b		20340503	gaagcaatactctgaaaagt	tttgaagagacattattctc	519	C->T	410	Hammer et al. 2001
305	P29	E	E		13007215	gataagacttttgaaaaaga	agccaataactcaagctatcac	684	A->C	534	YCC, 2002
306	P30	I1	I1a		13006761	gataagacttttgaaaaaga	agccaataactcaagctatcac	684	G->A	80	YCC, 2002
307	P31	O2	O2		13005251	taaggtctcatgtttccctat	gcactctcactgtgaatgtt	703	T->C	126	Hammer et al. 2001
308	P32	B2a1a	B2a1		13005252	taaggtctcatgtttccctat	gcactctcactgtgaatgtt	703	-T	127	YCC, 2002
309	P33	C2a1	C2a		25031122; 23397374; 25750056	taagcctttatctgaattacag	gtgctgaagttccaaatata	819	T->C	718	Hammer et al. 2001
310	P34	M1a	M1		22076575; 22100115; 22456098	aggaagaatggaagaacac	catgacattctgtcatgtct	661	G->A	512	YCC, 2002
311	P35	M1	M		25750785; 25030393; 23396645	tgaaatcgaattcagaagtaq	ccaacaatattgcacaaatctc	697	T->C	641	YCC, 2002
312	P36.1	A2			13006449	tgaaagaacataaattacaca	taagtcttaattatcacaga	637	G->A	217	Hammer et al. 2003
313	P36.2	O1	O		13006449	tgaaagaacataaattacaca	taagtcttaattatcacaga	637	G->A	217	YCC, 2002
314	P37.1	D2	D2		13001692	catctatgaccttaaga	ttccaaaatcagaacttt	447	T->C	135	YCC, 2002
315	P37.2	J2a	I1b		13001692	catctatgaccttaaga	ttccaaaatcagaacttt	447	T->C	135	YCC, 2002
316	P38	I1	I1		12994387	gaagaaaaagatgaagaacc	gaagaaaaagatgaagaacc	491	A->C	197	YCC, 2002
317	P39	C3b	C3b		12994589	gaagaaaaagatgaagaacc	gaagaaaaagatgaagaacc	491	G->A	399	YCC, 2002
318	P40	I1	I1a1		12994402	gaagaaaaagatgaagaacc	gaagaaaaagatgaagaacc	491	C->T	212	YCC, 2002
319	P41.1	D2	D2		13001679	catctatgaccttaaga	ttccaaaatcagaacttt	447	T->C	122	YCC, 2002

	SNP	Haplogroup (YCC2008)	Haplogroup (YCC2002)	RefSNP ID	Y-position	Forward Primer	Reverse Primer	PCR Size(bp)	Mutation	Site	Reference
320	P41.2 =M359	I2a1	I1b1		13001679	catctatgaccttgaaga	tccaaaaatcacagacttt	447	T->C	122	YCC, 2002
321	P42	D2a1a	D2a		12991737	gcccacttgaactcca	aggaatgataagctcaactctg	481	G->A	245	YCC, 2002
322	P43	N1b	N2		20340361	gaagcaataactctgaaaaagt	tttgaagggacattattctc	519	G->A	268	YCC, 2002
323	P44	C3	C3		13005259	taagctatctatgttccctat	gcactctcactgtgaatgatt	703	G->A	134	YCC, 2002
324	P45	F2b1a1			20340135	gaagcaataactctgaaaaagt	tttgaagggacattattctc	519	G->A	42	Hammer et al. 2003
325	P46	F1b1a			20340240	gaagcaataactctgaaaaagt	tttgaagggacattattctc	519	C->T	147	Hammer et al. 2003
326	P47	D3a			13007176	qtatgaaactgtttgaaaaaaga	anccaaatccagctcatcac	684	C->T	495	Hammer et al. 2003
327	P48	O1a4			13006660	taaaagacacataaagtacaca	taagtccatttaactctacaqa	637-638	T ins	428	Hammer et al. 2003
328	P49	O2b			13006415	taaaagacacataaagtacaca	taagtccatttaactctacaqa	637	A->T	183	Hammer et al. 2003
329	P50	B2a1a			13005250	taagctatctatgttccctat	gcactctcactgtgaatgatt	703	G del	125	Hammer et al. 2003
330	P51	M1a1			13002050	aaagtctacattttcga	acaqaatgaacacacaatgc	350	T->C	64	present paper
331	P53.1	C3e			13001657	qatctacacctccatcta	acatggtcatctataagctcc	476	T->C	112	present paper
332	P53.2	D2a1b1			13001657	qatctacacctccatcta	acatggtcatctataagctcc	476	T->C	112	present paper
333	P54	C2a2			13001667	qatctacacctccatcta	acatggtcatctataagctcc	476	A->G	122	present paper
334	P55	C6			12998960	tcatacctattgattgttc	ttctctgatacagaagtgq	367	C->A	142	present paper
335	P56	J1d			12997346	atggataattgatagataaataat	ctcactatcatatactattctcaa	524	A->G	143	Hammer et al. 2003
336	P57	S1a			12997074	agctcattctctcatg	aatcactatcatgtcattatc	519	T->G	312	Hammer et al. 2003
337	P58	J1e		rs34043621	12996675	acgtccaccatctcaac	ggacaaggggacagatt	306	T->C	189	Hammer et al. 2003
338	P59	F1b1a8a2			12994545	gaagcaaaaagtgaaaaacc	ggacaaggggacagatt	491	A->G	355	Hammer et al. 2003
339	P60	K2			12994479	gaagcaaaaagtgaaaaacc	ggacaaggggacagatt	491	T->C	289	Hammer et al. 2003
340	P61	S1b			12992202	ccacttccctctcacca	ctctacactgtatgaatg	525	G->A	275	present paper
341	P62	C3f			20303337	aacccttccacaaatacat	tctggaacccctggaagatc	624	C ins	443	present paper
342	P63	N1b1			20303215	aacccttccacaaatacat	tctggaacccctggaagatc	624	C ins	566	Hammer et al. 2003
343	P65	F1b1b1a2b			25030262	tgaatctgaattcacagatga	ccaacaatatactcacaatctc	697	C->A	510	present paper
344	P66	R1b1b2f			25030321	tgaatctgaattcacagatga	ccaacaatatactcacaatctc	697	G->A	569	present paper
345	P67	N1c1b			25030358	tgaatctgaattcacagatga	ccaacaatatactcacaatctc	697	T->C	606	Hammer et al. 2003
346	P68	E2			13435749	tatgataagtgatgaattcaa	tctgactgaaacacataa	475	G->A	290	Hammer et al. 2003
347	P69	P		rs7892898	13435814	tatgataagtgatgaattcaa	tctgactgaaacacataa	475	T->C	225	Hammer et al. 2003
348	P70	B2b4a			20071656	agaaagaaataactgatttcc	aaagccactattgaacacact	912	G->A	266	Hammer et al. 2003
349	P71	A3b1a			20071466	agaaagaaataactgatttcc	aaagccactattgaacacact	912	T->C	457	present paper
350	P72	F1b1b1f			20070241	qatctacacataaagatga	ctgaattttgaatataatgc	1810	G->A	794	Hammer et al. 2003
351	P75	F1b2			20340386	gaagcaataactctgaaaaagt	tttgaagggacattattctc	519	G->A	293	Hammer et al. 2003
352	P76	G1b			20340415	gaagcaataactctgaaaaagt	tttgaagggacattattctc	519	G->C	322	present paper
353	P77	T2			13435596	tatgataagtgatgaattcaa	tctgactgaaacacataa	475	G->A	72	Hammer et al. 2003
354	P78	J2b3			6800387	ttatttgcctcactttga	tctgaagaatagtcagaatgt	1135	C->T	248	present paper
355	P79	K3			6800377	ttatttgcctcactttga	tctgaagaatagtcagaatgt	1135	T->C	258	Scheinfeldt et al., 2006
356	P80	H2a			6799899	ttatttgcctcactttga	tctgaagaatagtcagaatgt	1135	G->C	736	Wilder et al. 2004a
357	P81	J2a12			6799856	ttatttgcctcactttga	tctgaagaatagtcagaatgt	1135	C->T	779	present paper
358	P82	A1a			6799826	ttatttgcctcactttga	tctgaagaatagtcagaatgt	1135	G->T	809	Wilder et al. 2004a
359	P83	S1c			6799772	ttatttgcctcactttga	tctgaagaatagtcagaatgt	1135	C->T	863	Wilder et al. 2004a
360	P84	J2b2d			6799767	ttatttgcctcactttga	tctgaagaatagtcagaatgt	1135	C->T	868	Wilder et al. 2004a
361	P85	B		rs9341290	13529972	ttttcactttccacttttcat	agactcttatatactatacta	423	T->C	43	Wilder et al. 2004a
362	P87	M1b			13529113	acacagagcagaataagtaa	actaacctcaccacatct	676	A->C	224	Scheinfeldt et al., 2006
363	P89	O1a5			13359859	acattacaagaccttgat	tacttaacaatactccc	857	G->T	258	Wilder et al. 2004a
364	P90	B			13359973	acattacaagaccttgat	tacttaacaatactccc	857	C->T	372	Wilder et al. 2004a
365	P91	F1			13359993	acattacaagaccttgat	tacttaacaatactccc	857	C->T	392	Wilder et al. 2004a
366	P92	C5a			13360247	acattacaagaccttgat	tacttaacaatactccc	857	C->T	646	Wilder et al. 2004a
367	P93	O3a		rs34248257	13378896	aaagagataataaagatggtg	cttattttgtttcagaagcagg	1344	C->T	316	Wilder et al. 2004a
368	P94	M1a2			13379075	aaagagataataaagatggtg	cttattttgtttcagaagcagg	1344	G->A	495	Wilder et al. 2004a
369	P95	J2b4			13379100	aaagagataataaagatggtg	cttattttgtttcagaagcagg	1344	G->T	520	Wilder et al. 2004a
370	P96	F3			13379137	aaagagataataaagatggtg	cttattttgtttcagaagcagg	1344	C->A	557	Wilder et al. 2004a
371	P97	A			13395667	tgaagagataaagatggtg	ttttaatgaaacaccgtga	954	T->G	420	Wilder et al. 2004a
372	P98	R1a1d			13395751	tgaagagataaagatggtg	ttttaatgaaacaccgtga	954	C->T	504	Wilder et al. 2004a
373	P99	D3			13395780	tgaagagataaagatggtg	ttttaatgaaacaccgtga	954	C->T	533	present paper
374	P100	A3b1			20362081	tgaaggtgaatgtttactaagatc	ctctgataaatcagtttccacac	506	G->A	285	Wilder et al. 2004a
375	P101	O3a3c2			20362006	tgaaggtgaatgtttactaagatc	ctctgataaatcagtttccacac	506	G->A	360	Wilder et al. 2004a
376	P102	A3b1a			13987411	attcagatctctccaaaagtc	gaaaagcaaaaataaaatataq	610	A->C	198	Wilder et al. 2004a
377	P103	O3a4a			13987225	attcagatctctccaaaagtc	gaaaagcaaaaataaaatataq	610	G->C	384	Wilder et al. 2004a
378	P104	F1			13987219	attcagatctctccaaaagtc	gaaaagcaaaaataaaatataq	610	G->A	390	Wilder et al. 2004a
379	P105	N1c			13932356	ttattccaccagcactgttta	agacacaaatgataaggtctt	1090	G->A	580	Wilder et al. 2004a
380	P106	O1a3a3			13932316	ttattccaccagcactgttta	agacacaaatgataaggtctt	1090	G->A	620	present paper
381	P107	R1b1b2a2			13329287	ctgattattcttttctacctga	gttatccagaaacatgcc	1081	G->A	268	Wilder et al. 2004a
382	P108	A1			13935641	attctgtgttctcttttatt	acttcagaataaatgtct	858	G->A	173	Wilder et al. 2004a
383	P109	I1c			13935399	attctgtgt tctcttttatt	acttcagaataaatgtct	858	G->A	415	Wilder et al. 2004a
384	P110	E1a2			13935117	attctgtgt tctcttttatt	acttcagaataaatgtct	858	G->A	697	Wilder et al. 2004a
385	P111	B2a2a			13935056	attctgtgt tctcttttatt	acttcagaataaatgtct	858	C->T	758	Wilder et al. 2004a
386	P112	B2c			20340313	gaagcaataactctgaaaaagt	tttgaagggacattattctc	519	G->A	220	Wilder et al. 2004a
387	P113	F1b1a7a3a			6800171	ttgtttgcctcactttga	tctgaagaatagtcagaatgt	1135	T->G	464	Wilder et al. 2004a
388	P114	A1b			13530049	ttttcactttccaaacttttcat	agactcttatatactatacta	423	G->A	120	Wilder et al. 2004a
389	P115	F1b1a7a2			13378644	aaagagataataaagatggtg	cttattttgtttcagaagcagg	1344	C->T	64	Wilder et al. 2004a
390	P116	F1b1a7a3			13379084	aaagagataataaagatggtg	cttattttgtttcagaagcagg	1344	A->G	504	Wilder et al. 2004a
391	P117	M3			13329087	ctgattattcttttctacctga	gttatccagaaacatgcc	1081	G->T	68	Wilder et al. 2004a
392	P118	M3			13529200	acacagagcagaataagtaa	actaacctcaccacatct	676	C del	311	Wilder et al. 2004a
393	P119	N1c1c			13435650	tatgataagtgatgaattcaa	tctgactgaaacacataa	475	G->A	126	present paper
394	P120	D2a3			13935394	attctgtgt tctcttttatt	acttcagaataaatgtct	858	G->T	420	present paper
395	P121	C1a			6799857	ttgtttgcctcactttga	tctgaagaatagtcagaatgt	1135	G->A	778	present paper
396	P122	C1			13360126	acattacaagaccttgat	tacttaacaatactccc	857	C->A	525	present paper
397	P123	IJ		rs17315821	17676255	agagtgatataatgaagtgata	cttagaatttttttttctgtg	417	T->C	257	present paper
398	P124	IJ		rs17315772	17547696	ttgaatctttctataatgtgtaa	aaaacaagaggaataaagaacat	325	A->C	169	present paper

	SNP	Haplogroup (YCC2008)	Haplogroup (YCC2002)	RefSNP ID	Y-position	Forward Primer	Reverse Primer	PCR Size(bp)	Mutation	Site	Reference
399	P125=M429	IJ		rs17306671	12541334	tatttatttatgatattgaacagt	taacaatataaggtttttcca	491	T->A	288	present paper, Underhill et al.2007
400	P126	IJ		rs17250163	19685158	ctctcattttatctccagaca	ccctgttttctcttctact	295	C->G	73	
401	P127	IJ		rs7892893	8650752	tttccaccacacgaactcgc	aactgcctctccacaaagact	362	C->T	213	present paper
402	P128	K-R		rs17250121	19296941	cacctgtattgaatgaagaaa	taqacaacataaaggaatagata	447	C->T	262	present paper
403	P129	IJ		rs17306699	12654593	ggaatagaataaagatgaataaata	atggaataaataatgtgactct	464	A->G	258	present paper
404	P130	IJ		rs17250887	8618969	cacttactgaacacacacaca	ctccaaagtattacacagac	513	A->T	233	present paper
405	P131	K-R		rs9786043	13982257	taaatctaaaqaqaaaagtactt	tcctccatcataaagaatataaa	199	C->T	108	present paper
406	P132	K-R		rs3853054	8739843	aaacatcattacaactcataaq	ctaatcaaaaqaaaqaaaacta	337	G->T	76	present paper
407	P133	F-R		rs16980711	10476740	ttcaaaqacacatcaaaactaa	caaccttcaaaacttcaacaa	465	G->A	290	present paper
408	P134	F-R		rs9786877	7455806	aaacaaagtgaqaaqacagaag	gattttacactgaatgaagac	535	C->G	252	present paper
409	P135	F-R		rs9786502	20078244	tgaagaaqaaqaaacaaqatag	acacaatgaagcaatgaagac	480	C->T	261	present paper
410	P136	F-R		rs9785908	21450035	caagcattatgaacttatatga	ttgttttgaactattttttctt	459	T->G	199	present paper
411	P138	F-R		rs16980478	12709284	tccttgaatgaatgaataatgcc	agggataactcaaatccaac	212	T->C	48	present paper
412	P139	F-R		rs1980459	142179559	taqtattctgtatatacttttga	taqtatgaacacacttatga	408	G->A	181	present paper
413	P140	F-R		rs9786636	15821369	aagacagattctcattactga	ttttttccacttccacttaag	459	G->C	213	present paper
414	P141	F-R		rs9306845	7001218	ttactttctctatgtccagc	ctcactctgtgtgtatga	480	G->A	343	present paper
415	P142	F-R		rs4988808	7278079	gccagatgtttttttctttga	ctctatctcaatacattcaac	788	G->A	322	present paper
416	P143	CF		rs4141886	12707867	gaggaqacaaaacacagac	aaacaaagtattcaacattagac	564	G->A	399	present paper
417	P144	DE		rs9786431	15520850	tactcctctctatgaatga	cactgtctgtatcatttga	463	G->A	292	present paper
418	P145	F-R		rs17842387	8484089	gcacacagactctctcag	cccaacatcaacttattccac	950	A->G	456	present paper
419	P146	F-R		rs16981340	8662415	caqtgtgaagctgtttga	gaactgtctgaaggaagactga	541	C->T	270	present paper
420	P147	E1		rs16980577	19542808	attcaagaqaaaacaaaagaggg	aataatgaatgaqaaaatactaaa	548	T->A	211	present paper
421	P148	F-R		rs16980396	17859009	ttaccagagctttttatgctc	atcactcagagactatccag	997	C->T	749	present paper
422	P149	F-R		rs16980391	17087870	aaagaactcctcagaagcac	ttcaattcaatttccatccta	413	G->A	184	present paper
423	P150	E		rs9786893	15355833	qaataatgaataatgaagat	atgaatactaaagacacact	979	C->A	498	present paper
424	P151	F-R		rs9786707	8740661	aatcaacagctcccaatataag	qacaaqaaqaaqaaacacaaq	282	T->C	160	present paper
425	P152	E		rs9786634	13174651	gtatcttatgatgaatttga	ctatgaagatgaatgaag	307	G->C	70	present paper
426	P153	DE		rs9786479	17070436	gtcactctatttcccttca	agtttccctctcttctact	736	T->G	501	present paper
427	P154	E		rs9786357	18009501	ttcttctgaatttatctgttga	ctctctgtcttcttcttctat	682	G->T	484	present paper
428	P155	E		rs9786301	14847931	gccacagacaaagataatga	tttagaccagagatgaagac	566	G->A	441	present paper
429	P156	E		rs9786126	15929411	ctccctcattcagaagactga	atttgaatttctattttacatga	488	A->G	237	present paper
430	P157	F-R		rs9786095	22769319	caqtgaagaaqaaattacac	tttttgaatgaagctatgac	480	T->C	242	present paper
431	P158	F-R		rs9785913	16002907	caagatacaaaataaagcaatga	gaagacacacagatcccc	606	C->T	501	present paper
432	P159	F-R		rs9785905	16606645	qacaaagctctaaagcagaagga	gataagagtttgaagcagaag	562	C->A	344	present paper
433	P160	F-R		rs9306848	8534189	taagacagcagaagattac	gtatgaagacatcaaaaataag	257	A->C	20	present paper
434	P161	F-R		rs16980495	16687485	atacaagaaqaaattgaatgc	aaagattttttatgtatttc	818	G->A	453	present paper
435	P162	E		rs7067483	6060464	gaagatttgaagacataag	gtataaacactgaaaaaatgac	645	T->C	189	present paper
436	P163	F-R		rs4589047	14751710	tattgaataaagactgaagac	gaagaaagaaqaaagatga	331	A->T	144	present paper
437	P164	O3a3b2		rs17316007	12511232	tatcactctcaatagaacac	gcattttccattctattctct	857	T->C	271	present paper
438	P165	DE		rs16980598	17880310	cattttgaagtgaagtgaag	caaagactgtgaatactga	194	G->A	94	present paper
439	P166	F-R		rs16980499	15765412	gttggtcattctgtctcga	tgatgtcctgtgctcttc	622	C->T	287	present paper
440	P167	DE		rs9786489	10461457	atccatagaataatgaataaagatga	ccccaacacatgaacaaag	971	G->T	485	present paper
441	P168	E		rs16980574	20077971	caaagaaatattgaagttca	gaataagcagaagatttga	375	G->C	69	present paper
442	P169	E		rs16980548	21327965	gaactgtcttttctctcca	agttgaattttccagatcca	187	C->T	32	present paper
443	P170	E		rs9786025	13530916	tcctgtactctttcagac	cttttattactcttttctct	548	G->A	104	present paper
444	P171	E		rs17842518	21853359	gtaacatctcaaaagaatacaga	attattcccaagccaccact	344	G->T	56	present paper
445	P172	E		rs16981311	7025215	ttaccctaatcacatctga	gaactccaagtgaagacac	178	C->T	56	present paper
446	P173	E		rs16981308	7055523	acaaatcaacagaacagaagac	tctaagaactcttccactga	457	A->G	232	present paper
447	P174	E		rs16980360	14318720	tactcttgaactgtatgaac	gccttctactcttctgaac	401	G->A	51	present paper
448	P175	E		rs9786191	13313471	gcattttgttctgaactctga	gtatctctactctgaactga	448	G->A	125	present paper
449	P176	E		rs7067279	14444918	acatttttactcagaagaaag	gtgctatttccccctctga	230	T->G	33	present paper
450	P177	E1b		rs16980473	12669846	ttccctcagctcccaag	ttccaccaacatttccacga	203	C->T	93	present paper
451	P179	E1b1		rs16980621	12570308	ctgaacacagagatgaagac	cataaacatttgaagataagac	480	A->C	218	present paper
452	P180	E1b1		rs9786035	17110668	taagatgaacataagacaaac	caacaaacagaagataagac	1256	G->A	749	present paper
453	P181	E1b1		rs9785940	15903505	ccctcttctcttccatc	acacatttccaccctgttagc	592	C->G	355	present paper
454	P182	E1b1a		rs16980394	17745841	tccagttactcttcaagcc	caagttatgccattatattga	837	G->A	416	present paper
455	P183	DE		rs16980749	7392132	ctcactatctgaactgaac	atccttcttactctctcc	289	C->T	166	present paper
456	P184	C			7278128	acccaagatttttttctttga	ctctatctcaatacattcaac	788	T->C	371	present paper
457	P186	O		rs16981290	7628568	ttcaatgtcagacttgaag	ccactctcactctctga	333	C->A	95	present paper
458	P187	F-R		rs17174528	9168252	caacagaagaaagactcaagag	tactatccccaaaagatgac	488	G->T	178	present paper
459	P188	NO		rs16980610	22043750	gataagatgaatccaagctc	gaagaaagaaagcccaatga	184	G->A	134	present paper
460	P189	E1b1a		rs9786819	12707977	gaggaqacaaaacacagac	aaacaaagtattcaacattagac	564	G->A	509	present paper
461	P190	D2			16606643	qacaaagctctaaagcagaagga	gataagatttgaagcagaag	562	A->G	342	present paper
462	P191	O		rs16980601	13924509	cttctctataacacactctc	ccatccactactcattgt	173	A->G	80	present paper
463	P192	NO		rs1698064	32077478	caagtgaatgattatgaagc	ttagaaggaataaagaaagc	361	A->G	122	present paper
464	P193	NO		rs16980426	20673609	aaaagtataaatacaacaggaac	gaacaaacacccaagggac	431	T->G	142	present paper
465	P194	NO		rs16980363	14712374	agattgaatactgtgactctga	gattgtcttctgaatttttc	368	C->G	113	present paper
466	P195	NO		rs2196155	21074650	gccttttatttccaccatttga	tacataagagatgatttccca	598	A->G	299	present paper
467	P196	O		rs917759	14263707	aatgaagatgaagacacattga	ggattgtataagcgaagac	641	C->A	554	present paper
468	P197	O3a		rs17276358	17688857	tagtcaagaagcagaataagc	ttcaataaacaacagataagga	450	G->T	177	present paper
469	P198	O3		rs17269816	15563165	gccttttatttctattgaatga	ctttgtatgattgaattccc	355	T->C	198	present paper
470	P199	O3a		rs17269928	17156436	ctttgaacacagattcttca	taacccaaggaatgaatgaag	556	A->G	222	present paper
471	P200	O3a		rs17316592	17069399	tatagaagcactattttttga	caagaaagctgtgaacttc	768	T->G	393	present paper
472	P201=IMS- JST021354	O3a3		rs2267801	2888196	acatttatttcttcttcttc	catttatttcttcttctt	949	T->C	464	present paper
473	P202	S			12511024	ttcactctcaatagaacac	gcatttttcatctattctct	857	T->A	241	present paper
474	P203	O1a1		rs13447354	21160339	ttctcactgaattgaataatctga	aaacaaagtgtctattattga	262	G->A recurrent	157	present paper
475	P204	S			3605172	gaataacacactcaactcac	tttccaaagtactaataatgt	528	G->T	324	present paper
476	P207	P		rs9786896	8679538	cacatctcacaatctctc	gaactatactcaatctccacag	335	G->A	147	present paper
477	P209	J		rs17315835	17688729	taatcaagaagcagaataagc	ttcaataaacaagataaagga	450	T->C	49	present paper

	SNP	Haplogroup (YCC2008)	Haplogroup (YCC2002)	RefSNP ID	Y-position	Forward Primer	Reverse Primer	PCR Size(bp)	Mutation	Site	Reference
478	P211	E1b1a			2723707	caatctatgaacagtgaatg	aaqaaaacgaactgcaac	731	T->A	295	present paper
479	P212	I			3605070	ggataacacactcaactcac	tttccagaactcctaataatgt	528	T->A	222	present paper
480	P214=M436	I2b		rs17315680	17256887	taaacacacatcaaaaaaac	tattttattgaatgttgaagc	971	G->C	784	present paper, Underhill et al.2007
481	P215=M438	I2		rs17307294	15148198	taagtattttctactctatg	cacttgaattttttttttttga	487	A->G	261	present paper, Underhill et al.2007
482	P216	I2b		rs17306657	12502338	ggaacttgaatcacaagaa	gaagattatgtcattagcgaac	646	C->G	253	present paper
483	P217	I2b		rs7892900	7688484	acaattcatcaataaaggtt	gtcagcattcacacaagat	372	C->T	83	present paper
484	P218	I2b		rs7067532	16003024	cacacatcaacacaaactc	gcacaccttgaagaaagga	576	T->G	287	present paper
485	P219	I2b		rs17221964	14027245	atacatatacaaacgaactcaa	atgaataaattatgaacagaa	597	T->G	469	present paper
486	P220	I2b		rs17316910	22885057	tttctcaagctgactctc	attctctgaactggtatga	701	G->T	491	present paper
487	P221	I2b		rs17316729	8413707	gaacttcttgaactctct	caaaaaaagaatctaagtatga	1095	C->A	957	present paper
488	P223	I2b		rs17222244	15208728	gtctatccaggtcaagaat	cctcaatgcttcaattcatttga	709	C->G	452	present paper
489	P224	R		rs17307398	15795387	ttgtattgtactttttatga	gaactatctctcaagcaatct	674	C->T	374	present paper
490	P225	R1		rs17307070	14099736	gttataccattcttatttca	gcctgatatttttaacctaa	562	G->T	256	present paper
491	P226	P		rs17250992	8905380	aaqaagatgaactcgaataaa	gtacaaaattcattagaatgac	522	C->T	422	present paper
492	P227	R		rs4481791	19869094	gtattcagtagaccacctc	ccacattttcttatccagtc	701	G->C	334	present paper
493	P228	P		rs17222419	16017731	cagaatcagaactgggggtg	gtccgtgagaatgctgtgc	520	C->T	321	present paper
494	P229	R		rs9786915	8110994	tgaagtgtgtgattttatga	aagcctgtactaccaccc	701	G->C	344	present paper
495	P230	P		rs9786781	15979506	tcaccagagatcatagatttca	cactgtcaagcattatacttc	852	G->A	488	present paper
496	P231	R1		rs9786465	10599615	ttcttccaacacgaatgaatg	ccacaacacataagacaaatg	478	A->G	248	present paper
497	P232	R		rs9786261	21444520	tacaatgtcttgaagggtg	ggaaaagttctcaaaagtatca	519	G->A	418	present paper
498	P233	R1		rs9786232	19625746	tcagcaggaagacaagagag	ctgggattacaggcgtgag	793	T->G	445	present paper
499	P234	R1		rs9786197	19577276	acaagctgaactcacactcc	tcactcaagtgaattgaacag	389	T->C	351	present paper
500	P235	P		rs9786119	17707606	ttcaaggagaagagaggaag	ataaaactggagatgacagag	595	A->G	435	present paper
501	P236	R1		rs9785959	16291572	cttgagatttgaagagagatg	gtgttttttttattttgtctattg	306	C->G	234	present paper
502	P237	P		rs9785740	8394875	acttctgaagctctgaactc	ctcgaattctcgtttttatga	765	A->G	278	present paper
503	P238	R1		rs9785717	7831131	ctttcacctgtcagcttc	taccacacattctctacc	888	G->A	485	present paper
504	P239	P		rs8181264	16390624	tatatctggtgaaacaaagc	tcaggggaaagaggaatgac	563	G->C	426	present paper
505	P240	P		rs6530605	13108816	aaaaggagcccccataaccg	gccaaaaacaaatgataagaa	831	T->C	441	present paper
506	P242	R1		rs7067478	7707357	gctgtttctctctctatg	ataaatcccaatcaataaag	456	G->A	170	present paper
507	P243	P		rs4141564	8745083	tcagtgaacacattagaagaa	ggagggagaagatgggataag	547	A->G	294	present paper
508	P244	P		rs2740981	12943107	gcaagctcactggaatgataatc	caagttcttactcgcgcctc	729	G->A	471	present paper
509	P247	A2		rs9341312	21151116	ttatctgaagcctttatccctg	ttatctgaagcaggtttacacct	287	T->A	51	present paper
510	P248	A2		rs9341314	21151209	ttatctgaagcctttatccctg	ttatgaagacaggtttacacct	287	G->T	151	present paper
511	P249	R2			8395203	acttctgggctgtgactc	ctcgaatgtcgtttttatg	765	G->A	606	present paper
512	P254	F4			3604898	ggatagcacactcagctcac	ttttcagaatgcttaataatgt	528	C->T	50	present paper
513	P255	C			8745038	tcagtgaacacattagaagaa	gcaaggaagatgggtaagag	547	G->A	140	present paper
514	P256	M			8745230	tcagtgaacacattagaagaa	gcaaggaagatgggtaagag	547	G->A	442	present paper
515	P257	G	rs2740980		12942936	gcaagctcactggaatgataatc	caagttcttactcgcgcctc	729	G->A	299	present paper
516	P258	E2b1a2			13540552	gaacttactcgaacttttg	gaagaaatgatacaaaagtctaacc	429	A ins	59	present paper
517	P259	I1d			14100868	gaagtccaagctgaagatg	tccttgcagccgctgaagag	380	T->G	185	present paper
518	P260	C			15795400	ttgtattgtactttttatga	gaactatctctcaagcaatct	674	A->C	387	present paper
519	P261	K4			12502279	gaagcctgaatcacaagaa	gaagattatgtcattagcgaac	646	G->A	194	present paper
520	P262	A2c			6992148	cttttgaagctgaatgacttc	gaaaacaataaaccacagaagc	346	G->C	251	present paper
521	P263	K4			19625357	tcagcaggaagacaagagag	ctgaattacagagcgtatga	793	A->C	56	present paper
522	P266	H2b			7699738	ttgtttgactcgtcttga	ttcgaagaatagatcaagatgt	1135	A->T	897	present paper
523	P267	R2			16538063	tcaccaataagatgtatcaatcc	atgaagaagagctctagcgaa	817	C->G	252	present paper
524	P268	E1b1a9			22399065	catcacagatgaacagaaacagag	taaaagacagatgaacaaaaagatct	562	T->A	300	present paper
525	P269	E1b1a9			22399066	catcacagatgaacagaaacagag	taaaagacagatgaacaaaaagatct	562	A->G	301	present paper
526	P277	E1b1a8a	rs16980558		14088609	atgtcaacattatttctctc	gttttgaattacagagca	260	A->G	72	present paper
527	P278	E1b1a8a	rs7067418		8527053	ctcattctctcaagcaag	gaattctctctccctaagc	781	G-A	361	present paper
528	P279	I2a13			2941377	aggaagacaaactgaagaa	cacttccaggaatcaaacat	517	G-A	295	present paper
529	P280	R	rs891407		20302478	gccacttctaataagagagat	ctaactcagccgaagaagatc	1048	A->G	950	present paper
530	P281	P	rs17315758		17473657	tcaccaataagatgtatcaatcc	atgaagagagactcagagcag	1212	A->G	978	present paper
531	P282	P	rs17307656		16538055	gttgaatccagtaaatga	accacatctacaataaagaactgac	817	A->G	244	present paper
532	P283	P	rs3865828		20553879	ggtccaaactgaataaatgctc	ttgttacttgtcatctgct	642	C->T	116	present paper
533	P284	P	rs4116821		20531728	taaaagaaattgaattttttct	tttctgaagactcataaatgctc	765	C->G	659	present paper
534	P285	R	rs17249974		17776738	actttttatctttgtgac	tgacaaacacatctcttaac	425	C->A	219	present paper
535	P286	R1	rs1118473		16225645	actgatatagaatctatga	aaatgatataaaaaagccctga	245	C->T	195	present paper
536	P287	G2	rs4116820		20531485	taaaagaaattgaattttttct	tttctgaagactcataaatgctc	765	G->T	416	present paper
537	P289	A3b			8527082	gctcattctctcaagcaag	gaatttctctctccctaagc	781	C->G	390	present paper
538	P291	A3b1			8526988	gctcattctctcaagcaag	gaatttctctctccctaagc	781	C->G	296	present paper
539	P292	Q1a3a3			13540161	taaaagaaattgaattttttct	taatttcaagaaattttgaattct	444	G ins	404	present paper
540	P293	E1b1a	rs16981297		8835178	taactaatcatttataaactct	caatcaccttcaactacac	583	G->A	351	present paper
541	P294	R1	rs1005041		7630827	atagtttttctcattagaactc	ttacattacaataaataaagcag	398	G->C	240	present paper
542	P295	P	rs895530		8023031	attcacataaacatctgattac	cctctgaactcctgactac	455	T->G	245	present paper
543	P297	R1b1b	rs9785702		17165902	agttattgccccttcaaacac	aaaaaagatctacagtggtatgc	487	G->C	242	present paper
544	I2f2.b	D2	D2			ctgaactgatcaaaatcttacaatc	ggaactccttcttcaactttatc	88	present->absent		Rosser et al. 2000
545	I2f2a	J	J			ctgaactgatcaaaatcttacaatc	ggaactccttcttcaactttatc	88	present->absent		Rosser et al. 2000
546	47z	O2b1	O2b1		3496442	taagtcaatgtcataaagac	taattacacctga(a)cataac	381	G->C	291	Shinka et al. 1999
547	50f2(P)	B2b	B2b		21906455	caccacatgtcccaagaatttg	gtgcatctattgaactctttcatg	687	G->C	547	YCC, 2002
548	92R7	P	P		6165721, 10364337	gaccacatgtatgaactgaact	gcctatctattcagtgaattct	722	G->A	504	Hurles et al. 1999
549	Apt	H2	F1		21905719	taagtatcaattcaacttcaatc	ctgaattcaaaatgtcgaattctc	820	G->A	423	Pandya et al. 1998
550	DYS391p	E1b1	E3		13122402	ctatttcttcaatcataccaca	gaattctttgatgtatgctg	285 (11 repeats)	C->G	168	YCC, 2002
551	IMS-JST002611	Q3a4		rs2075181	7606726	tattgaactgtacacagacg	ataaccctttacagatgctt	130	C->T	75	Nonaka et al., 2007
552	IMS-JST021355	D		rs2267802	2888425	aaccacagccattttatcta	agacaaaagaatcaggaatg	96	A->G	36	Nonaka et al., 2007
553	IMS-JST022454	D2a		rs2268588	22919969	taagtgaacttttcaatga	aacacatcaactctactaa	119	T->G	61	Nonaka et al., 2007
554	IMS-JST022457	D2a1b		rs2268591	22873985	gaatgaatcacaagacacag	tcactgaagaagaacacaa	90	C->G	40	Nonaka et al., 2007
555	LLY22q	N1	N		22124037, 22432174	ataagatgaactctcataag	gaatattgaactcttataagc	210	C/C->C/A	122	Tyler-Smith (unpublished)
556	MEH1	A2	A2		21906644	gtgcatctattgaacttttcatg	caccacatattccacagatttg	687	C->G	330	YCC, 2002
557	MEH2	Q1a	Q	rs4252209	4985637	attcataatttgaattcagaacag	taccatgaaaattcataatccaca	938	G->T	880	YCC, 2002

	SNP	Haplogroup (YCC2008)	Haplogroup (YCC2002)	RefSNP ID	Y-position	Forward Primer	Reverse Primer	PCR Size(bp)	Mutation	Site	Reference
558	MSY2.1	B2b4b	B2b4b			ctgaccttgaagacatacta	ctgaccttataagacataca	499/400	4->3		Bao et al. 2000
559	MSY2.2	O1	O1			ctgaccttgaagacatacta	ctgaccttataagacataca	499/400	4->3		Hammer et al., 2001
560	N1	D1a		rs3212291	13360920	taatttttttttgcctttta	agcaaaaaaatactcaacgaa	240	C->G	115	Deng et al. 2004
561	N2	D1a1		rs3212287	20359276	ccaagctgaagatgcagatgc	tcattttctcattttgcagaa	298	T->C	138	Deng et al. 2004
562	N4	O3a3b1a		rs3212290	20397920	ttcttggaatcaaatggaat	ctgacctttccctcaggacac	302	A->T	142	Deng et al. 2004
563	N5	O3a3b1b		rs3212292	13360932	taatttttttttgcctttta	agcaaaaaaatactcaacgaa	240	T->A	127	Deng et al. 2004
564	N14	O1a1		rs3212294	13540044	ttagacaacttactactttg	taaacattatcaaaaaaatt	445	C->A	298	Deng et al. 2004
565	PK1	A2		20992895		tcaactttctaaatgattatcatt	tcttctcaagaaacctctatga	451	C->A	60	Mohyuddin et al. 2006
566	PK2	C3		21078608		tatatctgaatctcttttga	taacaacaacatctcttaactga	466	T->C	342	Mohyuddin et al. 2006
567	PK3	L3a		21078913		tatatctgaatctcttttga	taacaacaacatctcttaactga	466	T->C	265	Mohyuddin et al. 2006
568	PK4	O2a1a		19745350		ccatctcccatgactgaat	gcttccaaagatccctttat	451	A->T	83	Mohyuddin et al. 2006
569	PK5	R1a1e		21717383		ttccaaaacacatctcttcac	taaaaaagaaagaaagactac	393	C->T	186	Mohyuddin et al. 2006
570	RPS4Y ₂₁₁ =M130	C	C	rs35284970	2794854	tatctctctcttattgcaag	ccacaaggggaaaaaacac	205	C->T	41	Bergen et al. 1999
571	SRY _{10831.1}	BR	BR	rs2534636	2717176	ccacaacctctttctac	aataaaaaatcccgtaaaata	536	A->G	135	Hammer et al. 1998
572	SRY _{10831.2}	R1a	R1a	rs2534636	2717176	ccacaacctctttctac	aataaaaaatcccgtaaaata	536	G->A	135	Hammer et al. 1998
573	SRY ₆₂₇ =M167	R1b1b2d	R1b8	rs1800865	2718271	aggtctttttgccttctta	atgcacagattcttttga	1242	C->T	299	Veitia et al. 1997
574	SRY ₄₀₆₄ =M40=P20	E	E	rs9786608	2723943	gcattttgttacccttctcaac	tgacaaagacttaccagatttc	612	G->A	258	Hammer et al. 1998
575	SRY ₄₆₅	O2b	O2b	rs11575897	2715180	gccgaagaattgcagtttgc	gttgatggcggtgaagtgc	148	C->T	52	Shinka et al. 1999
576	SRY ₆₁₃₈ =M177	M2a	K1		2718869	tttaacattqacaagaccaa	qacaaccaaaaaagaaqacc	1067	C->T	363	Hammer et al. 1998
577	Tat	N1c	N3	rs34442126	13431977	gaactgaatgaactgtatga	gaaggtgacctaaaaagtatga	112	T->C	28	Zerjal et al. 1997
578	U106=M405	R1b1b2g		rs16981293	8856078	gctctgaatgacatgaagattc	aactgaactcttgaagatgaq	255	C->T	46	Sims et al. 2007, Underhill et al. 2007
579	U152	R1b1b2h		rs1236440	13842543	cttaactatacagcctctttttga	aacattccacacttgaagataa	172	C->T	127	Sims et al. 2007
580	U174=P252	E1b1a7a		rs16980586	14760751	tccttcagatgaataatgtttg	ctcgaactttgaagtgaattgc	107	G->A	46	Sims et al. 2007
581	U175	E1b1a8		rs16980588	14763088	ctggtcacactaaagcacca	tctaatacacaagaaagtcacaa	72	G->A	48	Sims et al. 2007
582	U179	I		rs2319818	14864102	aaagggatatacgaactgaat	caactctcttttcaactctca	275	G->A	220	Sims et al. 2007
583	U181	E1b1a8a1a		rs16980589	14883820	cactgacacatggaactgaatg	gtttaccaggaacccccatc	90	C->T	41	Sims et al. 2007
584	U186	E1b1a7		rs16980370	14987946	gcctaaagcccttctcgttaag	atctgtagattttctcttattgg	106	A->G	29	Sims et al. 2007
585	U198=M467	R1b1b2g1		rs17222279	15348893	tcatcattgcatggtataactg	ttaagttctatggtatttgaactt	77	G->A	24	Sims et al. 2007, Underhill et al. 2007
586	U209	E1b1a8a		rs16980502	15804352	ccacagaatgcaaaaagat	cacctgacacattaaatgga	72	C->T	33	Sims et al. 2007
587	U247=P253	E1b1a7		rs2068150	17348769	gaagggaggtttcttctcaat	tcgaagacaaatcacctgtaa	78	C->T	45	Sims et al. 2007
588	U250=P222	I2b		rs17315723	17397594	ctgattatctatcttctcaac	attaaaaatgtgattatgaca	778	G->C	476	Sims et al. 2007
589	U290	E1b1a8a1		rs16980406	20105446	atccactgaaaagaccata	tatgacagacaaaagcatacc	140	T->A	95	Sims et al. 2007
590	USP9Y ₃₃₆₃₆ =M222	R1b1b2e		rs20321	13411808	gataatgaatgaagaaataaaaa	cattcaagaatcccaagaatctc	264	G->A	175	Sun et al. 1999
591	V6	E1b1b1e			6992007	ctttataagctgatacgtctc	gaaaaacaataaaccaagaaqg	346	G->C	110	Cruciani et al. 2004
592	V12	E1b1b1a1			6883099	caaaagttatttcaaaagggaga	ccataaagttgaattgaagaaq	439	A->G	222	Cruciani et al. 2006
593	V13	E1b1b1a2			6902263	atctgtagagaccaggaatgc	agatgtatcaacaatgccaa	491	G->A	207	Cruciani et al. 2006
594	V19	E1b1b1a3b			20355588	aacaqaattatcagaaaaagattt	ttttactgttctgatactttcaa	568	T->C	421	Cruciani et al. 2006
595	V22	E1b1b1a3			6919957	aatacctcaactacagaaatga	cactgaccagaaacacatgaq	289	T->C	84	Cruciani et al. 2006
596	V27	E1b1b1a2a			6956051	ctctcagaacactgtactgtc	gctcggtgactctgagaac	360	A->T	211	Cruciani et al. 2006
597	V32	E1b1b1a1b			6992821	qcaaaatcccaaacatcatt	tcattgacccaaaagacaca	355	G->C	197	Cruciani et al. 2006
598	V36	E1b1b1a2			6874246	tcctctttccacttacctcca	caaatcaaatcaccatttgaq	449	T->C	383	Cruciani et al. 2007
599	V65	E1b1b1a4			15797066	cctcaacctcaaatatgaccatq	atgcccacaatttcccat	349	G->T	77	Cruciani et al. 2007

¹ Homo sapiens Genome - Build 36 version 1

Supplementary Table 2. *De novo* ascertained SNPs and corresponding assignment to haplogroups.

alleles	snp_id(rs)	position	P_number	name/alternative name	Haplogroup
T/G	9786479	17506232	153		DE
G/A	16980598	18316106	165		DE
G/T	9786489	9465552	167		DE
C/T	16980749	7035088	183		DE
G/C	9786634	13673922	152		E
G/T	9786357	18445297	154		E
G/A	9786301	15347202	155		E
A/G	9786126	16365207	156		E
G/C	16980574	20513767	168		E
G/A	9786025	14030187	170		E
G/T	17842518	22289155	171		E
G/A	16980360	14817991	174		E
G/A	9786191	13812742	175		E
T/A	16980577	19978604	147		E1
G/A	9786105	7104792	178		E1b1
A/C	16980621	13069579	179		E1b1
G/A	9786035	17546464	180		E1b1
C/G	9785940	16339301	181		E1b1
G/A	16980394	18181637	182		E1b1a
G/A	9786819	13207248	189		E1b1a
G/A	16981297	8478134	293		E1b1a
T/C	2032598	13859006		M180	E1b1a
G/A	9786252	2556163			E1b1a
G/A	9785989	5611238			E1b1a
C/T	768983	6521247			E1b1a
C/A	9786904	7360983			E1b1a
G/A	9786036	8131043			E1b1a
T/C	9786299	8170688			E1b1a
G/A	9786248	8211704			E1b1a
A/T	9786074	8262743			E1b1a
C/T	9786574	8289969			E1b1a
C/T	16980754	8449396			E1b1a
G/T	7893091	12905603			E1b1a
C/T	9785753	13675860			E1b1a
T/C	9786100	14323712			E1b1a
A/T	16980497	17335733			E1b1a
A/G	16980606	17508672			E1b1a
C/T	9786135	17682050			E1b1a
A/G	9786159	18217625			E1b1a
G/A	16980401	19981395			E1b1a
C/G	17174592	20556451			E1b1a
A/G	9786042	21076605			E1b1a
T/C	9786467	21101564			E1b1a
A/G	16980561	21517215			E1b1a
C/T	16980435	21966892			E1b1a
T/A	9785875	23224551			E1b1a
A/G	16981830	27505935			E1b1a
A/T	9785907	14611742			E1b1a
T/C	9786581	14991679			E1b1a
A/G	9786459	15380284			E1b1a
T/C	1971755	15586737			E1b1a
C/T	16980467	15650051			E1b1a
G/T	16980457	15721983			E1b1a
G/A	16980463	15985783			E1b1a
T/C	16980500	16231478			E1b1a

alleles	snp_id(rs)	position	P_number	name/alternative name	Haplogroup
T/C	9785895	16360890			E1b1a
A/G	16980370	15487217		U186	E1b1a7
G/A	16980586	15260022		U174	E1b1a7a
G/A	7067418	8170009	278		E1b1a8a
G/A	16980588	15262359		U175	E1b1a8
C/T	16980502	16240148		U209	E1b1a8a
T/A	16980406	20541242		U290	E1b1a8a1
C/T	16980589	15383091		U181	E1b1a8a1a
G/C	9786877	7098762	134		F
T/C	9786502	20514040	135		F
G/T	9785908	21885831	136		F
C/T	16980478	13208555	138		F
A/G	16980459	15915348	139		F
C/G	9786636	16257165	140		F
A/G	9306845	6644174	141		F
A/G	17842387	8127045	145		F
T/C	16981340	8305371	146		F
T/C	16980396	18294805	148		F
A/G	16980391	17523666	149		F
C/T	9786707	8383617	151		F
C/T	9786095	23205115	157		F
T/C	9785913	16438703	158		F
A/C	9785905	17042441	159		F
C/A	9306848	8177145	160		F
A/G	16980495	17123281	161		F
T/C	16980499	16201208	166		F
T/G	17174528	8811208	187		F
A/G	4141886	13207138	143		F+C
C/T	17250345	6646478			I
A/C	17250803	7749687			I
C/G	17316778	8239824			I
T/C	7892876	13346636			I
T/C	9341301	14032029		M258	I
T/C	17221922	14481528			I
A/C	17221943	14508775			I
G/A	17315694	17731364			I
A/G	17315842	18178863			I
G/T	17250226	20736473			I
T/C	17250275	20995271			I
A/G	17307126	14887682			I
C/G	17307245	15410070			I
C/T	2319818	15323818		U179	I
T/G	17250310	6380575			I1
T/G	17316192	6384435			I1
G/A	17316597	7251871			I1
C/T	17306537	9468064			I1
C/T	17221531	9599027			I1
A/T	17306762	13354977			I1
C/T	9341296	14031372		M253	I1
T/A	17307007	14488564			I1
T/C	17222657	17112593			I1
T/C	17249791	17704859			I1
G/A	17315912	18317890			I1
A/T	17315919	18320482			I1
G/C	966239	18509084			I1
C/G	17250114	19729887			I1

alleles	snp_id(rs)	position	P_number	name/alternative name	Haplogroup
A/C	17316031	19983481			I1
G/A	17250177	20204560			I1
T/C	871626	21759562			I1
A/G	17307252	15424581			I1
T/C	17315821	18112051	123		IJ
A/C	17315772	17983492	124		IJ
T/A	17306671	13040605	125		IJ
C/G	17250163	20120954	126		IJ
C/T	7892893	8293708	127		IJ
A/G	17306699	13153864	129		IJ
A/T	17250887	8261925	130		IJ
G/C	17315680	17692683	214		I2b
C/G	17306657	13001609	216		I2b
T/C	17221964	14514720	219		I2b
G/T	17316910	23320853	220		I2b
C/A	17316729	8056663	221		I2b
C/G	17315723	17833390	222	U250	I2b
G/T	17250740	7345779			I2b
T/C	17315835	18124525	209		J
A/C	13447352	21595037		M304	J
G/A	17306965	14286131			J_unresolved
G/C	17250458	21818123			J_unresolved
C/T	17307175	14946624			J_unresolved
A/G	17307231	15385863			J_unresolved
T/C	17250121	19732737	128		K
T/G	3853054	8382799	132		K
G/A	16980610	22479546	188		NO
A/G	16980641	18224955	192		NO
T/G	16980426	21109405	193		NO
C/G	16980363	15211645	194		NO
C/A	16981290	7271524	186		O
A/G	16980601	14423780	191		O
G/A	17276777	5653840			O_unresolved
G/T	17276338	17788031			O_unresolved
C/G	17276345	18117143			O_unresolved
T/C	17323322	21591970			O_unresolved
G/C	17316543	16453699			O_unresolved
T/A	3963016	17507897			O_unresolved
G/A	13447354	21596135	203	M307	O1a1; I1
A/G	17269928	17592232	199		O3a
G/T	17276358	18124653	197		O3a
C/T	17269816	15998961	198		O3a
T/G	17316592	17505195	200		O3a
T/C	2267801	2473326	201		O3a3
A/G	17316007	13010503	164		O3a3b2
T/C	17250992	8548336	226		P,Q,R
G/A	17222419	16441104	228		P,Q,R
C/T	9786781	16406668	230		P,Q,R
G/A	9786119	18143402	235		P,Q,R
G/A	9785740	8037831	237		P,Q,R
G/C	8181264	16727368	239		P,Q,R
G/A	4141564	8388039	243		P,Q,R
C/T	3853052	8336501	245		P,Q,R
G/A	17315758	17909453	281		P,Q,R
A/G	17307656	16972045	282		P,Q,R
T/G	4116821	16438820	284		P,Q,R

alleles	snp_id(rs)	position	P_number	name/alternative name	Haplogroup
T/C	895530	16231183	295		P,Q,R
A/G	2032631	16415302		M45	P,Q,R
A/G	9786916	18124730	208		R
T/C	17307398	16077770	224		R
C/G	9786915	7753950	229		R
A/G	9786261	21880316	232		R
G/C	891407	20738274	280		R
A/C	17249974	18212534	285		R
A/C	1558843	21595767		M306	R
G/A	17307070	14590648	225		R1
G/A	9786465	9603710	231		R1
C/T	9786197	20013072	234		R1
T/C	9785959	16711952	236		R1
A/G	9785717	7474087	238		R1
A/C	2032624	14035089	241	M173	R1
A/G	7067478	7350313	242		R1
C/G	1005041	7273778	294		R1
A/G	17316227	6609030			R1a
G/A	17316771	8236691			R1a
T/A	17221601	13063894			R1a
C/A	17306692	13148016			R1a
C/T	17315926	18320484			R1a
T/A	17250535	22318385			R1a
T/G	17307105	14599007			R1a
A/C	17222146	15192077			R1a
C/G	17222573	16826420			R1a
T/C	17307677	17062383			R1a
A/G	9785783	4055107			R1b
G/A	9786882	7852304			R1b
A/G	9786140	8205192			R1b
A/C	9786194	8873501			R1b
A/G	9786774	13202655			R1b
T/C	9786876	17108024			R1b
T/C	17249854	17859631			R1b
T/C	9786111	18000079			R1b
G/A	7067384	20078827			R1b
T/G	17316372	21969551			R1b
G/C	1358368	27656099			R1b
A/G	2082033	15487185			R1b
C/G	17222251	15707999			R1b
G/A	1529516	15848164			R1b
A/G	765557	15958920			R1b
A/G	9786582	16836431			R1b
G/A	17307670	16973851			R1b
C/G	9785702	17601698			R1b
C/A	17222279	15844744		U198	R1b1c7a
C/T	16981293	8499034		U106	R1b1c7
A/G	2355476	15647469			conflictive; duplicaed in X chr
T/C	2381233	16453527			conflictive; duplicaed in X chr
A/G	17222265	15721952			genotyping error

Supplementary Table 3. Haplogroup names for YCC cell line DNA.

YCC samples	Haplogroup (YCC 2002)	Haplogroup (this report)
YCC34	<u>A2*</u>	<u>A2*</u>
YCC35	<u>A2b</u>	<u>A2b</u>
YCC05/22	<u>A2*</u>	<u>A2c</u>
YCC19/38	<u>A3b1</u>	<u>A3b1</u>
YCC42	<u>B2a1</u>	<u>B2a1a</u>
YCC09	<u>B2b*</u>	<u>B2b*</u>
YCC21/28/39	<u>B2b1</u>	<u>B2b1</u>
YCC29/30	<u>B2b4a</u>	<u>B2b4a</u>
YCC06/07	<u>B2b4b</u>	<u>B2b4b</u>
YCC23	<u>C3b</u>	<u>C3b</u>
YCC76	<u>D2a</u>	<u>D2a1a1</u>
YCC36	<u>E3a*</u>	<u>E1b1a*</u>
YCC31/44	<u>E3a1</u>	<u>E1b1a1</u>
YCC43	<u>E3a*</u>	<u>E1b1a7</u>
YCC40	<u>E3a*</u>	<u>E1b1a7a1</u>
YCC65	<u>E3a*</u>	<u>E1b1a8a*</u>
YCC45	<u>E3a*</u>	<u>E1b1a8a1*</u>
YCC33	<u>E3a*</u>	<u>E1b1a8a2</u>
YCC32	<u>E3b*</u>	<u>E1b1b1f</u>
YCC37	<u>E2b</u>	<u>E2b1*</u>
YCC08	<u>E2b</u>	<u>E2b1a1</u>
YCC79	<u>G1</u>	<u>G1a</u>
YCC52/53/55	<u>G2*</u>	<u>G2a*</u>
YCC80	<u>G2a*</u>	<u>G2a1*</u>
YCC24	<u>G2a1</u>	<u>G2a1a</u>
YCC58	<u>H</u>	<u>H1*</u>
YCC63	<u>I1a1</u>	<u>I1</u>
YCC72	<u>I1b*</u>	<u>I2a*</u>
YCC74	<u>I1*</u>	<u>I2a*</u>
YCC61	<u>I1*</u>	<u>I2b3</u>
YCC59	<u>J*</u>	<u>J2</u>
YCC60	<u>J2*</u>	<u>J2</u>
YCC56	<u>J2*</u>	<u>J2a12</u>
YCC10	<u>K1</u>	<u>M2a</u>
YCC11	<u>M2*</u>	<u>M1b1*</u>
YCC78	<u>N1</u>	<u>N1a</u>
YCC47/48	<u>N3a*</u>	<u>N1c*</u>
YCC49/50	<u>N3a1</u>	<u>N1c1a</u>
YCC51	<u>N3a*</u>	<u>N1c1b</u>
YCC66/67	<u>O1*</u>	<u>O1a1*</u>
YCC69	<u>O2a*</u>	<u>O2a*</u>
YCC68	<u>O3c</u>	<u>O3a3a</u>
YCC78	<u>O3e*</u>	<u>O3a3c*</u>
YCC57	<u>O3e*</u>	<u>O3a3c2</u>
YCC03	<u>Q*</u>	<u>Q1a3*</u>
YCC12/13/14/15/16/17/18	<u>Q3*</u>	<u>Q1a3a*</u>
YCC25	<u>Q*</u>	<u>Q1a4</u>
YCC70/81	<u>R1a1*</u>	<u>R1a1</u>
YCC26/71	<u>R1b*</u>	<u>R1b1b2*</u>
YCC62	<u>R1b*</u>	<u>R1b1b2g</u>
YCC27/64	<u>R1b*</u>	<u>R1b1b2h*</u>

Supplementary Figure 1. Tree corresponding to haplogroup A. Mutation names are indicated on the branches. Subclades are indicated at the beginning of the branches that define them, with numbers or letters, according to the YCC (2002) alpha-numeric nomenclature system. Terminal haplogroup names are indicated at the right end of the tree. Branch lengths do not represent the time between nodes.

Supplementary Figure 2. Tree corresponding to haplogroup B. See **Figure 2** legend for details.

Supplementary Figure 3. Tree corresponding to haplogroup C. See **Figure 2** legend for details.

Supplementary Figure 4. Tree corresponding to haplogroup D. See **Figure 2** legend for details.

Supplementary Figure 5. Tree corresponding to haplogroup E. See **Figure 2** legend for details.

Supplementary Figure 6. Tree corresponding to haplogroup G. See **Figure 2** legend for details.

Supplementary Figure 7. Tree corresponding to haplogroup H. See **Figure 2** legend for details.

Supplementary Figure 8. Tree corresponding to haplogroup I. See **Figure 2** legend for details.

Supplementary Figure 9. Tree corresponding to haplogroup J. See **Figure 2** legend for details.

Supplementary Figure 10. Tree corresponding to haplogroup L. See **Figure 2** legend for details.

Supplementary Figure 11. Tree corresponding to haplogroup M. See **Figure 2** legend for details.

Supplementary Figure 12. Tree corresponding to haplogroup N. See **Figure 2** legend for details.

Supplementary Figure 13. Tree corresponding to haplogroup O. See **Figure 2** legend for details.

Supplementary Figure 14. Hypothetical tree for lineages defined by the LINE-1 insertion in haplogroup O. Mutations names are indicated on the branches. There are at least two independent deletions of the LINE-1 insertion.

Supplementary Figure 15. Tree corresponding to haplogroup Q. See **Figure 2** legend for details.

Supplementary Figure 16. Tree corresponding to haplogroup R. See **Figure 2** legend for details.

Supplementary Figure 17. Tree corresponding to haplogroup S. See **Figure 2** legend for details.

Supplementary Figure 18. Tree corresponding to haplogroup T. See **Figure 2** legend for details.

Supplementary figure 19. Tree representing branches leading to haplogroups E1b1, I1, and R1b. The root of the subtree and internal nodes whose ages have been estimated are labeled according to the text. Numbers of mutations between nodes are indicated on the branches. Branch lengths are proportional to the observed number of mutations.





































