

Appendix A

Inactivating mutations in Typhi

Nonsense SNPs are labelled numerically, mutation column gives with the amino acid residue which is mutated. Deletions are numbered alphabetically corresponding to details in Table 2.11; *=deletion is not consistent with single event on phylogenetic tree. Expression gives maximal percentile rank of gene expression level in microarray experiments in the GEO database.

Strain key is:

A - E00-7866	K = 150(98)S
B - E01-6750	L = 8(04)N
C = E02-1180	M = CT18
D = E98-0664	N = E02-2759
E = E98-2068	O = E03-4983
F = J185SM	P = E03-9804
G = M223	Q = ISP-03-07467
H = 404ty	R = ISP-04-06979
I = AG3	S = Ty2
J = E98-3139	

ID	Gene ID	Name	Product	Mutation
A	STY0068	<i>citD2</i>	citrate lyase acyl carrier protein	C-term del
A	STY0069	<i>citE2</i>	citrate lyase beta chain	N-term del
1	STY0089	<i>yaaU</i>	putative metabolite transport protein	387
2	STY0212	<i>sfsA</i>	sugar fermentation stimulation protein	132
3	STY0336	<i>safC</i>	outer-membrane fimbrial usher protein (SPI6)	347
4	STY0349	<i>tinR</i>	transcriptional regulator (SPI6)	141
5	STY0371	<i>stbC</i>	outer membrane fimbrial usher protein	155
6	STY0428	<i>araJ</i>	transport protein, potentially sugar efflux protein	202
7	STY0519	<i>acrB</i>	acriflavin resistance protein B	769
8	STY0519	<i>acrB</i>	acriflavin resistance protein B	
9	STY0590	<i>fimI</i>	fimbrin-like protein	47
10	STY0682		sec-independent protein translocase protein	68
11	STY0971	<i>sopD2</i>	secreted effector protein sopD homolog	144
12	STY0992	<i>ycbC</i>	putative membrane protein	174
B	STY1131	<i>hpaB</i>	4-hydroxyphenylacetate 3-monooxygenase	N-term del
13	STY1167		hypothetical protein	63
14	STY1204		putative membrane transporter	188
15	STY1260		putative ROK-family protein	113
16	STY1304	<i>oppA</i>	periplasmic oligopeptide-binding protein	559
17	STY1326	<i>trpC</i>	indole-3-glycerol phosphate synthase	15
18	STY1410	<i>dbpA</i>	ATP-dependent RNA helicase	30
19	STY1457		putative lipoprotein	185
20	STY1476		putative NADP-dependent oxidoreductase	168
C	STY1485	<i>narV</i>	respiratory nitrate reductase 2 gamma chain	N-term del
C	STY1486	<i>narW</i>	respiratory nitrate reductase 2 delta chain	C-term del
21	STY1488	<i>narZ</i>	respiratory nitrate reductase 2 alpha chain	870
D	STY1503	<i>glgX</i>	putative hydrolase	deleted
22	STY1507		putative aminotransferase	251
E	STY1507		putative aminotransferase	N-term del
E	STY1508		putative transport protein	deleted
E	STY1509		hypothetical protein	N-term del
G	STY1536		putative aldehyde-dehydrogenase	C-term del
23	STY1553		putative D-mannonate oxidoreductase	182
H	STY1568	<i>dmsC</i>	putative dimethyl sulphoxide reductase subunit	deleted
H	STY1569		hypothetical protein	deleted
H	STY1570		putative ABC transporter membrane protein	deleted
H	STY1571		putative ABC transporter periplasmic binding protein	deleted
H	STY1572		putative ABC transporter membrane protein	deleted
H	STY1573		putative ABC transporter ATP/GTP-binding protein	deleted
H	STY1574		putative voltage gated chloride channel protein	deleted
H	STY1575		putative dethiobiotin synthetase	N-term del
24	STY1587		putative membrane protein	304
I	STY1648		hypothetical protein	N-term del

ID	Gene ID	Strain(s) with the mutation	Expression
A	STY0068	O	98
A	STY0069	O	97
1	STY0089	M	no data
2	STY0212	D	94
3	STY0336	C	98
4	STY0349	F, H, O	100
5	STY0371	S	98
6	STY0428	J, G, D, M, E, F, H, O, S, B, H58/H63	94
7	STY0519	G	94
8	STY0519	I	94
9	STY0590	M	100
10	STY0682	C, A	98
11	STY0971	H	94
12	STY0992	J	90
B	STY1131	M, E, F, H, O, S, B, H58/H63	no data
13	STY1167	J	95
14	STY1204	*B, E	95
15	STY1260	E	98
16	STY1304	J	68
17	STY1326	H, O	89
18	STY1410	H58/H63	98
19	STY1457	H58/H63	97
20	STY1476	A	81
C	STY1485	S, B, H58/H63	94
C	STY1486	S, B, H58/H63	94
21	STY1488	E	100
D	STY1503	C	92
22	STY1507	H, O	98
E	STY1507	H58/H63	98
E	STY1508	H58/H63	no data
E	STY1509	H58/H63	no data
G	STY1536	*M, F	no data
23	STY1553	S, B, H58/H63	94
H	STY1568	L	no data
H	STY1569	L	90
H	STY1570	L	92
H	STY1571	L	89
H	STY1572	L	89
H	STY1573	L	92
H	STY1574	L	92
H	STY1575	L	98
24	STY1587	P	95
I	STY1648	*B, A, C	98

ID	Gene ID	Name	Product	Mutation
I	STY1649		outer membrane protein	deleted
I	STY1650		hypothetical protein	N-term del
25	STY1683		putative oxidoreductase	3
26	STY1693	<i>ydhB</i>	putative transcriptional regulator	2
27	STY1738	<i>ttrA</i>	tetrathionate reductase subunit A (SPI2)	622
28	STY1924	<i>treA</i>	periplasmic trehalase	92
29	STY1977	<i>proP</i>	proP effector	203
30	STY2005		conserved hypothetical protein	179
K	STY2238	<i>cbiC</i>	precorrin-8X methylmutase	N-term del
31	STY2398	<i>pbpG</i>	penicillin-binding protein	5
32	STY2501		putative transmembrane transport protein	85
33	STY2506	<i>nrdA</i>	ribonucleoside-diphosphate reductase 1 alpha chain	762
34	STY2526	<i>ais</i>	Ais protein	34
L	STY2717	<i>aegA</i>	putative oxidoreductase	(internal deletion)
M	STY2791		putative RNA methyltransferase	(internal deletion)
35	STY2838	<i>yfiK</i>	putative membrane protein	85
36	STY2877		putative type I secretion protein (SPI9)	719
37	STY2913	<i>gabP</i>	GabA permease (4-amino butyrate transport carrier)	244
38	STY3001	<i>stpA</i>	tyrosine phosphatase (translational regulation) (SPI1)	322
39	STY3001	<i>stpA</i>	tyrosine phosphatase (translational regulation) (SPI1)	185
40	STY3034		hypothetical protein	74
41	STY3049	<i>rpoS</i>	RNA polymerase sigma subunit RpoS (sigma-38)	52
42	STY3049	<i>rpoS</i>	RNA polymerase sigma subunit RpoS (sigma-38)	43
43	STY3138	<i>ppdA</i>	prepilin peptidase dependent protein A precursor	141
44	STY3352		possible AraC-family transcriptional regulator	119
45	STY3428	<i>tdcA</i>	TDC operon transcriptional activator	277
46	STY3508		hypothetical protein	228
N	STY3617		hypothetical protein	N-term del
N	STY3618		putative membrane protein	deleted
47	STY4008		putative inner membrane transport protein	326
IS	STY4123	<i>viaO</i>	putative periplasmic protein	IS1 insertion
48	STY4134	<i>malS</i>	alpha-amylase	376
49	STY4162	<i>yhjW</i>	putative membrane protein	488
O	STY4162	<i>yhjW</i>	putative membrane protein	
50	STY4329	<i>yhfK</i>	hypothetical protein	685
R	STY4575		hypothetical protein (SPI7)	deleted
R	STY4576		hypothetical protein (SPI7)	deleted
R	STY4577		hypothetical protein (SPI7)	deleted
R	STY4578		putative membrane protein (SPI7)	deleted
R	STY4579		putative membrane protein (SPI7)	deleted
S	STY4580		putative membrane protein (SPI7)	deleted
S	STY4582		possible exported protein (SPI7)	deleted
51	STY4728	<i>yjfJ</i>	hypothetical protein	184

ID	Gene ID	Strain(s) with the mutation	Expression
I	STY1649	*B, A, C	100
I	STY1650	*B, A, C	87
25	STY1683	B	87
26	STY1693	E	90
27	STY1738	B	92
28	STY1924	J, G, D, M, E, F, H, O, S, B, H58/H63	98
29	STY1977	O	97
30	STY2005	J	98
K	STY2238	J, G, D, M, E, F, H, O, S, B, H58/H63	no data
31	STY2398	J, G, D, M, E, F, H, O, S, B, H58/H63	97
32	STY2501	J, G, D, M, E, F, H, O, S, B, H58/H63	97
33	STY2506	A	90
34	STY2526	C	90
L	STY2717	J, G, D, M, E, F, H, O, S, B, H58/H63	95
M	STY2791	A	98
35	STY2838	C	98
36	STY2877	D, M, E, F, H, O, S, B, H58/H63	94
37	STY2913	S, B, H58/H63	95
38	STY3001	J	100
39	STY3001	H58/H63	100
40	STY3034	H, O	no data
41	STY3049	L	98
42	STY3049	K	98
43	STY3138	C	89
44	STY3352	A	92
45	STY3428	C	94
46	STY3508	C	95
N	STY3617	N, P	92
N	STY3618	N, P	97
47	STY4008	G	94
IS	STY4123	M	95
48	STY4134	F, H, O	94
49	STY4162	C	95
O	STY4162	J, G, D, M, E, F, H, O, S, B, H58/H63	95
50	STY4329	C	90
R	STY4575	A	95**
R	STY4576	A	95**
R	STY4577	A	98**
R	STY4578	A	94**
R	STY4579	A	94**
S	STY4580	S, B	98**
S	STY4582	S, B	95**
51	STY4728	C, A	95

ID	Gene ID	Name	Product	Mutation
P	STY4728	<i>yjfJ</i>	hypothetical protein	deleted
P	STY4728a		hypothetical protein	deleted
P	STY4729	<i>yjfK</i>	hypothetical protein	N-term del
Q	STY4786		hypothetical protein	C-term del
Q	STY4787		putative BglB-family transcriptional antiterminator	N-term del
52	STY4811		putative exported protein	36
53	STY4849		helicase related protein (SPI10)	635
54	STY4849		helicase related protein (SPI10)	381
55	STY4853		hypothetical protein	180

ID	Gene ID	Strain(s) with the mutation	Expression
P	STY4728	J	95
P	STY4728a	J	no data
P	STY4729	J	98
Q	STY4786	A	73*
Q	STY4787	A	90
52	STY4811	G	97
53	STY4849	J	89
54	STY4849	C, A	89
55	STY4853	A	95

Appendix B

Paratyphi A isolates sequenced in pools

* = Isolate also sequenced individually. Kolkata isolates were provided by Shanta Dutta, National Institute of Cholera and Enteric Diseases, Kolkata; Delhi isolates by Rajni Gaiind, Safdarjung Hospital, Delhi; and Karachi isolates by Rumina Hasan, Aga Khan University Hospital, Karachi. Isolates in pools MA1-18 are part of the *Salmonella* collection at the Pasteur Institute, Paris and DNA was provided by Francois-Xavier Weill.

Pool	Strains	Year	Country	Region
JW1	B1357	2004/5	India	Kolkata
	D2383	2004/5	India	Kolkata
	D1985	2004/5	India	Kolkata
	B943	2004/5	India	Kolkata
	C4672	2004/5	India	Kolkata
JW2	A1338	2004/5	India	Kolkata
	AKU_12601*	2002	India	Kolkata
	B4173	2004/5	India	Kolkata
	B418	2004/5	India	Kolkata
	B964	2004/5	India	Kolkata
	D441	2004/5	India	Kolkata

Pool	Strains	Year	Country	Region
JW3	A1345	2004/5	India	Kolkata
	A2248	2004/5	India	Kolkata
	B4986	2004/5	India	Kolkata
	C806	2004/5	India	Kolkata
	D4075	2004/5	India	Kolkata
	F846	2004/5	India	Kolkata
JW4	2129	2004/5	Kuwait	-
	BL8758*	2004/5	Pakistan	Karachi
	BL4595	2004/5	Pakistan	Karachi
	BL14275	2004/5	Pakistan	Karachi
	58/38	2004/5	India	Delhi
	138/69	2004/5	India	Delhi
JW5	2664	2004/5	India	-
	BL1344	2004/5	Pakistan	Karachi
	BL4579	2004/5	Pakistan	Karachi
	B7697	2004/5	UK	-
	6911*	2007	Kenya	-
	6912*	2007	Kenya	-
JW6	181	2005	India	Delhi
	11	2005	India	Delhi
	1	2005	India	Delhi
	331-32	2005	India	Delhi
	5	2005	India	Delhi
	40	2005	India	Delhi
JW7	4	2007	India	Delhi
	83	2007	India	Delhi
	56	2007	India	Delhi
	105	2007	India	Delhi
	123	2007	India	Delhi
	31	2007	India	Delhi

Pool	Strains	Year	Country	Region
JW8	38/1/06	2006	India	Delhi
	181/8/06	2006	India	Delhi
	56/8/05	2005	India	Delhi
	68/1/04	2004	India	Delhi
	92/5/03	2002/3	India	Delhi
JW9	BL28008	2002/3	Pakistan	Karachi
	BL27136	2002/3	Pakistan	Karachi
	BL23318	2002/3	Pakistan	Karachi
	BL1893	2002/3	Pakistan	Karachi
	2460	2005/6	Kuwait	-
	1540	2005/6	Kuwait	-
MA1	A68-37	1968	Cambodia	-
	Banker Type 1	1943	India	-
	99 3482	1999	India	-
	9910258	1999	Indonesia	-
	99 7863	1999	Sri Lanka	-
	00 6053	2000	India	-
MA2	99 5900	1999	Cambodia	-
	WS0783	1925	Palestine	-
	02 1960	2002	Cambodia	-
	05 3784	2005	Cambodia	-
	8-58	1958	Cambodia	-
	06-610	2006	Cambodia	-
MA3	Banker Type 3	1954	India	-
	01 5766	2001	India	-
	04 2589	2004	India	-
	04 6500	2004	India	-
	05 5304	2005	India	-
	05 0208	2005	India	-

Pool	Strains	Year	Country	Region
MA4	A65-4	1965	Cambodia	-
	Banker Type 4	1954	Egypt	-
	98 9652	1998	Morocco	-
	99 0915	1999	Nepal	-
	A52-409	1952	Turkey	-
	9-65	1965	Turkey	-
MA5	99 7158	1999	Thailand	-
	04 9176	2004	Indonesia	-
	01 7057	2001	Indonesia	-
	03 9604	2003	Burma	-
	05 6721	2005	Burma	-
	Banker Type 5	1955-1962	Indonesia	-
MA6	A63-3 (Banker Type 6)	1963	Vietnam	-
	WS0179	1946	Vietnam	-
	9-63	1963	Vietnam	-
	05 0473	2005	Vietnam	-
	06 7153	2006	India	-
	06-4418	2006	India	-
MA7	00 3513	2000	Cambodia	-
	00 6735	2000	Chad	-
	97 1822	1997	India	-
	97 7358	1997	India	-
	98 2812	1998	Pakistan	-
	03 7001	2003	Pakistan	-
MA8	97 0613	1997	Pakistan	-
	9710913	1997	Pakistan	-
	99 7252	1999	Turkey	-
	01 8877	2001	Pakistan	-
	05 6792	2005	Pakistan	-
	04 0406	2004	Turkey	-

Pool	Strains	Year	Country	Region
MA9	A62-5	1962	Algeria	-
	A61-79 (7-58)	1958	France	-
	A61-149 (A50-4)	1950	France	-
	A61-81 (9-58)	1958	France	-
	A61-145 (4-51)	1951	Vietnam	-
	WS0784	1967	France	-
MA10	A63-72	1963	Cambodia	-
	A 63-73	1963	France	-
	WS0785	1917	Albania	-
	WS0065	1971	US	-
	02 1383	2002	Guinea	-
	02 8292	2002	Guinea	-
MA11	J307	1949	Algeria	-
	J852	1949	Algeria	-
	6-60	1960	Brasil	-
	4-56	1956	Ethiopia	-
	A52-428	1952	Turkey	-
	A61-125 (3-52)	1952	Turkey	-
MA12	A103	1945	France	-
	A506	1949	France	-
	Reil 18	1949	France	-
	Reil 90	1949	France	-
	Brun12	1949	France	-
	Balt8	1949	Iran	-
MA13	1-57	1957	Morocco	-
	A61-139 (20-52)	1952	Senegal	-
	7-54	1954	Tunisia	-
	00 2046	2000	Guinea	-
	00 6712	2000	Morocco	-
	00 5851	2000	Nepal	-

Pool	Strains	Year	Country	Region
MA14	A80-82	1980	Brasil	-
	A80-2	1980	Togo	-
	A73-2	1973	Morocco	-
	A77-46	1977	Mali	-
	02 4282	2002	Mali	-
	06 6491	2006	Mali	-
MA15	06-1246	2006	India	-
	06-5568	2006	India	-
	5-66	1966	Senegal	-
	01 4749	2001	Nepal	-
	01 8552	2001	Peru	-
MA16	05 6761	2005	Bengladesh	-
	01 6979	2001	China	-
	04 3588	2004	Nepal	-
	05 7465	2005	Nepal	-
	WS0063, WS 0178	1899	US	-
	17-66	1966	Morocco	-
MA17	06-6204	2006	Turkey	-
	06-2861	2006	Pakistan	-
	06-2633	2006	Senegal	-
	01 1852	2001	Senegal	-
	04 6031	2004	Senegal	-
	06 0906	2006	Senegal	-
MA18	A80-26	1980	Congo	-
	02 7555	2002	Benin	-
	WS0782	1934	Jordania	-
	WS0064	pre 1963	-	-
	SARB42/ATCC9150*	pre 1993	-	-
	02 2076	2002	Indonesia	-

Appendix C

Genes with >2 SNPs more than expected among Paratyphi A pools

Gene IDs correspond to AKU_12601 annotation. Gene symbol is given where possible.

Gene ID	Symbol	Product
SSPA0020		Fimbrial chaperone
SSPA0061	<i>citG</i>	CitG protein
SSPA0101	<i>araB</i>	L-ribulokinase
SSPA0103		DedA family integral membrane protein
SSPA0107		Putative ABC transporter periplasmic solute binding protein
SSPA0157		Putative exported protein
SSPA0163		Putative transcriptional regulator
SSPA0193	<i>fhuC</i>	Ferrichrome transport ATP-binding protein FhuC
SSPA0196	<i>stfA</i>	Putative fimbrial subunit
SSPA0277		Putative oxidoreductase
SSPA0316		Putative lipoprotein
SSPA0319		Putative anaerobic reductase component
SSPA0331		Putative exported protein
SSPA0348		Putative arsenate reductase
SSPA0361		Succinyl-diaminopimelate desuccinylase
SSPA0457		Div protein

Gene ID	Symbol	Product
SSPA0477		Histidine transport ATP-binding protein
SSPA0483		Putative transcriptional regulator
SSPA0489		Putative membrane protein
SSPA0511		NADH dehydrogenase I chain M
SSPA0555		Hypothetical protein
SSPA0559		Regulator of capsule synthesis B component
SSPA0583		Putative sulphatase
SSPA0613		Colicin I receptor
SSPA0643		D-lactate dehydrogenase
SSPA0661		Putative outer membrane usher protein
SSPA0670		Fructose-bisphosphate aldolase class I
SSPA0696	<i>mdtC</i>	Putative RND-family transporter protein
SSPA0698		Putative uncharacterized protein
SSPA0719		Phosphomannomutase
SSPA0720		Putative transmembrane transport protein
SSPA0728		Glucose-1-phosphate cytidyltransferase
SSPA0733	<i>rfbX</i>	Putative O-antigen transporter
SSPA0735		Putative glycosyltransferase
SSPA0739		Undecaprenyl-phosphate galactosephosphotransferase
SSPA0764	<i>pduT</i>	Putative propanediol utilization protein PduT
SSPA0791		Synthesis of vitamin B12 adenosyl cobalamide precursor
SSPA0827		Colanic acid capsular biosynthesis activation protein A
SSPA0850	<i>fliC</i>	Flagellin
SSPA0856		Putative ABC transport ATP-binding protein
SSPA0860		Invasion response-regulator
SSPA0910		High-affinity zinc uptake system membrane protein
SSPA0931		Hypothetical protein
SSPA0953		Hypothetical protein
SSPA0956		Putative membrane protein
SSPA0957a	<i>proQ</i>	ProP effector
SSPA1014	<i>nifE</i>	Hydrogenase-1 large chain (NifE hydrogenase)
SSPA1032	<i>narL</i>	Nitrate/nitrite response regulator protein NarL
SSPA1072		Anthranilate phosphoribosyltransferase
SSPA1083		Aconitate hydratase 1 (Citrate hydro-lyase 1)
SSPA1095		Enoyl-[acyl-carrier-protein] reductase (NADH)
SSPA1120	<i>mppA</i>	Periplasmic murein peptide-binding protein MppA
SSPA1125a		Hypothetical protein
SSPA1136		Fumarate and nitrate reduction regulatory protein
SSPA1149		Putative periplasmic protein
SSPA1166		Hypothetical protein
SSPA1188		Putative regulatory protein

Gene ID	Symbol	Product
SSPA1196		Putative uncharacterized protein
SSPA1198		Respiratory nitrate reductase 2 beta chain
SSPA1201		Nitrite extrusion protein
SSPA1220		Putative aminotransferase
SSPA1271		Putative regulatory protein
SSPA1328	<i>mdtK</i>	Hypothetical integral membrane protein
SSPA1386		Phosphoenolpyruvate synthase
SSPA1434		Putative MutT-family protein
SSPA1445		Glyceraldehyde 3-phosphate dehydrogenase A
SSPA1451		Diguanylate cyclase/phosphodiesterase domain 1
SSPA1490		Putative toxin-like protein
SSPA1505	<i>phoQ</i>	Sensor protein PhoQ, regulator of virulence determinants
SSPA1519	<i>trcF</i>	Transcription-repair coupling factor (TrcF)
SSPA1531a	<i>fhuE</i>	FhuE receptor precursor
SSPA1533		Putative uncharacterized protein
SSPA1574		Putative cytochrome
SSPA1576		Hypothetical protein
SSPA1584		Putative uncharacterized protein
SSPA1594		Putative uncharacterized protein
SSPA1605		Proline dehydrogenase (Proline oxidase)
SSPA1613a	<i>scsB</i>	Membrane protein, suppressor for copper-sensitivity B precursor
SSPA1724	<i>clpA</i>	ATP-dependent Clp protease ATP-binding subunit ClpA
SSPA1731		Putative periplasmic protein
SSPA1742		Arginine-binding periplasmic protein 1
SSPA1754	<i>potG</i>	Putrescine transport ATP-binding protein PotG
SSPA1777		Hypothetical ABC transporter ATP-binding protein
SSPA1809		Hypothetical protein
SSPA1820a	<i>slrP</i>	Leucine-rich repeat protein SlrP
SSPA1838		Molybdate-binding periplasmic protein
SSPA1844		Galactose-1-phosphate uridylyltransferase
SSPA1899	<i>kdpD</i>	Sensor protein KdpD
SSPA1900		KDP operon transcriptional regulatory protein
SSPA1902		Putrescine-ornithine antiporter
SSPA1915		Putative outer membrane protein
SSPA1928a	<i>gltJ</i>	Glutamate/aspartate transport system permease protein GltJ
SSPA1968		Ribonuclease I
SSPA1984		Carbon starvation protein A
SSPA1993	<i>fepG</i>	Ferric enterobactin transport protein FepG
SSPA1999		Ferrienterobactin receptor
SSPA2034	<i>lpxH</i>	Putative uncharacterized protein
SSPA2045a	<i>ybbW</i>	Putative allantoin permease

Gene ID	Symbol	Product
SSPA2074		Inosine-guanosine kinase
SSPA2167		Branched chain amino acid transport system II carrier protein
SSPA2171	<i>sbcC</i>	Exonuclease SbcC
SSPA2191		Hypothetical protein
SSPA2212		Possible transcriptional regulator
SSPA2221		Putative fimbrial protein
SSPA2277		Aminoacyl-histidine dipeptidase
SSPA2292		Outermembrane fimbrial usher protein
SSPA2318		Hypothetical protein
SSPA2460		Putative nickel transporter
SSPA2509		Glucitol operon repressor
SSPA2563		Surface presentation of antigens protein
SSPA2592	<i>rpoS</i>	RNA polymerase sigma subunit RpoS (Sigma-38)
SSPA2598	<i>ispD</i>	2-C-methyl-D-erythritol 4-phosphate cytidyltransferase
SSPA2613a		Similar to putative metal-dependent hydrolases of the beta-lactamase superfamily II
SSPA2617	<i>pyrG</i>	CTP synthetase
SSPA2620		Outer membrane usher protein
SSPA2639		Putative serine transporter
SSPA2644		Fucose-1-phosphate aldolase
SSPA2663		Protease III (Pitriysin)
SSPA2664		Exonuclease V subunit
SSPA2745		Possible ABC-transport protein, ATP-binding component
SSPA2775		Nucleoside permease
SSPA2794		Putative oxidoreductase
SSPA2805		Glutathionylspermidine synthetase/amidase
SSPA2807		Hypothetical protein
SSPA2848		Putative uncharacterized protein
SSPA2862		Putative membrane protein
SSPA2873	<i>gcp</i>	Possible glycoprotease
SSPA2908		TDC operon transcriptional activator
SSPA2916		PTS system, sugar phosphotransferase enzyme IIBC component
SSPA3036	<i>prmA</i>	Ribosomal protein L11 methyltransferase
SSPA3043		RND family, multidrug transport protein, acriflavin resistance protein F
SSPA3087		Type III leader peptidase
SSPA3110		Cyclic AMP receptor protein, catabolite gene activator
SSPA3120		Putative nitrite transporter
SSPA3122		Tryptophanyl-tRNA synthetase
SSPA3133		Penicillin-binding protein 1A
SSPA3153		4-alpha-glucanotransferase
SSPA3155	<i>malT</i>	MalT regulatory protein
SSPA3162	<i>glgC</i>	Glucose-1-phosphate adenylyltransferase

Gene ID	Symbol	Product
SSPA3163	<i>glgX</i>	Glycogen operon protein
SSPA3164		1,4-alpha-glucan branching enzyme
SSPA3202		Putative lipoprotein
SSPA3209		Hypothetical ABC transporter ATP-binding protein
SSPA3215		Hypothetical protein
SSPA3234		Hypothetical luxR-family transcriptional regulator
SSPA3240	<i>dctA</i>	C4-dicarboxylate transport protein
SSPA3295		Putative transcriptional regulator
SSPA3307		L-lactate permease
SSPA3308		Putative L-lactate dehydrogenase operon regulator
SSPA3336		Lipopolysaccharide core biosynthesis protein
SSPA3354	<i>ligB</i>	Putative DNA ligase
SSPA3369		Hypothetical protein
SSPA3432		Two-component sensor protein histidine protein kinase
SSPA3448		Putative hydrolase
SSPA3475	<i>rbsD</i>	High affinity ribose transport protein RbsD
SSPA3480		Hypothetical 20.8 kDa protein in rbsr-rpsc intergenic region
SSPA3484		Putative magnesium chelatase, subunit ChII
SSPA3499	<i>gppA</i>	Guanosine-5'-triphosphate,3'-diphosphate pyrophosphatase
SSPA3511	<i>wecF/rffT</i>	Putative uncharacterized protein
SSPA3531		Magnesium and cobalt transport protein
SSPA3555		Putative deoxyribonuclease
SSPA3629		Two-component sensor kinase protein
SSPA3646		Putative ABC transporter permease protein
SSPA3655		Putative glycerol metabolic protein
SSPA3725		Two-component system sensor protein
SSPA3824		Melibiose carrier protein
SSPA3864		Fumarate reductase, flavoprotein subunit
SSPA3866		Putative amino acid permease
SSPA3893	<i>aidB</i>	Probable acyl Co-A dehydrogenase
SSPA3921		2',3'-cyclic-nucleotide 2'-phosphodiesterase
SSPA3963		Carbamate kinase
SSPA4071	<i>lplA</i>	Lipoate-protein ligase A

Appendix D

Variable pseudogenes in the Paratyphi A population

N = number of nonsense SNPs, Freq = SNP frequency or 'd' for deletion.

Gene ID	N	Freq	Symbol	Product
SSPA0005a	-	d		Fimbrial chaperone
SSPA0020	1	1		Fimbrial chaperone
SSPA0021	1	15		Fimbrial usher
SSPA0068	1	2	<i>caiC</i>	Probable crotonobetaine/carnitine-CoA ligase
SSPA0078	1	2		Probable secreted protein
SSPA0103	1	5		DedA family integral membrane protein
SSPA0107	1	2		Putative ABC transporter periplasmic solute binding protein
SSPA0209	1	1		Hypothetical protein
SSPA0223	1	3	<i>yaeT</i>	Outer membrane protein
SSPA0304	1	1	<i>iscR</i>	Putative uncharacterized protein
SSPA0330	1	1		Putative exported protein
SSPA0337	1	1		Putative outer membrane lipoprotein
SSPA0367	1	1		Putative exported protein
SSPA0376	1	2		Putative phosphate acyltransferase
SSPA0381	1	2		Putative alcohol dehydrogenase
SSPA0387	1	1	<i>eutK</i>	Ethanolamine utilization protein EutK
SSPA0401	1	2		Putative exported protein
SSPA0422	1	1		Putative decarboxylase
SSPA0470	1	24		Hypothetical protein
SSPA0477	1	1		Histidine transport ATP-binding protein
SSPA0526	1	2		Melittin resistance protein PqaB

Gene ID	N	Freq	Symbol	Product
SSPA0546	1	1		Glycerol-3-phosphate transporter
SSPA0558	1	2	<i>rscC</i>	Sensor protein RcsC
SSPA0560	1	2		Putative two-component system sensor kinase
SSPA0579a	-	d	<i>ccmH</i>	Cytochrome c-type biogenesis protein H1
SSPA0604	1	1		Putative membrane protein
SSPA0615a	1	1	<i>sdaC</i>	Putative L-serine dehydratase
SSPA0620	2	1,3		Mgl repressor and galactose ultrainduction factor
SSPA0621	1	7		D-galactose-binding periplasmic protein precursor
SSPA0638	1	5		Putative lipoprotein
SSPA0662	1	2		Putative exported protein
SSPA0670	1	1		Fructose-bisphosphate aldolase class I
SSPA0689	1	2		Putative exported protein
SSPA0708	-	d	<i>wcaA</i>	Hypothetical protein
SSPA0719a	1	14	<i>wcaJ</i>	Putative extracellular polysaccharide biosynthesis protein
SSPA0720	-	d		Membrane transport protein
SSPA0728	1	3		Glucose-1-phosphate cytidyltransferase
SSPA0735	1	30		Putative glycosyltransferase
SSPA0738	1	6		Phosphomannomutase
SSPA0768	1	15		Putative uncharacterized protein
SSPA0775	1	16	<i>pduG</i>	Propanediol dehydratase reactivation protein
SSPA0780a	-	d	<i>pduF</i>	Propanediol diffusion facilitator
SSPA0790	1	1		Synthesis of vitamin B12 adenosyl cobalamide
SSPA0791	1	1		Synthesis of vitamin B12 adenosyl cobalamide precursor
SSPA0795	1	4	<i>cbiQ</i>	Putative cobalt transport protein CbiQ
SSPA0802a	-	d	<i>yeeO</i>	Putative inner membrane protein
SSPA0816a	1	1		Putative membrane protein
SSPA0938	1	2		Putative hydrolase
SSPA0951	1	1		Serine/threonine protein phosphatase 1
SSPA0957a	2	1,1	<i>proQ</i>	ProP effector
SSPA0978	1	1	<i>nudL</i>	Putative uncharacterized protein
SSPA1000	1	1		Alanine racemase
SSPA1002	1	2		Hypothetical protein
SSPA1072	2	3,5		Anthranilate phosphoribosyltransferase
SSPA1083	1	1		Aconitate hydratase 1 (Citrate hydro-lyase 1)
SSPA1180	1	57		Putative inner membrane protein
SSPA1197a	-	d	<i>narW</i>	Respiratory nitrate reductase 2 delta chain
SSPA1204a	-	d	<i>nmpC</i>	Outer membrane porin
SSPA1217	1	4		Putative hydrolase
SSPA1227	1	1	<i>hyaE2</i>	Hydrogenase-1 operon protein HyaE2
SSPA1249	1	1		Putative oxidoreductase
SSPA1267	1	1		Putative ABC transporter membrane protein
SSPA1285	1	4		Two component sensor kinase
SSPA1311	1	10		Putative HlyD-family protein
SSPA1391	2	1,1		Hypothetical protein

Gene ID	N	Freq	Symbol	Product
SSPA1447	1	128		Putative oxidoreductase
SSPA1449a	-	d	<i>yeaG</i>	Putative uncharacterized protein
SSPA1578	1	1	<i>mdtG</i>	Putative membrane transport protein
SSPA1590	1	2		Putative regulatory protein
SSPA1706	1	1		Anaerobic dimethyl sulfoxide reductase chain A
SSPA1724	1	1	<i>clpA</i>	ATP-dependent Clp protease ATP-binding subunit ClpA
SSPA1773	1	3		Putative uncharacterized protein
SSPA1786	1	2		Putative exported protein
SSPA1797	1	2		Hypothetical Zinc-finger containing protein
SSPA1798	1	1		Hypothetical protein
SSPA1829a	1	1	<i>hutU</i>	Urocanate hydratase
SSPA1832	1	5	<i>hutI</i>	Imidazolonepropionase
SSPA1902	1	1		Putrescine-ornithine antiporter
SSPA1906	1	1	<i>ybfF</i>	Putative esterase/lipase YbfF
SSPA1915	1	2		Putative outer membrane protein
SSPA1921a	-	d	<i>asnB</i>	Asparagine synthetase B
SSPA1928a	3	1,1,8	<i>gltJ</i>	Glutamate/aspartate transport system permease protein GltJ
SSPA2005	1	1		Oxygen-insensitive NAD(P)H nitroreductase
SSPA2007	1	3		Putative membrane protein
SSPA2017a	3	4,5,5		Putative membrane protein
SSPA2090	1	3	<i>acrB</i>	Acriflavin resistance protein B
SSPA2100	-	d	<i>tesB</i>	Acyl-CoA thioesterase II
SSPA2118	1	2	<i>bolA</i>	Transcriptional regulator
SSPA2182	1	1	<i>psiF</i>	Phosphate starvation-inducible protein PsiF
SSPA2185a	2	2,2	<i>ddlA</i>	D-alanine:D-alanine ligase A
SSPA2334	1	2		Hypothetical protein
SSPA2338	1	4		Putative uncharacterized protein
SSPA2375	1	4		Putative type I secretion protein, ATP-binding protein
SSPA2376	1	1		Putative type I secretion protein
SSPA2592	3	2,2,2	<i>rpoS</i>	RNA polymerase sigma subunit RpoS (Sigma-38)
SSPA2598	1	1	<i>ispD</i>	2-C-methyl-D-erythritol 4-phosphate cytidyltransferase
SSPA2606	1	2		Hypothetical protein
SSPA2630	1	2		Sensor protein
SSPA2643	-	d		Lactaldehyde reductase
SSPA2663	1	1		Protease III (Pitrilysin)
SSPA2760	1	1		Probable global regulatory protein homolog
SSPA2775	1	1		Nucleoside permease
SSPA2807a	1	1		Possible ABC-transport protein, periplasmic-binding component
SSPA2848	1	1		Putative uncharacterized protein
SSPA2877	1	14		G/U mismatch-specific DNA glycosylase
SSPA2900a	1	19		Hypothetical transport protein
SSPA2907	1	1		Catabolic threonine dehydratase
SSPA2916	1	2		PTS system, sugar phosphotransferase enzyme IIBC component
SSPA2939	1	1		Putative uncharacterized protein

Gene ID	N	Freq	Symbol	Product
SSPA2987	1	1		Hypothetical protein
SSPA3040	1	1		Diguanylate cyclase/phosphodiesterase domain 2
SSPA3087	1	2		Type III leader peptidase
SSPA3117	1	1	<i>tsgA</i>	Putative membrane protein
SSPA3146	1	1		Ferrous iron transport protein B
SSPA3155	1	1	<i>malT</i>	MalT regulatory protein
SSPA3202	-	d		Putative lipoprotein
SSPA3209	1	15		Hypothetical ABC transporter ATP-binding protein
SSPA3240	1	1	<i>dctA</i>	C4-dicarboxylate transport protein
SSPA3259a	1	18	<i>yhjW</i>	Putative membrane protein
SSPA3281	1	3		Putative exported amidase
SSPA3307	1	2		L-lactate permease
SSPA3308	1	1		Putative L-lactate dehydrogenase operon regulator
SSPA3329	1	1	<i>waaK</i>	Lipopolysaccharide 1,2-N-acetylglucosaminetransferase
SSPA3370	1	2		Putative autotransported protein
SSPA3432	1	1		Two-component sensor protein histidine protein kinase
SSPA3446	1	1		Hypothetical protein
SSPA3448	1	1		Putative hydrolase
SSPA3475	1	9	<i>rbsD</i>	High affinity ribose transport protein RbsD
SSPA3476a	-	d	<i>rbsC</i>	High affinity ribose transport protein RbsC
SSPA3478a	-	d	<i>rbsR</i>	Ribose operon repressor
SSPA3484	1	2	<i>chlI</i>	Putative magnesium chelatase, subunit ChlI
SSPA3485	1	1		Acetolactate synthase large
SSPA3499	1	1	<i>gppA</i>	Guanosine-5'-triphosphate,3'-diphosphate pyrophosphatase
SSPA3499a	-	d	<i>rhlB</i>	ATP-dependent RNA helicase
SSPA3565	1	2		Molybdopterin-guanine dinucleotide biosynthesis protein B
SSPA3578	1	2		Glutamine synthetase
SSPA3581	1	93		Hypothetical protein
SSPA3616	1	3	<i>rhaD</i>	Rhamnulose-1-phosphate aldolase
SSPA3629	1	1		Two-component sensor kinase protein
SSPA3676	1	4		Putative GntR-family regulatory protein
SSPA3720	1	3	<i>nfi</i>	Putative endonuclease
SSPA3784	1	15		Putative type-I secretion protein
SSPA3871	1	2	<i>artJ</i>	Probable arginine-binding periplasmic protein
SSPA3893	-	d	<i>aidB</i>	Probable acyl Co-A dehydrogenase
SSPA3921	1	3		2',3'-cyclic-nucleotide 2'-phosphodiesterase
SSPA3950	1	1		Anaerobic ribonucleoside-triphosphate reductase
SSPA3979	1	2		GntP family, L-idonate transport protein
SSPA4005	1	1		Putative uncharacterized protein
SSPA4022	1	1		Probable transcriptional activator
SSPA4028	1	1		Putative membrane protein
SSPA4030	1	3		Putative uncharacterized protein
SSPA4071	-	d		Lipoate-protein ligase A
SSPA4083	1	12		Putative two-component response regulator

Appendix E

Typhi isolates used for SNP typing

Typhi isolates were sourced from the following collections:

S - Sequenced isolates - DNA from Sanger Institute;

A - Pasteur Institute (isolates from travellers returning to France with typhoid fever)
- Francois-Xavier Weill, Pasteur Institute, Paris, France;

B - Mekong Delta - Christiane Dolecek, Oxford University Clinical Research Unit, Hospital for Tropical Diseases, Ho Chi Minh City, Vietnam;

C - Kathmandu - Andrew Pollard, Department of Pediatrics, Oxford University, Oxford, UK;

D - Kolkata - Shanta Dutta, National Institute for Cholera and Enteric Diseases, Kolkata, India

E - Kenya - Sam Kariuki, Kenya Medical Research Institute, Nairobi, Kenya.

Isolate	Year	Country	Haplotype	IncHI1	Study
B01787	2004	India	H16	-	D
A02292	2005	India	H16	-	D
D02273	2004	India	H42	-	D
D02104	2004	India	H42	-	D
C07620	2006	India	H42	-	D
C05146	2005	India	H42	-	D
C05029	2005	India	H42	-	D
C04892	2005	India	H42	-	D
C04881	2005	India	H42	-	D
C04809	2005	India	H42	-	D
C04190	2005	India	H42	-	D
C02132	2004	India	H42	-	D
C01667	2004	India	H42	-	D
C01071	2004	India	H42	-	D
C00951	2003	India	H42	-	D
B07476	2006	India	H42	-	D
B07459	2006	India	H42	-	D
B07437	2006	India	H42	-	D
B05142	2005	India	H42	-	D
B03080	2004	India	H42	-	D
B02933	2004	India	H42	-	D
B02555	2004	India	H42	-	D
B01794	2004	India	H42	-	D
B01741	2004	India	H42	-	D
B01714	2004	India	H42	-	D
B01664	2004	India	H42	-	D
A02904	2006	India	H42	-	D
A01481	2004	India	H42	-	D
A00929	2004	India	H42	-	D
D02422	2004	India	H42/H85	-	D
C01057	2004	India	H42/H85	-	D
C07566	2006	India	H42	-	D
C07548	2006	India	H42	-	D
B03159	2004	India	H42	-	D
D02348	2004	India	H50	-	D
D00763	2003	India	H50	-	D
D00205	2003	India	H50	-	D
C05572	2005	India	H50	-	D
C01662	2004	India	H50	-	D
C01606	2004	India	H50	-	D
B00679	2003	India	H50	-	D
B00181	2003	India	H50	-	D
A01910	2005	India	H50	-	D

Isolate	Year	Country	Haplotype	IncHI1	Study
D01946	2004	India	H52	-	D
D03021	2004	India	H58-A	-	D
D02274	2004	India	H58-A	-	D
D02190	2004	India	H58-A	-	D
D01988	2004	India	H58-A	-	D
D00405	2003	India	H58-A	-	D
C05685	2005	India	H58-A	ST6	D
C02633	2004	India	H58-A	ST6	D
C02066	2004	India	H58-A	-	D
C01802	2004	India	H58-A	-	D
D00193	2003	India	H58-B	-	D
C07539	2006	India	H58-B	-	D
C07343	2006	India	H58-B	-	D
C07121	2006	India	H58-B	-	D
C06953	2006	India	H58-B	-	D
C06502	2006	India	H58-B	-	D
C06427	2006	India	H58-B	-	D
C05732	2005	India	H58-B	-	D
C05573	2005	India	H58-B	-	D
C05557	2005	India	H58-B	-	D
C05518	2005	India	H58-B	-	D
C05475	2005	India	H58-B	-	D
C05446	2005	India	H58-B	-	D
C05443	2005	India	H58-B	-	D
C05440	2005	India	H58-B	-	D
C05423	2005	India	H58-B	-	D
C05279	2005	India	H58-B	-	D
C04862	2005	India	H58-B	-	D
C04529	2005	India	H58-B	-	D
C04404	2005	India	H58-B	-	D
C04401	2005	India	H58-B	-	D
C02780	2004	India	H58-B	-	D
C02670	2004	India	H58-B	-	D
C01038	2004	India	H58-B	-	D
C00145	2003	India	H58-B	-	D
B07521	2006	India	H58-B	-	D
B06864	2006	India	H58-B	-	D
B06399	2006	India	H58-B	-	D
B06375	2006	India	H58-B	-	D
B06297	2006	India	H58-B	-	D
B06295	2006	India	H58-B	-	D
B06266	2006	India	H58-B	-	D
B06198	2006	India	H58-B	-	D

Isolate	Year	Country	Haplotype	IncHI1	Study
B06078	2006	India	H58-B	-	D
B05961	2006	India	H58-B	-	D
B05787	2006	India	H58-B	-	D
B05658	2005	India	H58-B	-	D
B05600	2005	India	H58-B	-	D
B05563	2005	India	H58-B	-	D
B05561	2005	India	H58-B	-	D
B05517	2005	India	H58-B	-	D
B05505	2005	India	H58-B	-	D
B05476	2005	India	H58-B	-	D
B05467	2005	India	H58-B	-	D
B04751	2005	India	H58-B	-	D
B04716	2005	India	H58-B	-	D
B04487	2005	India	H58-B	-	D
B04421	2005	India	H58-B	-	D
B03274	2004	India	H58-B	-	D
B03166	2004	India	H58-B	-	D
B02181	2004	India	H58-B	-	D
B02150	2004	India	H58-B	-	D
B02034	2004	India	H58-B	-	D
B02026	2004	India	H58-B	-	D
B01961	2004	India	H58-B	-	D
B01911	2004	India	H58-B	-	D
B01861	2004	India	H58-B	-	D
B01813	2004	India	H58-B	-	D
B01667	2004	India	H58-B	-	D
B01661	2004	India	H58-B	-	D
B01535	2004	India	H58-B	-	D
B01342	2004	India	H58-B	-	D
B01240	2004	India	H58-B	-	D
B01074	2004	India	H58-B	-	D
B01037	2004	India	H58-B	-	D
B01021	2004	India	H58-B	-	D
B00965	2003	India	H58-B	-	D
B00756	2003	India	H58-B	-	D
B00279	2003	India	H58-B	-	D
B00116	2003	India	H58-B	-	D
B00045	2003	India	H58-B	-	D
A02964	2006	India	H58-B	-	D
A02783	2005	India	H58-B	-	D
A00981	2004	India	H58-B	-	D
A00118	2003	India	H58-B	-	D
D02950	2004	India	H58-G	-	D

Isolate	Year	Country	Haplotype	IncHI1	Study
D01545	2004	India	H58-G	-	D
D00964	2003	India	H58-G	-	D
D00043	2003	India	H58-G	-	D
D00030	2003	India	H58-G	-	D
C07610	2006	India	H58-G	-	D
C07179	2006	India	H58-G	-	D
C07087	2006	India	H58-G	-	D
C07079	2006	India	H58-G	-	D
C07052	2006	India	H58-G	-	D
C06932	2006	India	H58-G	-	D
C06876	2006	India	H58-G	-	D
C06875	2006	India	H58-G	-	D
C06855	2006	India	H58-G	-	D
C06806	2006	India	H58-G	-	D
C06567	2006	India	H58-G	-	D
C05501	2005	India	H58-G	-	D
C04932	2005	India	H58-G	ST6	D
C04903	2005	India	H58-G	ST6	D
C04365	2005	India	H58-G	-	D
C04334	2005	India	H58-G	-	D
C04062	2005	India	H58-G	-	D
C03891	2005	India	H58-G	ST6	D
C03112	2004	India	H58-G	-	D
C01818	2004	India	H58-G	-	D
C01777	2004	India	H58-G	-	D
C00777	2003	India	H58-G	-	D
B06681	2006	India	H58-G	-	D
B06390	2006	India	H58-G	-	D
B05529	2005	India	H58-G	-	D
B03103	2004	India	H58-G	-	D
B03000	2004	India	H58-G	-	D
B02377	2004	India	H58-G	-	D
B02176	2004	India	H58-G	-	D
B02095	2004	India	H58-G	-	D
B02071	2004	India	H58-G	-	D
B02020	2004	India	H58-G	-	D
B01501	2004	India	H58-G	-	D
B00031	2003	India	H58-G	ST6	D
B00025	2003	India	H58-G	-	D
A03175	2006	India	H58-G	-	D
A00832	2004	India	H58-G	-	D
A00763	2004	India	H58-G	-	D
D01604	2004	India	H64	-	D

Isolate	Year	Country	Haplotype	IncHI1	Study
C05035	2005	India	H64	-	D
C03495	2005	India	H64	-	D
A02467	2005	India	H64	-	D
A01014	2004	India	H64	-	D
A00102	2003	India	H64	-	D
B02997	2004	India	H58-K	-	D
B01772	2004	India	H8	-	D
C03646	2005	India	pre-H58	-	D
B03046	2004	India	pre-H58	-	D
C03656	2005	India	H45	-	D
NPL1871	2006	Nepal	H42	-	C
NPL882	2005	Nepal	H42	-	C
NPL726	2005	Nepal	H42	-	C
NPL1922	2006	Nepal	H42	-	C
NPL1708	2006	Nepal	H42	-	C
NPL1591	2006	Nepal	H42	-	C
NPL1421	2006	Nepal	H42	-	C
NPL1402	2006	Nepal	H42	-	C
NPL1121	2006	Nepal	H42	-	C
NPL1077	2006	Nepal	H42	-	C
NPL1265	2006	Nepal	H42	-	C
NPL728	2005	Nepal	H50	-	C
NPL1382	2006	Nepal	H50	-	C
NPL107	2005	Nepal	H50	-	C
NPL959	2006	Nepal	H58-B	-	C
NPL239	2005	Nepal	H58-G	-	C
NPL1493	2006	Nepal	H58-G	-	C
NPL972	2006	Nepal	H58-G	-	C
NPL95	2005	Nepal	H58-G	-	C
NPL830	2005	Nepal	H58-G	-	C
NPL809	2005	Nepal	H58-G	-	C
NPL764	2005	Nepal	H58-G	-	C
NPL73	2005	Nepal	H58-G	-	C
NPL716	2005	Nepal	H58-G	-	C
NPL699	2005	Nepal	H58-G	-	C
NPL64	2005	Nepal	H58-G	-	C
NPL587	2005	Nepal	H58-G	-	C
NPL537	2005	Nepal	H58-G	-	C
NPL528	2005	Nepal	H58-G	-	C
NPL527	2005	Nepal	H58-G	-	C
NPL462	2005	Nepal	H58-G	-	C
NPL453	2005	Nepal	H58-G	-	C
NPL1921	2006	Nepal	H58-G	-	C

Isolate	Year	Country	Haplotype	IncHI1	Study
NPL1838	2006	Nepal	H58-G	-	C
NPL17	2005	Nepal	H58-G	-	C
NPL1505	2006	Nepal	H58-G	-	C
NPL1487	2006	Nepal	H58-G	-	C
NPL1354	2006	Nepal	H58-G	-	C
NPL1305	2006	Nepal	H58-G	-	C
NPL1287	2006	Nepal	H58-G	-	C
NPL1255	2006	Nepal	H58-G	-	C
NPL1238	2006	Nepal	H58-G	-	C
NPL117	2005	Nepal	H58-G	-	C
NPL1143	2006	Nepal	H58-G	-	C
NPL1048	2006	Nepal	H58-G	-	C
NPL872	2005	Nepal	H58	-	C
FEB6075	2004	Kenya	H73	ST6-like	E
FEB7273	2008	Kenya	H42	-	E
Sam6	1998	Kenya	H52	-	E
LIV915	1989	Kenya	H7	-	E
LIV901	1989	Kenya	H7	-	E
LIV822	1989	Kenya	H7	-	E
LIV586	1988	Kenya	H7	-	E
LIV5223	1992	Kenya	H7	-	E
LIV516	1988	Kenya	H7	-	E
LIV279	1988	Kenya	H7	-	E
FEB6319	2005	Kenya	H7	-	E
Sam8	1998	Kenya	H55	-	E
Sam11	2001	Kenya	H55	-	E
FEB7271	2008	Kenya	H58-B	ST6	E
FEB7263	2008	Kenya	H58-B	ST6	E
FEB7231	2008	Kenya	H58-B	ST6	E
FEB7223	2008	Kenya	H58-B	-	E
FEB7212	2008	Kenya	H58-B	-	E
FEB7195	2008	Kenya	H58-B	ST6	E
FEB6747	2006	Kenya	H58-B	ST6	E
FEB6465	2006	Kenya	H58-B	ST6	E
FEB6384	2005	Kenya	H58-B	ST6	E
FEB6329	2005	Kenya	H58-B	ST6	E
FEB6323	2005	Kenya	H58-B	ST6	E
FEB6318	2005	Kenya	H58-B	ST6	E
FEB6157	2005	Kenya	H58-B	ST6	E
FEB6154	2005	Kenya	H58-B	ST6	E
FEB6124	2005	Kenya	H58-B	ST6	E
FEB6123	2005	Kenya	H58-B	ST6	E
FEB6094	2004	Kenya	H58-B	ST6	E

Isolate	Year	Country	Haplotype	IncHI1	Study
FEB6079	2004	Kenya	H58-B	ST6	E
FEB6078	2004	Kenya	H58-B	ST6	E
FEB6077	2004	Kenya	H58-B	ST6	E
FEB6489	2006	Kenya	H58-G	-	E
Sam9	2001	Kenya	H58-J1	-	E
Sam7	1998	Kenya	H58-J1	ST6	E
Sam5	1994	Kenya	H58-J1	ST6	E
Sam4	1995	Kenya	H58-J1	ST6	E
Sam3	1994	Kenya	H58-J1	ST6	E
Sam2	2005	Kenya	H58-J1	ST6	E
Sam10	2001	Kenya	H58-J1	ST6	E
Sam1	2003	Kenya	H58-J1	ST6	E
KEN980	1992	Kenya	H58-J1	ST6	E
KEN738	1991	Kenya	H58-J1	ST6	E
KEN678	1991	Kenya	H58-J1	ST6	E
KEN417	1990	Kenya	H58-J1	ST6	E
KEN297	1989	Kenya	H58-J1	ST6	E
KEN294	1989	Kenya	H58-J1	ST6	E
KEN239	1988	Kenya	H58-J1	ST6	E
FEB7108	2008	Kenya	H58-J1	-	E
FEB6466	2006	Kenya	H58-J1	ST6	E
FEB6156	2005	Kenya	H58-J1	ST6	E
FEB6125	2005	Kenya	H58-J1	ST6	E
FEB6074	2004	Kenya	H58-J1	ST6	E
FEB4106	2003	Kenya	H58-J1	ST6	E
FEB1441	2001	Kenya	H58-J1	ST6	E
FEB1408	2001	Kenya	H58-J1	ST6	E
FEB1361	2001	Kenya	H58-J1	ST6	E
FEB1303	2001	Kenya	H58-J1	ST6	E
FEB1300	2001	Kenya	H58-J1	ST6	E
FEB1294	2001	Kenya	H58-J1	ST6	E
FEB1227	2001	Kenya	H58-J2	ST6	E
FEB1226	2001	Kenya	H58-J2	ST6	E
LIV846	1989	Kenya	H16	-	E
KEN858	1991	Kenya	H16	-	E
KEN741	1991	Kenya	H16	-	E
FEB6653	2006	Kenya	H16	-	E
FEB6645	2006	Kenya	H16	-	E
FEB6784	2006	Kenya	H45	-	E
FEB6126	2005	Kenya	H45	-	E
FEB6472	2006	Kenya	H14	-	E
FEB6377	2005	Kenya	H14	-	E
FEB6118	2005	Kenya	H14	-	E

Isolate	Year	Country	Haplotype	IncHI1	Study
BJ365	2004	Vietnam	contam	contam	B
BJ382	2004	Vietnam	contam	contam	B
BJ64	2004	Vietnam	H1	-	B
BJ63	2004	Vietnam	H1	-	B
BJ105	2004	Vietnam	H1	-	B
BJ264	2004	Vietnam	H45	-	B
BJ9	2004	Vietnam	H50	-	B
BJ3	2004	Vietnam	H52	-	B
BJ359	2004	Vietnam	H58-B	ST6	B
BJ99	2005	Vietnam	H58-C	ST6	B
BJ95	2005	Vietnam	H58-C	-	B
BJ94	2005	Vietnam	H58-C	-	B
BJ91	2005	Vietnam	H58-C	ST6	B
BJ89	2005	Vietnam	H58-C	ST6	B
BJ83	2004	Vietnam	H58-C	ST6	B
BJ76	2004	Vietnam	H58-C	ST6	B
BJ75	2004	Vietnam	H58-C	ST6	B
BJ71	2004	Vietnam	H58-C	ST6	B
BJ70	2004	Vietnam	H58-C	ST6	B
BJ69	2004	Vietnam	H58-C	ST6	B
BJ67	2004	Vietnam	H58-C	-	B
BJ66	2004	Vietnam	H58-C	-	B
BJ60	2004	Vietnam	H58-C	-	B
BJ6	2004	Vietnam	H58-C	ST6	B
BJ57	2004	Vietnam	H58-C	ST6	B
BJ525	2005	Vietnam	H58-C	ST6	B
BJ524	2005	Vietnam	H58-C	ST6	B
BJ521	2005	Vietnam	H58-C	ST6	B
BJ520	2005	Vietnam	H58-C	-	B
BJ52	2005	Vietnam	H58-C	-	B
BJ518	2005	Vietnam	H58-C	-	B
BJ517	2005	Vietnam	H58-C	ST6	B
BJ515	2005	Vietnam	H58-C	ST6	B
BJ514	2005	Vietnam	H58-C	ST6	B
BJ512	2005	Vietnam	H58-C	ST6	B
BJ511	2005	Vietnam	H58-C	ST6	B
BJ510	2005	Vietnam	H58-C	ST6	B
BJ507	2005	Vietnam	H58-C	ST6	B
BJ506	2005	Vietnam	H58-C	ST6	B
BJ505	2005	Vietnam	H58-C	ST6	B
BJ504	2005	Vietnam	H58-C	ST6	B
BJ503	2005	Vietnam	H58-C	ST6	B
BJ5	2004	Vietnam	H58-C	-	B

Isolate	Year	Country	Haplotype	IncHI1	Study
BJ402	2005	Vietnam	H58-C	ST6	B
BJ401	2005	Vietnam	H58-C	ST6	B
BJ400	2005	Vietnam	H58-C	ST6	B
BJ398	2005	Vietnam	H58-C	ST6	B
BJ397	2005	Vietnam	H58-C	ST6	B
BJ396	2005	Vietnam	H58-C	ST6	B
BJ395	2005	Vietnam	H58-C	ST6	B
BJ394	2005	Vietnam	H58-C	ST6	B
BJ393	2005	Vietnam	H58-C	ST6	B
BJ392	2005	Vietnam	H58-C	-	B
BJ391	2005	Vietnam	H58-C	ST6	B
BJ388	2005	Vietnam	H58-C	ST6	B
BJ387	2005	Vietnam	H58-C	ST6	B
BJ386	2005	Vietnam	H58-C	ST6	B
BJ384	2005	Vietnam	H58-C	-	B
BJ380	2005	Vietnam	H58-C	ST6	B
BJ379	2005	Vietnam	H58-C	ST6	B
BJ378	2005	Vietnam	H58-C	ST6	B
BJ377	2005	Vietnam	H58-C	-	B
BJ375	2005	Vietnam	H58-C	ST6	B
BJ373	2005	Vietnam	H58-C	ST6	B
BJ372	2005	Vietnam	H58-C	ST6	B
BJ370	2005	Vietnam	H58-C	ST6	B
BJ367	2005	Vietnam	H58-C	ST6	B
BJ366	2005	Vietnam	H58-C	ST6	B
BJ364	2005	Vietnam	H58-C	ST6	B
BJ362	2005	Vietnam	H58-C	ST6	B
BJ361	2005	Vietnam	H58-C	ST6	B
BJ360	2004	Vietnam	H58-C	ST6	B
BJ358	2005	Vietnam	H58-C	ST6	B
BJ356	2005	Vietnam	H58-C	ST6	B
BJ353	2005	Vietnam	H58-C	ST6	B
BJ351	2004	Vietnam	H58-C	ST6	B
BJ345	2004	Vietnam	H58-C	-	B
BJ336	2004	Vietnam	H58-C	ST6	B
BJ324	2004	Vietnam	H58-C	ST6	B
BJ322	2004	Vietnam	H58-C	-	B
BJ321	2004	Vietnam	H58-C	ST6	B
BJ318	2004	Vietnam	H58-C	ST6	B
BJ315	2004	Vietnam	H58-C	ST6	B
BJ311	2004	Vietnam	H58-C	ST6	B
BJ297	2004	Vietnam	H58-C	ST6	B
BJ296	2004	Vietnam	H58-C	ST6	B

Isolate	Year	Country	Haplotype	IncHI1	Study
BJ290	2004	Vietnam	H58-C	ST6	B
BJ288	2004	Vietnam	H58-C	ST6	B
BJ287	2004	Vietnam	H58-C	ST6	B
BJ286	2004	Vietnam	H58-C	ST6	B
BJ283	2004	Vietnam	H58-C	ST6	B
BJ279	2004	Vietnam	H58-C	ST6	B
BJ275	2004	Vietnam	H58-C	-	B
BJ271	2004	Vietnam	H58-C	-	B
BJ260	2004	Vietnam	H58-C	-	B
BJ26	2004	Vietnam	H58-C	-	B
BJ258	2004	Vietnam	H58-C	-	B
BJ256	2004	Vietnam	H58-C	-	B
BJ251	2004	Vietnam	H58-C	-	B
BJ249	2004	Vietnam	H58-C	ST6	B
BJ248	2004	Vietnam	H58-C	ST6	B
BJ240	2004	Vietnam	H58-C	ST6	B
BJ230	2004	Vietnam	H58-C	ST6	B
BJ223	2004	Vietnam	H58-C	ST6	B
BJ220	2004	Vietnam	H58-C	ST6	B
BJ217	2004	Vietnam	H58-C	ST6	B
BJ2	2004	Vietnam	H58-C	ST6	B
BJ196	2004	Vietnam	H58-C	ST6	B
BJ193	2004	Vietnam	H58-C	-	B
BJ192	2004	Vietnam	H58-C	ST6	B
BJ190	2004	Vietnam	H58-C	ST6	B
BJ187	2004	Vietnam	H58-C	ST6	B
BJ185	2004	Vietnam	H58-C	ST6	B
BJ174	2004	Vietnam	H58-C	ST6	B
BJ168	2004	Vietnam	H58-C	-	B
BJ164	2004	Vietnam	H58-C	ST6	B
BJ163	2004	Vietnam	H58-C	ST6	B
BJ162	2004	Vietnam	H58-C	ST6	B
BJ161	2004	Vietnam	H58-C	-	B
BJ160	2004	Vietnam	H58-C	ST6	B
BJ159	2004	Vietnam	H58-C	-	B
BJ154	2004	Vietnam	H58-C	ST6	B
BJ151	2005	Vietnam	H58-C	ST6	B
BJ104	2005	Vietnam	H58-C	ST6	B
BJ1	2004	Vietnam	H58-C	ST6	B
BJ7	2004	Vietnam	H58-C	-	B
BJ88	2005	Vietnam	H58-D3	ST6	B
BJ516	2005	Vietnam	H58-D3	ST6	B
BJ502	2005	Vietnam	H58-D3	-	B

Isolate	Year	Country	Haplotype	IncHI1	Study
BJ228	2004	Vietnam	H58-D3	ST6	B
BJ59	2004	Vietnam	H58-E1	ST6	B
BJ509	2005	Vietnam	H58-E1	ST6	B
BJ508	2005	Vietnam	H58-E1	ST6	B
BJ4	2004	Vietnam	H58-E1	-	B
BJ399	2005	Vietnam	H58-E1	ST6	B
BJ383	2005	Vietnam	H58-E1	ST6	B
BJ376	2005	Vietnam	H58-E1	ST6	B
BJ374	2005	Vietnam	H58-E1	ST6	B
BJ368	2005	Vietnam	H58-E1	ST6	B
BJ298	2004	Vietnam	H58-E1	ST6	B
BJ201	2004	Vietnam	H58-E1	ST6	B
BJ191	2004	Vietnam	H58-E1	ST6	B
BJ188	2004	Vietnam	H58-E1	ST6	B
BJ165	2004	Vietnam	H58-E1	ST6	B
BJ102	2005	Vietnam	H58-E1	ST6	B
BJ90	2005	Vietnam	H58-E2	ST6	B
BJ8	2004	Vietnam	H58-E2	-	B
BJ519	2005	Vietnam	H58-E2	ST6	B
BJ357	2005	Vietnam	H58-E2	-	B
BJ355	2005	Vietnam	H58-E2	-	B
BJ352	2004	Vietnam	H58-E2	-	B
BJ350	2004	Vietnam	H58-E2	-	B
BJ349	2004	Vietnam	H58-E2	-	B
BJ348	2004	Vietnam	H58-E2	-	B
BJ347	2004	Vietnam	H58-E2	-	B
BJ346	2004	Vietnam	H58-E2	-	B
BJ344	2004	Vietnam	H58-E2	-	B
BJ343	2004	Vietnam	H58-E2	-	B
BJ340	2004	Vietnam	H58-E2	-	B
BJ339	2004	Vietnam	H58-E2	-	B
BJ338	2004	Vietnam	H58-E2	-	B
BJ334	2004	Vietnam	H58-E2	-	B
BJ333	2004	Vietnam	H58-E2	-	B
BJ332	2004	Vietnam	H58-E2	-	B
BJ331	2004	Vietnam	H58-E2	-	B
BJ330	2004	Vietnam	H58-E2	-	B
BJ329	2004	Vietnam	H58-E2	-	B
BJ328	2004	Vietnam	H58-E2	-	B
BJ327	2004	Vietnam	H58-E2	-	B
BJ326	2004	Vietnam	H58-E2	-	B
BJ325	2004	Vietnam	H58-E2	-	B
BJ323	2004	Vietnam	H58-E2	ST6	B

Isolate	Year	Country	Haplotype	IncHI1	Study
BJ320	2004	Vietnam	H58-E2	-	B
BJ319	2004	Vietnam	H58-E2	-	B
BJ314	2004	Vietnam	H58-E2	-	B
BJ313	2004	Vietnam	H58-E2	-	B
BJ310	2004	Vietnam	H58-E2	-	B
BJ309	2004	Vietnam	H58-E2	-	B
BJ308	2004	Vietnam	H58-E2	-	B
BJ307	2004	Vietnam	H58-E2	-	B
BJ305	2004	Vietnam	H58-E2	-	B
BJ304	2004	Vietnam	H58-E2	-	B
BJ302	2004	Vietnam	H58-E2	-	B
BJ301	2004	Vietnam	H58-E2	-	B
BJ299	2004	Vietnam	H58-E2	-	B
BJ295	2004	Vietnam	H58-E2	-	B
BJ294	2004	Vietnam	H58-E2	-	B
BJ293	2004	Vietnam	H58-E2	-	B
BJ292	2004	Vietnam	H58-E2	ST6	B
BJ289	2004	Vietnam	H58-E2	ST6	B
BJ285	2004	Vietnam	H58-E2	-	B
BJ284	2004	Vietnam	H58-E2	-	B
BJ282	2004	Vietnam	H58-E2	-	B
BJ281	2004	Vietnam	H58-E2	-	B
BJ280	2004	Vietnam	H58-E2	-	B
BJ278	2004	Vietnam	H58-E2	-	B
BJ276	2004	Vietnam	H58-E2	-	B
BJ274	2004	Vietnam	H58-E2	-	B
BJ273	2004	Vietnam	H58-E2	-	B
BJ269	2004	Vietnam	H58-E2	-	B
BJ267	2004	Vietnam	H58-E2	-	B
BJ266	2004	Vietnam	H58-E2	-	B
BJ265	2004	Vietnam	H58-E2	-	B
BJ263	2004	Vietnam	H58-E2	-	B
BJ262	2004	Vietnam	H58-E2	-	B
BJ261	2004	Vietnam	H58-E2	-	B
BJ259	2004	Vietnam	H58-E2	-	B
BJ257	2004	Vietnam	H58-E2	-	B
BJ255	2004	Vietnam	H58-E2	-	B
BJ254	2004	Vietnam	H58-E2	-	B
BJ252	2004	Vietnam	H58-E2	-	B
BJ247	2004	Vietnam	H58-E2	-	B
BJ245	2004	Vietnam	H58-E2	-	B
BJ244	2004	Vietnam	H58-E2	-	B
BJ243	2004	Vietnam	H58-E2	-	B

Isolate	Year	Country	Haplotype	IncHI1	Study
BJ239	2004	Vietnam	H58-E2	-	B
BJ238	2004	Vietnam	H58-E2	-	B
BJ234	2004	Vietnam	H58-E2	-	B
BJ233	2004	Vietnam	H58-E2	ST6	B
BJ216	2004	Vietnam	H58-E2	-	B
BJ215	2004	Vietnam	H58-E2	-	B
BJ212	2004	Vietnam	H58-E2	ST6	B
BJ206	2004	Vietnam	H58-E2	-	B
BJ205	2004	Vietnam	H58-E2	ST6	B
BJ200	2004	Vietnam	H58-E2	-	B
BJ198	2004	Vietnam	H58-E2	-	B
BJ197	2004	Vietnam	H58-E2	-	B
BJ195	2004	Vietnam	H58-E2	-	B
BJ194	2004	Vietnam	H58-E2	ST6	B
BJ189	2004	Vietnam	H58-E2	-	B
BJ186	2004	Vietnam	H58-E2	-	B
BJ184	2004	Vietnam	H58-E2	ST6	B
BJ183	2004	Vietnam	H58-E2	ST6	B
BJ182	2004	Vietnam	H58-E2	-	B
BJ180	2004	Vietnam	H58-E2	-	B
BJ179	2004	Vietnam	H58-E2	ST6	B
BJ178	2004	Vietnam	H58-E2	-	B
BJ177	2004	Vietnam	H58-E2	-	B
BJ176	2004	Vietnam	H58-E2	-	B
BJ175	2004	Vietnam	H58-E2	-	B
BJ173	2004	Vietnam	H58-E2	-	B
BJ172	2004	Vietnam	H58-E2	-	B
BJ171	2004	Vietnam	H58-E2	ST6	B
BJ170	2004	Vietnam	H58-E2	-	B
BJ169	2004	Vietnam	H58-E2	-	B
BJ166	2004	Vietnam	H58-E2	ST6	B
BJ158	2004	Vietnam	H58-E2	-	B
BJ157	2004	Vietnam	H58-E2	-	B
BJ156	2004	Vietnam	H58-E2	ST6	B
BJ155	2004	Vietnam	H58-E2	-	B
BJ153	2004	Vietnam	H58-E2	-	B
BJ152	2004	Vietnam	H58-E2	ST6	B
BJ523	2005	Vietnam	H58-F2	ST6	B
BJ389	2005	Vietnam	H58-F2	ST6	B
BJ385	2005	Vietnam	H58-F2	ST6	B
BJ381	2005	Vietnam	H58-F2	ST6	B
BJ218	2004	Vietnam	H58-F2	-	B
BJ87	2005	Vietnam	H58-F3	ST6	B

Isolate	Year	Country	Haplotype	IncHI1	Study
BJ522	2005	Vietnam	H58-F3	ST6	B
BJ312	2004	Vietnam	H58-F3	ST6	B
BJ246	2004	Vietnam	H58-F3	ST6	B
BJ335	2004	Vietnam	H58	-	B
BJ291	2004	Vietnam	H58	ST6	B
BJ167	2004	Vietnam	H58	ST6	B
1(04)C	2004	Vietnam	H1	-	A
69-67	1967	Vietnam	H1	-	A
67-67	1967	Vietnam	H1	-	A
66-67	1967	Vietnam	H1	-	A
72-1258	1972	Mexico	H11	ST3	A
49-65	1965	Madagascar	H15	-	A
48-65	1965	Madagascar	H15	-	A
12-66	1966	Madagascar	H15	-	A
E97-3246	1997	Madagascar	H17	-	A
E97-9141	1997	Turkey	H18	-	A
E98-2107	1998	Senegal	H19	-	A
E98-6926	1998	Mauritania	H21	-	A
E98-8119	1998	Peru	H22	-	A
E98-8120	1998	Cameroon	H23	-	A
E99-1028	1999	Senegal	H24	-	A
E99-4879	1999	Morocco	H25	-	A
E99-5920	1999	Tunisia	H26	-	A
E99-6359	1999	Mali	H27	-	A
E99-6478	1999	Guinea	H28	-	A
E02-5919	2002	China	H28	-	A
E99-6646	1999	Algeria	H29	-	A
E99-6785	1999	Morocco	H30	-	A
E99-7012	1999	Morocco	H31	-	A
E99-8013	1999	Morocco	H32	-	A
E99-8095	1999	Algeria	H33	-	A
E99-9794	1999	Comoros	H35	-	A
E00-6924	2000	Algeria	H36	-	A
31-66	1966	Algeria	H36	-	A
E00-2756	2000	India	H37	-	A
E00-3201	2000	Mali	H38	-	A
E01-7923	2001	Ivory Coast	H39	-	A
E01-7101	2001	Togo	H39	-	A
134-67	1967	Senegal	H39	-	A
131-67	1967	Ivory Coast	H39	-	A
106-67	1967	Ivory Coast	H39	-	A
102-66	1966	Senegal	H39	-	A
39-67	1967	Ivory Coast	H39	-	A

Isolate	Year	Country	Haplotype	IncHI1	Study
E02-0530	2002	Nigeria	H4	-	A
E00-5869	2000	Bangladesh	H40	-	A
E00-6599	2000	CapeVerde	H41	-	A
76-1406	1976	Indonesia	H42	ST2	A
04 6845	2004	Benin	H42	ST2	A
03-4747	2003	Togo	H42	ST2	A
75-67	1967	Morocco	H42	-	A
50-67	1967	Congo	H42	-	A
31-67	1967	Congo	H42	-	A
13-62	1962	Senegal	H42	-	A
E00-6999	2000	Peru	H43	-	A
E00-7463	2000	Morocco	H44	-	A
E03-0658	2003	Philippines	H45	-	A
E00-9821	2000	Congo	H46	-	A
133-67	1967	Congo	H46	-	A
129-66	1966	Congo	H46	-	A
12-58	1958	Cameroon	H46	-	A
E01-1747	2001	Cameroon	H47	-	A
E99-8067	1999	Algeria	H48	-	A
E01-1811	2001	Mali	H49	-	A
E98-4364	1998	Mexico	H50	-	A
E03-6643	2003	India	H50	-	A
80-2002	1980	Madagascar	H50	-	A
76-1261	1976	Zaire	H50	-	A
81-863	1981	Peru	H50	ST8	A
73-114	1973	Vietnam	H50	-	A
162-66	1966	Algeria	H50	-	A
104-67	1967	Ivory Coast	H50	-	A
76-54	1976	Chile	H50	central	A
73-99	1973	Vietnam	H50	-	A
68-63	1963	Chad	H50	-	A
67-63	1963	Chad	H50	-	A
66-61	1961	Tunisia	H50	-	A
49-67	1967	Vietnam	H50	-	A
49-66	1966	Algeria	H50	-	A
40-67	1967	Madagascar	H50	-	A
37-66	1966	Cameroon	H50	-	A
32-66	1966	Cameroon	H50	-	A
28-62	1962	Chad	H50	-	A
06-62	1962	Senegal	H50	-	A
05-59	1959	Vietnam	H50	-	A
CIS9661/06	unk	unk	H50	-	A
E01-7006	2001	Lebanon	H51	-	A

Isolate	Year	Country	Haplotype	IncHI1	Study
E00-6172	2000	Indonesia	H52	-	A
171-66	1966	Morocco	H52	-	A
84-66	1966	Tunisia	H52	-	A
73-43	1973	France	H52	-	A
68-61	1961	Tunisia	H52	-	A
64-63	1963	Chad	H52	-	A
63-63	1963	Chad	H52	-	A
41-63	1963	Chad	H52	-	A
29-66	1966	Algeria	H52	-	A
27-67	1967	Senegal	H52	-	A
27-64	1964	Chad	H52	-	A
19-66	1966	Congo	H52	-	A
12-62	1962	Senegal	H52	-	A
10-64	1964	Chad	H52	-	A
08-64	1964	Chad	H52	-	A
07-62	1962	Senegal	H52	-	A
06-64	1964	Chad	H52	-	A
05-67	1967	Congo	H52	-	A
CIS9662/06	unk	unk	H52	-	A
E01-8716	2001	Srilanka	H53	-	A
E02-0232	2002	French Guiana	H54	-	A
75-2507	1975	India	H55	ST2	A
77-303	1977	India	H55	ST2	A
77-302	1977	India	H55	ST2	A
69-61	1961	Tunisia	H56	-	A
E99-8635	1999	Nepal	H58-A	-	A
E03-6418	2003	Bangladesh	H58-A	-	A
19(02)S	2002	Vietnam	H58-B	ST6	A
14/96	1996	Vietnam	H58-C	ST6	A
4(02)N	2002	Vietnam	H58-C	ST6	A
318(98)N	1998	Vietnam	H58-C	-	A
209(97)S	1997	Vietnam	H58-C	ST6	A
43(97)S	1997	Vietnam	H58-C	ST6	A
E03-5712	2003	Cambodia	H58-C	ST6	A
8(04)S	2004	Vietnam	H58-C	-	A
8(02)S	2002	Vietnam	H58-C	-	A
8(02)C	2002	Vietnam	H58-C	ST6	A
7(02)N	2002	Vietnam	H58-C	-	A
49(98)S	1998	Vietnam	H58-C	ST6	A
43(98)S	1998	Vietnam	H58-C	ST6	A
4(04)C	2004	Vietnam	H58-C	-	A
4(02)S	2002	Vietnam	H58-C	-	A
4(02)C	2002	Vietnam	H58-C	ST6	A

Isolate	Year	Country	Haplotype	IncHI1	Study
39(98)S	1998	Vietnam	H58-C	-	A
38(98)S	1998	Vietnam	H58-C	ST6	A
30(98)S	1998	Vietnam	H58-C	-	A
3(04)C	2004	Vietnam	H58-C	ST6	A
3(02)C	2002	Vietnam	H58-C	-	A
219(99)S	1999	Vietnam	H58-C	ST6	A
21(04)S	2004	Vietnam	H58-C	-	A
205(97)S	1997	Vietnam	H58-C	ST6	A
2(02)S	2002	Vietnam	H58-C	-	A
2(02)N	2002	Vietnam	H58-C	ST6	A
20(02)N	2002	Vietnam	H58-C	-	A
17(02)S	2002	Vietnam	H58-C	ST6	A
16(04)S	2004	Vietnam	H58-C	ST6	A
12(02)S	2002	Vietnam	H58-C	-	A
11(02)S	2002	Vietnam	H58-C	ST6	A
1(02)C	2002	Vietnam	H58-C	-	A
358/98	1998	Vietnam	H58-C	ST6	A
339/98	1998	Vietnam	H58-C	ST6	A
192(99)S	1999	Vietnam	H58-D2	-	A
2(04)S	2004	Vietnam	H58-D3	-	A
197(99)S	1999	Vietnam	H58-D3	-	A
43-64	1964	Chad	H58-E2	-	A
E00-9345	2000	India	H58-G	-	A
E02-2159	2002	Srilanka	H58-G	ST6	A
14(02)S	2002	Vietnam	H60	-	A
226(97)S	1997	Vietnam	H61	ST6	A
04-2176	2004	India	H58-I1	-	A
E00-6111	2000	India	H58-I2	-	A
E02-1963	2002	Laos	H58	-	A
31(98)S	1998	Vietnam	H58	ST6	A
76-1292	1976	Zaire	H6	-	A
05-3275	2005	Morocco	H6	-	A
E01-5741	2001	Angola	H6	-	A
SonLa-1	2002	Vietnam	H68	-	A
72-1907	1972	Vietnam	H68	ST2	A
27-58	1958	Morocco	H69	-	A
162/95	1995	Vietnam	H75	-	A
81-918	1981	Peru	H77	ST8	A
81-424	1981	Peru	H77	ST8	A
14-58	1958	Cameroon	H77	-	A
E02-1687	2002	Thailand	H79	-	A
E01-5612	2001	Indonesia	H8	-	A
E00-4624	2000	China	H8	-	A