
APPENDICES

Appendix A: Pairwise comparisons by the heterogeneity G-test of the distributions of *AluI* + and - ,*Hgal* + and - , and *Psp1406I* + and – alleles between different population samples.

a) G_H test

The calculation of the pairwise comparison by the heterogeneity G-test of the distributions of *AluI* + and- alleles between the Malays and Chinese as an example is illustrated as below:

i) Null hypothesis: The distributions of *AluI* + and- alleles between the Malays and Chinese are similar.

ii) Alternative hypothesis: The distributions of *AluI* + and- alleles between the Malays and Chinese are different.

iii) Level of significance: $\alpha = 0.05$

iv) Criterion: Reject the null hypothesis if $G_H > 3.841$, the $G_{H,0.05}$ value for 1 degree of freedom (df);

$$G_H = 2 \times (j+k-m-n+s)$$

or otherwise accept it.

v) Calculation:

	<i>AluI</i> (+)	<i>AluI</i> (-)	Total
Malays	46	160	206
Chinese	54	158	212
Total	100	318	418

$$j = [46 \times \ln(46) + 160 \times \ln(160)] = 988.145$$

$$k = [54 \times \ln(54) + 158 \times \ln(158)] = 1015.295$$

$$m = [100 \times \ln(100) + 318 \times \ln(318)] = 2292.849$$

$$n = [206 \times \ln(206) + 212 \times \ln(212)] = 2233.139$$

$$s = [418 \times \ln(418)] = 2522.831$$

$$G_H = 2 \times (j+k-m-n+s)$$

$$= 2 \times (988.145 + 1015.295 - 2292.849 - 2233.139 + 2522.831)$$

$$= 0.566$$

$$df = (2-1)(2-1) = 1$$

(vi) Decision: Since $G_H = 0.566$ does not exceed 3.841, the null hypothesis is accepted.

b) The results of pairwise comparisons of the distributions of *AluI* + and - alleles:

Malays/Indians				
	<i>AluI</i> (+)	<i>AluI</i> (-)	Total	j = 988.145
Malays	46	160	206	k = 971.745
Indians	40	162	202	m = 2242.479
Total	86	322	408	n = 2169.813
				s = 2452.597
				G _H = 0.39
				df = 1

Chinese/Indians				
	<i>AluI</i> (+)	<i>AluI</i> (-)	Total	j = 1015.295
Chinese	54	158	212	k = 971.745
Indians	40	162	202	m = 2272.932
Total	94	320	414	n = 2207.866
				s = 2494.709
				G _H = 1.904
				df = 1

Malays/Caucasians				
	<i>AluI</i> (+)	<i>AluI</i> (-)	Total	j = 988.145
Malays	46	160	206	k = 329.027
Caucasians	11	71	82	m = 1487.65
Total	57	231	288	n = 1458.893
				s = 1630.933
				G _H = 3.124
				df = 1

Malays/Japanese				
	<i>AluI</i> (+)	<i>AluI</i> (-)	Total	j = 988.145
Malays	46	160	206	k = 394.774
Japanese	24	74	98	m = 1573.939
Total	70	234	304	n = 1546.869
				s = 1737.976
				G _H = 0.174
				df = 1

Chinese/Caucasians				
	<i>AluI</i> (+)	<i>AluI</i> (-)	Total	j = 1015.295
Chinese	54	158	212	k = 329.027
Caucasians	11	71	82	m = 1515.658
Total	65	229	294	n = 1496.947
				s = 1670.972
				G _H = 5.378*
				df = 1

Chinese/Japanese				
	<i>AluI</i> (+)	<i>AluI</i> (-)	Total	$j = 1015.295$
Chinese	54	158	212	$k = 394.774$
Japanese	24	74	98	$m = 1603.466$
Total	78	232	310	$n = 1584.923$
				$s = 1778.337$
				$G_H = 0.034$
				$df = 1$

Indians/Caucasians				
	<i>AluI</i> (+)	<i>AluI</i> (-)	Total	$j = 971.745$
Indians	40	162	202	$k = 329.027$
Caucasians	11	71	82	$m = 1470.615$
Total	51	-	284	$n = 1433.621$
				$s = 1604.309$
				$G_H = 1.69$
				$df = 1$

Indians/Japanese				
	<i>AluI</i> (+)	<i>AluI</i> (-)	Total	$j = 971.745$
Indian	40	162	202	$k = 394.774$
Japanese	24	74	98	$m = 1555.632$
Total	64	236	300	$n = 1521.597$
				$s = 1711.135$
				$G_H = 0.85$
				$df = 1$

Caucasians/Japanese				
	<i>AluI</i> (+)	<i>AluI</i> (-)	Total	$j = 329.027$
Caucasians	11	71	82	$k = 394.774$
Japanese	24	74	98	$m = 846.064$
Total	35	145	180	$n = 810.678$
				$s = 934.732$
				$G_H = 3.582$
				$df = 1$

c) The results of pairwise comparisons of the distributions of *Hgal* + and - alleles:

Malays/Chinese				
	<i>Hgal</i> (+)	<i>Hgal</i> (-)	Total	j = 959.490
Malays	125	81	206	k = 1006.605
Chinese	149	63	212	m = 2253.650
Total	274	144	418	n = 2233.139
				s = 2522.831
				G _H = 4.274*
				df = 1

Malays/Indians				
	<i>Hgal</i> (+)	<i>Hgal</i> (-)	Total	j = 959.490
Malays	125	81	206	k = 933.057
Indians	110	92	202	m = 2174.522
Total	235	173	408	n = 2169.813
				s = 2452.597
				G _H = 1.618
				df = 1

Malays/Caucasians				
	<i>Hgal</i> (+)	<i>Hgal</i> (-)	Total	j = 959.490
Malays	125	81	206	k = 724.772
Caucasians	95	69	164	m = 1938.193
Total	220	150	370	n = 1933.921
				s = 2187.996
				G _H = 0.288
				df = 1

Malays/Japanese				
	<i>Hgal</i> (+)	<i>Hgal</i> (-)	Total	j = 959.490
Malays	125	81	206	k = 914.612
Japanese	137	59	196	m = 2150.736
Total	262	140	402	n = 2132.053
				s = 2410.574
				G _H = 3.774
				df = 1

Chinese/Indians				
	<i>Hgal</i> (+)	<i>Hgal</i> (-)	Total	j = 1006.605
Chinese	149	63	212	k = 933.057
Indians	110	92	202	m = 2220.949
Total	259	155	414	n = 2207.866
				s = 2494.709
				G _H = 11.112*
				df = 1

Chinese/Caucasians				
	Hgal (+)	Hgal (-)	Total	j = 1006.605
Chinese	149	63	212	k = 724.772
Caucasians	95	69	164	m = 1985.839
Total	244	132	376	n = 1971.974
				s = 2229.526
				G _H = 3.09
				df = 1

Chinese/Japanese				
	Hgal (+)	Hgal (-)	Total	j = 1006.605
Chinese	149	63	212	k = 914.612
Japanese	137	59	196	m = 2203.704
Total	286	122	408	n = 2170.107
				s = 2452.597
				G _H = 0.006
				df = 1

Indians/Caucasians				
	Hgal (+)	Hgal (-)	Total	j = 933.057
Indians	110	92	202	k = 724.772
Caucasians	95	69	164	m = 1909.323
Total	205	161	366	n = 1908.648
				s = 2160.364
				G _H = 0.444
				df = 1

Indians/Japanese				
	Hgal (+)	Hgal (-)	Total	j = 933.057
Indians	110	92	202	k = 914.612
Japanese	137	59	196	m = 2118.428
Total	247	151	398	n = 2106.781
				s = 2382.608
				G _H = 10.136*
				df = 1

Caucasians/Japanese				
	Hgal (+)	Hgal (-)	Total	j = 724.772
Caucasians	95	69	164	k = 914.612
Japanese	137	59	196	m = 1884.703
Total	232	128	360	n = 1870.889
				s = 2118.997
				G _H = 5.578*
				df = 1

d) The results of pairwise comparisons of the distributions of *Psp1406I* + and - alleles:

Malays/Chinese				
	<i>Psp1406I</i> (+)	<i>Psp1406I</i> (-)	Total	
Malays	78	128	206	j = 960.883 k = 990.504
Chinese	92	120	212	m = 2240.416
Total	170	248	418	n = 2233.139 s = 2522.831 $G_H = 1.326$ df = 1

Malays/Indians				
	<i>Psp1406I</i> (+)	<i>Psp1406I</i> (-)	Total	
Malays	78	128	206	j = 960.883 k = 951.159
Indians	58	144	202	m = 2192.899
Total	136	272	408	n = 2169.813 s = 2452.597 $G_H = 3.854^*$ df = 1

Chinese/Indians				
	<i>Psp1406I</i> (+)	<i>Psp1406I</i> (-)	Total	
Chinese	92	120	212	j = 990.50 k = 951.159
Indians	58	144	202	m = 2223.646
Total	150	264	414	n = 2207.866 s = 2494.709 $G_H = 9.712^*$ df = 1

Appendix B: Pairwise comparisons by the heterogeneity G-test of the distributions of four haplotypes between different population samples for *Hgal-AluL* and *Hgal-Psp1406I* assays.

a) G_H test

The calculation of the pairwise comparison by the heterogeneity G-test of the distributions of four haplotypes between the Malays and Chinese for *Hgal-AluL* assay as an example is illustrated as below:

- Null hypothesis: The distributions of four haplotypes between the Malays and Chinese are similar.
- Alternative hypothesis: The distributions of four haplotypes between the Malays and Chinese are different.
- Level of significance: $\alpha = 0.05$
- Criterion: Reject the null hypothesis if $G_H > 7.815$, the $G_{H,0.05}$ value for 3 degrees of freedom (df);

$$G_H = 2 \times (j+k-m-n+s)$$

or otherwise accept it.

v) Calculation:

	- +	+ +	--	- + -	Total
Malays	10	36	66	94	206
Chinese	10	43	54	105	212
Total	20	79	120	199	418

$$j = [10 \times \ln(10)] + [36 \times \ln(36)] + [66 \times \ln(66)] + [94 \times \ln(94)] = 855.619$$

$$k = [10 \times \ln(10)] + [43 \times \ln(43)] + [54 \times \ln(54)] + [105 \times \ln(105)] = 888.828$$

$$m = [20 \times \ln(20)] + [79 \times \ln(79)] + [120 \times \ln(120)] + [199 \times \ln(199)] \\ = 2032.968$$

$$n = [206 \times \ln(206)] + [212 \times \ln(212)] = 2233.139$$

$$s = 418 \times \ln(418) = 2522.831$$

$$\begin{aligned} G_H &= 2 \times (j+k-m-n+s) \\ &= 2 \times (855.619 + 888.828 - 2032.968 - 2233.139 + 2522.831) \\ &= 2.342 \\ df &= (4-1)(2-1) = 3 \end{aligned}$$

(vi) Decision: Since $G_H = 2.342$ is less than 7.815, the null hypothesis is accepted.

b) The results of pairwise comparisons of the distributions of four haplotypes for *Hgal-AluI* assay:

Malays/Indians					
	- +	++	--	+ -	Total
Malays	10	36	66	94	206
Indians	11	24	80	87	202
Total	21	60	146	181	408

J=855.619
 k=841.746
 m= 1978.130
 n= 2169.813
 s= 2452.597
 $G_H = 4.038$
 df= 1

Malays/Caucasians					
	- +	++	--	+ -	Total
Malays	10	36	66	94	206
Caucasians	20	1	75	68	164
Total	30	37	141	162	370

J= 855.619
 k= 670.653
 m= 1757.606
 n= 1933.921
 s= 2187.996
 $G_H = 45.482^*$
 df= 1

Malays/Japanese					
	- +	++	--	+ -	Total
Malays	10	36	66	94	206
Japanese	39	9	98	50	196
Total	49	45	164	144	402

J= 855.619
 k= 807.582
 m= 1914.030
 n= 2132.053
 s= 2410.574
 $G_H = 55.384^*$
 df= 1

Chinese/Indians					
	- +	++	--	+ -	Total
Chinese	10	43	54	105	105
Indians	11	24	80	87	87
Total	21	67	134	192	192

J= 888.828
 k= 841.746
 m= 2011.399
 n= 2207.866
 s= 2494.709
 $G_H = 12.036^*$
 df= 1

Chinese/Caucasians					
	- +	++	--	+ -	Total
Chinese	10	43	54	105	212
Caucasians	20	1	75	68	164
Total	30	44	129	173	376
					s= 2229.526
					$G_H = 60.114^*$
					df= 1

Chinese/Japanese					
	- +	++	--	+ -	Total
Chinese	10	43	54	105	212
Japanese	39	9	98	50	196
Total	49	52	152	155	408
					s= 2452.597
					$G_H = 74.75^*$
					df= 1

Indians/Caucasians					
	- +	++	--	+ -	Total
Indians	11	24	80	87	202
Caucasians	20	1	75	68	164
Total	31	25	155	155	366
					s= 2160.364
					$G_H = 289.306^*$
					df= 1

Indians/Japanese					
	- +	++	--	+ -	Total
Indians	11	24	80	87	202
Japanese	39	9	98	50	196
Total	50	33	178	137	398
					s= 2382.608
					$G_H = 35.548^*$
					df= 1

Caucasians/Japanese					
	- +	++	--	+ -	Total
Caucasians	20	1	75	68	164
Japanese	39	9	98	50	196
Total	59	10	173	118	360
					s= 2118.997
					$G_H = 16.564^*$
					df= 1

c) The results of pairwise comparisons of the distributions of four haplotypes for *Hgal-Psp1406I* assay:

Malays/Chinese						
	- +	++	--	+ -	Total	J= 839.236
Malays	58	12	70	66	206	k= 864.028
Chinese	79	21	71	41	212	m= 1987.190
Total	137	33	141	107	418	n= 2233.139
						s= 2522.831
						$G_H = 11.532^*$
						df= 1

Malays/Indians						
	- +	++	--	+ -	Total	J= 839.236
Malays	58	12	70	66	206	k= 826.102
Indians	64	10	47	81	202	m= 1944.861
Total	122	22	117	147	408	n= 2169.813
						s= 2452.597
						$G_H = 6.522$
						df= 1

Chinese/Indians						
	- +	++	--	+ -	Total	J= 864.028
Chinese	79	21	71	41	212	k= 826.102
Indians	64	10	47	81	202	m= 1965.172
Total	143	31	118	122	414	n= 2207.866
						s= 2494.709
						$G_H = 23.602^*$
						df= 1

Appendix C: Pairwise comparisons by the heterogeneity G-test of the distributions of eight haplotypes between different Malaysian population samples.

a) G_H test

The calculation of the pairwise comparison by the heterogeneity G-test of the distributions of eight haplotypes between the Malays and Chinese as an example is illustrated as below:

- Null hypothesis: The distributions of eight haplotypes between the Malays and Chinese are similar.
- Alternative hypothesis: The distributions of eight haplotypes between the Malays and Chinese are different.
- Level of significance: $\alpha = 0.05$
- Criterion: Reject the null hypothesis if $G_H > 14.067$, the $G_{H,0.05}$ value for 7 degrees of freedom (df);

$$G_H = 2 \times (j+k-m-n+s)$$

or otherwise accept it.

v) Calculation:

	+++	++-	+ - +	+ --	- ++	- + -	- - +	- - -	Total
Malay	21	5	41	48	2	8	8	53	186
Chinese	22	11	39	54	7	3	14	39	189
Total	43	16	80	102	9	11	22	92	375

$$j = [21 \times \ln(21)] + [5 \times \ln(5)] + [41 \times \ln(41)] + [48 \times \ln(48)] + [2 \times \ln(2)] + [8 \times \ln(8)] + [8 \times \ln(8)] + [53 \times \ln(53)] = 655.139$$

$$k = [22 \times \ln(22)] + [11 \times \ln(11)] + [39 \times \ln(39)] + [54 \times \ln(54)] + [7 \times \ln(7)] + [3 \times \ln(3)] + [14 \times \ln(14)] + [39 \times \ln(39)] = 649.407$$

$$m = [43 \times \ln(43)] + [16 \times \ln(16)] + [80 \times \ln(80)] + [102 \times \ln(102)] + [9 \times \ln(9)] + [11 \times \ln(11)] + [22 \times \ln(22)] + [92 \times \ln(92)] = 1558.562$$

$$n = [186 \times \ln(186)] + [189 \times \ln(189)] = 1962.679$$

$$s = 375 \times \ln(375) = 2222.597$$

$$G_H = 2 \times (j+k-m-n+s)$$

$$= 2 \times (655.139 + 649.407 - 1558.562 - 1962.679 + 2222.597)$$

$$= 11.804$$

$$df = (8-1)(2-1) = 7$$

- Decision: Since $G_H = 11.804$ is less than 14.067, the null hypothesis is accepted.

b) The results of pairwise comparisons of the distributions of eight haplotypes:

Malays/Indians										
	+++	++-	+--	---	-++	-+-	--+	---	Total	j=655.139
Malay	21	5	41	48	2	8	8	53	186	k=682.385
Indian	16	7	28	47	2	7	8	74	189	m=1593.934
Total	37	12	69	95	4	15	16	127	375	n=1962.679
										s=2222.597
										$G_H=7.016$
										Df=7

Chinese/Indians										
	+++	++-	+--	---	-++	-+-	--+	---	Total	j=649.407
Chinese	22	11	39	54	7	3	14	39	189	k=682.385
Indian	16	7	28	47	2	7	8	74	189	m=1583.095
Total	38	18	67	101	9	10	22	113	378	n=1981.380
										s=2243.390
										$G_H=21.414^*$
										df=7

Appendix D: Results of MS31A (Locus D7S21) typing.

No.	UH No.	Race	<i>AluI</i>	<i>Hgal</i>	<i>Psp1406I</i>
1	301	I	-/+	+/-	-/+
2	370	I	-/-	+/-	+/-
3	378	C	-/+	-/+	-/+
4	433	M	-/-	+/-	-/+
5	434	C	-/+	+/-	-/-
6	436	C	-/-	+/-	-/+
7	437	M	-/+	+/-	-/-
8	438	M	-/-	-/-	-/-
9	439	C	-/-	+/-	+/-
10	1023	I	-/-	-/-	-/-
11	455	M	-/-	+/-	-/-
12	456	C	-/+	+/-	-/-
13	537	I	-/-	+/-	-/-
14	538	M	-/-	-/+	-/-
15	539	C	-/+	+/-	+/-
16	540	M	-/-	-/+	-/-
17	541	C	-/-	-/+	-/+
18	542	I	-/-	+/-	-/-
19	543	I	-/+	-/+	-/+
20	544	M	+/-	+/-	+/-
21	546	C	-/-	+/-	-/+
22	547	C	-/+	+/-	+/-
23	548	I	-/-	-/+	-/-
24	552	M	-/-	-/+	-/-
25	553	C	-/-	-/+	-/-
26	557	M	-/-	+/-	+/-
27	560	I	-/-	-/+	-/-
28	563	C	-/-	-/-	-/-
29	564	M	-/+	+/-	-/+
30	565	C	-/+	+/-	-/+
31	566	M	-/-	-/-	-/-
32	567	M	-/-	-/+	-/+
33	568	I	-/-	+/-	-/-
34	569	I	-/-	+/-	-/-
35	570	C	-/-	-/+	-/+
36	571	I	-/-	+/-	-/+

37	572	I	-/-	-/+	-/-
38	574	C	-/-	-/+	-/+
39	575	C	-/-	-/+	-/+
40	576	C	-/+	+/+	-/+
41	577	C	-/+	+/+	+/+
42	578	M	-/-	-/+	-/-
43	579	M	+/+	+/+	+/+
44	580	I	+/+	-/-	-/+
45	581	C	+/+	-/-	+/+
46	582	I	-/-	-/-	-/-
47	583	M	-/+	+/+	+/+
48	586	C	-/+	+/+	-/+
49	588	C	-/-	-/+	-/+
50	589	M	-/+	+/+	-/+
51	585	C	-/-	-/+	-/-
52	590	M	-/-	-/+	-/+
53	591	C	-/-	+/+	-/-
54	593	C	-/-	-/-	+/+
55	594	M	-/-	-/-	-/-
56	597	I	-/-	-/+	-/+
57	598	C	-/-	+/+	-/-
58	599	C	-/-	+/+	-/+
59	601	C	-/+	+/+	+/+
60	602	I	-/+	-/+	-/+
61	607	C	-/-	-/+	-/-
63	459	C	-/-	-/+	-/+
64	460	C	-/-	-/+	-/+
65	461	C	-/+	-/+	-/+
66	463	C	-/+	-/+	-/+
67	464	C	-/-	+/+	-/+
68	465	M	-/+	-/+	-/+
69	468	C	-/-	-/+	+/+
70	471	M	-/+	-/+	-/+
71	474	M	+/+	-/+	-/+
72	480	C	-/+	+/+	-/+
73	485	M	-/+	-/-	-/-
74	490	M	+/+	-/+	+/+
75	491	M	+/+	+/+	+/+
76	492	M	-/-	-/-	-/-

77	493	M	-/-	-/+	-/-
78	494	C	-/+	-/+	-/+
79	495	C	-/+	-/-	-/+
80	496	C	-/+	-/-	-/+
81	497	C	-/+	+/*	+/*
82	499	C	-/-	+/*	-/-
83	500	M	+/*	+/*	+/*
84	501	M	-/-	+/*	+/*
85	502	M	-/-	-/+	-/+
86	503	M	-/-	-/+	+/*
87	504	C	+/*	+/*	-/+
88	505	C	-/-	+/*	-/-
89	506	M	-/-	-/-	+/*
90	508	C	-/+	-/+	-/+
91	509	C	-/-	-/+	-/+
92	510	I	-/+	-/-	-/+
93	512	C	-/+	+/*	-/-
94	513	C	-/-	-/+	-/+
95	514	M	-/-	-/+	-/-
96	515	M	-/-	-/-	-/-
97	516	C	-/-	-/+	+/*
98	517	C	+/*	-/+	+/*
99	519	C	-/+	+/*	-/-
100	520	C	-/+	+/*	-/+
101	521	C	-/-	-/+	-/+
102	522	C	-/+	+/*	-/+
103	523	C	-/+	+/*	-/+
104	524	C	-/+	+/*	+/*
105	525	I	-/-	-/+	-/+
106	526	M	-/-	+/*	-/+
107	527	C	-/-	-/+	-/-
108	528	C	-/+	+/*	+/*
109	529	C	-/-	+/*	-/+
110	530	C	-/-	+/*	-/+
111	531	C	-/+	+/*	+/*
112	532	C	-/-	-/-	-/+
113	533	C	-/+	+/*	-/+
114	534	C	-/+	+/*	-/+
115	535	C	-/-	+/*	-/-

116	610	M	-/-	+/+	-/-
117	611	M	-/-	-/+	-/+
118	614	I	-/-	-/+	+/+
119	615	I	-/-	-/+	+/+
120	616	M	-/+	+/+	+/+
121	617	C	-/-	-/+	-/-
122	618	C	-/-	-/+	-/+
123	619	C	-/+	-/+	+/+
124	620	C	-/-	-/+	-/-
125	621	I	-/-	-/+	-/-
126	622	C	-/-	+/+	-/+
127	623	M	-/-	-/+	-/+
128	624	M	-/-	-/+	-/-
129	626	M	-/+	+/+	+/+
130	627	I	-/+	-/+	-/-
131	628	C	+/+	+/+	+/+
132	629	M	-/+	-/-	-/+
133	631	C	-/-	+/+	-/+
134	632	C	-/-	-/-	-/-
135	633	M	-/+	+/+	-/+
136	635	C	-/-	-/+	-/-
137	636	C	-/+	-/+	-/+
138	637	I	-/-	-/+	-/-
139	638	I	+/+	+/+	+/+
140	639	C	+/+	-/+	+/+
141	640	C	-/-	-/+	-/-
142	641	C	-/-	+/+	-/-
143	642	M	-/-	-/-	-/-
144	643	M	-/+	+/+	-/-
145	644	I	-/-	-/+	-/-
146	645	I	-/-	+/+	-/-
147	646	C	-/+	+/+	-/-
148	648	C	-/-	-/-	-/-
149	649	I	-/-	-/-	-/-
150	650	M	-/-	+/+	-/+
151	651	I	-/+	-/+	-/+
152	652	C	-/-	+/+	-/+
153	653	C	-/-	-/-	-/+
154	655	C	-/+	-/+	-/+

155	656	C	-/+	-/+	-/+
156	658	C	-/-	-/+	-/+
157	660	M	-/-	-/-	-/-
158	661	M	+/-	+/-	-/-
159	662	M	-/-	-/+	-/-
160	663	M	-/-	+/-	-/-
161	664	I	-/-	-/-	-/-
162	665	I	-/-	-/-	-/-
163	666	I	-/-	-/+	-/-
164	667	M	-/-	+/-	-/+
165	668	M	-/-	-/+	-/+
166	669	C	-/+	-/+	-/+
167	670	I	-/+	+/-	-/+
168	671	C	-/-	+/-	-/+
169	672	I	-/-	-/+	-/-
170	673	I	-/-	-/+	-/-
171	674	C	-/+	+/-	-/-
172	675	C	-/-	-/+	-/+
173	676	C	-/+	-/+	-/-
174	677	M	-/+	+/-	-/-
175	678	M	-/-	+/-	-/+
176	679	M	-/-	+/-	-/+
177	680	C	-/+	+/-	-/+
178	681	M	-/-	+/-	-/+
179	682	C	-/-	+/-	-/+
180	683	I	-/+	-/-	-/-
181	684	C	-/-	-/+	-/-
182	686	C	-/+	-/+	-/-
183	687	C	-/-	+/-	-/+
184	688	C	-/+	-/+	-/+
185	697	I	-/+	-/+	-/+
186	698	I	-/-	+/-	-/+
187	702	I	-/-	-/-	-/-
188	703	M	-/-	-/+	-/+
189	706	I	-/+	-/-	-/+
190	707	I	-/+	-/-	-/-
191	709	M	-/+	+/-	-/+
192	718	M	-/-	-/+	-/+
193	719	I	-/-	-/+	-/+

194	722	I	-/+	-/+	-/+
195	731	M	-/-	-/+	-/-
196	728	M	-/+	+/+	+/+
197	723	M	-/-	+/+	-/-
198	724	M	-/-	-/-	-/-
199	730	M	-/-	+/+	-/-
200	734	M	-/-	-/+	-/+
201	735	I	+/ ¹	+/ ¹	+/ ¹
202	737	M	-/-	-/+	-/-
203	738	I	-/-	+/+	-/+
204	740	M	-/-	-/+	-/+
205	741	M	-/+	-/-	-/-
206	749	M	-/+	-/-	-/-
207	750	I	-/-	+/+	-/+
208	758	I	-/-	-/-	-/+
209	759	M	-/+	+/+	+/ ¹
210	768	I	-/+	-/+	-/-
211	770	M	-/-	-/+	-/+
212	771	I	-/-	+/+	-/+
213	772	M	-/-	-/-	-/-
214	773	M	-/-	+/+	-/-
215	776	I	-/-	-/+	-/+
216	777	I	+/ ¹	+/ ¹	-/+
217	778	I	-/-	-/+	-/-
218	783	M	-/-	+/+	-/+
219	784	M	-/-	-/-	-/-
220	787	M	-/-	+/+	-/+
221	789	I	-/+	-/+	-/-
222	790	I	-/-	-/+	-/+
223	792	M	-/-	-/+	-/+
224	804	I	-/-	-/-	-/-
225	811	I	-/-	-/+	-/-
226	814	I	-/ ¹	+/+	-/-
227	817	M	-/+	+/+	+/ ¹
228	820	M	-/-	-/+	-/+
229	821	M	-/-	-/-	-/-
230	826	I	-/-	-/-	-/-
231	827	I	-/-	-/+	-/-
232	828	I	-/+	+/+	-/+

233	829	I	- -	-/+	-/+
234	830	M	-/-	+/*	+/*
235	831	M	-/+	-/+	-/-
236	833	I	-/+	+/*	-/+
237	834	M	+/*	+/*	-/+
238	836	M	-/-	-/-	-/-
239	837	I	-/+	-/+	-/-
240	839	M	+/*	-/+	-/+
241	840	M	-/+	+/*	-/+
242	852	I	-/-	-/+	-/+
243	856	I	+/*	-/-	-/-
244	858	M	-/+	+/*	-/+
245	865	I	-/-	-/-	-/+
246	866	I	-/+	-/+	-/+
247	884	I	-/-	-/+	-/+
248	896	M	-/+	+/*	-/+
249	897	M	-/+	-/+	+/*
250	898	M	-/+	+/*	-/+
251	901	I	-/-	+/*	-/+
252	903	M	-/-	+/*	-/+
253	904	I	-/+	-/+	-/+
254	904	I	-/-	+/*	+/*
255	911	I	-/-	-/+	-/-
256	917	I	-/-	+/*	-/+
257	918	M	-/-	-/+	+/*
258	923	I	-/-	-/+	-/-
259	924	M	-/+	-/+	-/+
260	927	M	-/-	-/+	-/-
261	928	M	-/+	-/+	-/+
262	929	I	-/-	-/-	-/-
263	934	M	-/-	-/+	-/+
264	937	I	-/+	-/+	-/-
265	938	I	-/+	-/+	-/+
266	940	M	-/-	-/+	-/+
267	941	M	-/-	-/+	-/+
268	942	I	-/-	+/*	-/+
269	943	I	-/-	-/+	-/-
270	944	M	-/-	+/*	-/+
271	945	I	-/-	-/+	-/-

272	946	I	-/-	-/+	-/-
273	950	I	-/-	-/+	-/+
274	951	M	-/+	-/+	-/-
275	952	I	-/-	-/+	-/+
276	953	I	-/-	-/-	-/-
277	954	I	-/-	-/+	-/+
278	956	M	-/-	+/+	-/-
279	958	M	-/-	+/+	-/+
280	959	C	+/+	-/+	-/-
281	960	M	-/-	+/+	-/-
282	961	M	-/-	-/-	-/+
283	467	C	+/+	+/+	+/+
284	949	I	-/-	-/-	-/-
285	1122	C *	-/+	+/+	+/+
286	1160	C	-/-	+/+	-/-
287	1162	C	-/-	+/+	-/+
288	1166	C	-/-	-/+	-/-
289	1371	C	-/-	+/+	-/+
290	1379	C	-/-	-/+	-/-
291	416	I	+/+	+/+	-/+
292	1120	I	-/+	-/+	-/+
293	1125	I	-/-	-/+	-/-
294	1137	I	-/-	+/+	+/+
295	1138	I	-/+	-/+	-/+
296	1169	I	-/-	-/+	-/-
297	1239	I	-/+	+/+	-/+
298	1234	I	-/+	-/+	-/-
299	1233	I	-/-	+/+	-/-
300	1250	I	-/-	+/+	-/+
301	1251	I	-/-	-/+	-/+
302	1264	I	-/-	-/+	-/-
303	1283	I	-/-	+/+	-/-
304	402	I	-/+	-/+	-/-
305	425	I	-/+	+/+	+/+
306	1223	I	-/-	-/-	-/-
307	401	C	-/-	-/+	-/+
308	408	C	-/-	-/+	-/-
309	409	C	-/-	-/+	-/-
310	412	C	-/-	-/+	-/-

Note: M = Malay
 C = Chinese
 I = Indian
 UH = University Hospital

Appendix E: Results of *Hgal-AluL* assay.

No.	UH No.	Race	Allele	<i>Hgal</i>	<i>AluL</i>
1	463	C	1	+	+
			2	-	-
2	465	M	1	+	-
			2	-	+
3	543	I	1	+	+
			2	-	-
4	378	C	1	+	+
			2	-	-
5	655	C	1	+	-
			2	-	+
6	669	C	1	+	-
			2	-	+
7	471	M	1	+	+
			2	-	-
8	494	C	1	+	+
			2	-	-
9	508	C	1	+	-
			2	-	+
10	656	C	1	+	+
			2	-	-
11	602	I	1	+	+
			2	-	-
12	651	I	1	+	+
			2	-	-
13	688	C	1	+	+
			2	-	-
14	697	I	1	+	+
			2	-	-
15	837	I	1	+	-
			2	-	+
16	928	M	1	+	+
			2	-	-
17	938	I	1	+	+
			2	-	-
18	768	I	1	+	-
			2	-	+
19	676	C	1	+	+
			2	-	-
20	1120	I	1	+	+
			2	-	-
21	461	C	1	+	-
			2	-	+
22	722	I	1	+	+
			2	-	-
23	831	M	1	+	+
			2	-	-

24	789	I	1	+	+
			2	-	-
25	897	M	1	+	+
			2	-	-
26	951	M	1	+	-
			2	-	+

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Appendix F: Results of *Hgal-Psp1406I* assay,

No.	UH No.	Race	Allele	<i>Hgal</i>	<i>Psp1406I</i>
1	669	C	1	+	-
			2	-	+
2	461	C	1	+	-
			2	-	+
3	378	C	1	+	+
			2	-	-
4	941	M	1	+	+
			2	-	-
5	463	C	1	+	+
			2	-	-
6	465	M	1	+	+
			2	-	-
7	655	C	1	+	+
			2	-	-
8	574	C	1	+	-
			2	-	+
9	575	C	1	+	-
			2	-	+
10	570	C	1	+	+
			2	-	-
11	513	C	1	+	-
			2	-	+
12	521	C	1	+	+
			2	-	-
13	525	I	1	+	+
			2	-	-
14	494	C	1	+	+
			2	-	-
15	508	C	1	+	+
			2	-	-
16	602	I	1	+	+
			2	-	-
17	688	C	1	+	+
			2	-	-
18	697	I	1	+	+
			2	-	-
19	928	M	1	+	+
			2	-	-
20	938	I	1	+	+
			2	-	-
21	1120	I	1	+	+
			2	-	-
22	541	C	1	+	+
			2	-	-
23	543	I	1	+	+
			2	-	-
24	588	C	1	+	-
			2	-	+
25	460	C	1	+	-
			2	-	+
26	508	C	1	+	+
			2	-	-

27	611	M	1	+	+
			2	-	-
28	459	C	1	+	+
			2	-	-
29	718	M	1	+	+
			2	-	-
30	829	I	1	+	+
			2	-	-
31	839	M	1	+	+
			2	-	-
32	852	I	1	+	+
			2	-	-
33	590	M	1	+	+
			2	-	-
34	474	M	1	+	+
			2	-	-
35	509	C	1	+	+
			2	-	-
36	658	C	1	+	-
			2	-	+
37	703	M	1	+	+
			2	-	-
38	734	M	1	+	-
			2	-	+
39	866	I	1	+	-
			2	-	+
40	950	I	1	+	-
			2	-	+
41	651	I	1	+	+
			2	-	-
42	884	I	1	+	+
			2	-	-
43	952	I	1	+	+
			2	-	-
44	401	C	1	+	+
			2	-	-
45	597	I	1	+	+
			2	-	-
46	675	C	1	+	+
			2	-	-
47	790	I	1	+	+
			2	-	-
48	820	M	1	+	+
			2	-	-
49	770	M	1	+	+
			2	-	-
50	776	I	1	+	+
			2	-	-
51	502	M	1	+	+
			2	-	-
52	618	C	1	+	+
			2	-	-
53	623	M	1	+	+
			2	-	-
54	636	C	1	+	+
			2	-	-

55	668	M	1	+	+
			2	-	-
56	719	I	1	+	+
			2	-	-
57	934	M	1	+	+
			2	-	-
58	940	M	1	+	+
			2	-	-
59	954	I	1	+	+
			2	-	-
60	1138	I	1	+	-
			2	-	+
61	740	M	1	+	-
			2	-	+
62	792	M	1	+	+
			2	-	-
63	722	I	1	+	+
			2	-	-
64	1251	I	1	+	+
			2	-	-

Note: M = Malay
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