

Supplementary Table I. List of significant pairs

chr1	pos1	effect_allele1	non-effect_allele1	chr2	pos2	effect_allele2	non-effect_allele2	mdr_precision	chi-square_pval	OR*
9	126300948	A	G	20	926397	G	A	60.86	9.16986E-10	0,863
5	178382980	T	A	6	153496654	T	G	60.86	2.2896E-09	1,282
5	178382980	T	A	6	153496718	G	T	60.86	2.2896E-09	1,279
5	178382980	T	A	6	153496061	T	A	60.86	1.83531E-09	1,495
1	162626640	A	AT	5	159084262	A	C	60.84	1.24372E-07	1,279
5	178382980	T	A	6	153499921	C	T	60.76	2.16282E-09	1,279
5	178382980	T	A	6	153495323	G	C	60.76	2.74155E-09	1,279
4	11692300	A	C	22	25810620	C	A	60.7	9.76021E-09	0,540
4	11694537	C	T	22	25810620	C	C	60.7	9.76021E-09	0,539
4	11690584	A	C	22	25810620	C	A	60.7	1.11026E-08	0,997
4	11697866	A	T	22	25810620	C	A	60.7	9.76021E-09	0,540
4	11693061	T	A	22	25810620	C	T	60.7	9.76021E-09	0,540
4	11696342	G	A	22	25810620	C	G	60.7	9.76021E-09	1,279
9	126300948	A	G	20	926325	T	A	60.68	1.1509E-09	1,942
5	178382980	T	A	6	153493694	A	C	60.68	6.9406E-09	1,942
6	159167488	T	A	9	36910581	G	A	60.6	3.7812E-08	1,101
5	178382980	T	A	6	153495022	A	AG	60.52	7.24434E-09	1,976
5	178382980	T	A	6	153495023	A	G	60.52	7.24434E-09	1,971

8	106511690	T	C	21	27711126	GA	T	60.5	4.14088E-08	0,723
13	110354913	A	G	13	111146417	A	ATT	60.5	2.23188E-09	0,871
5	157646280	C	A	22	27662213	G	C	60.5	1.50443E-08	1,937
5	159084262	A	C	15	42319942	T	A	60.5	2.28092E-10	1,966
8	106511690	T	C	21	27708236	C	T	60.5	4.14088E-08	1,966
8	106511690	T	C	21	27711336	T	T	60.5	4.14088E-08	1,971
8	106511690	T	C	21	27710757	G	T	60.5	4.14088E-08	0,701
5	159084262	A	C	7	38837992	C	T	60.42	3.15262E-08	0,744
8	106511690	T	C	21	27706323	G	T	60.4	6.95833E-08	0,695
1	36977811	C	G	13	89361483	C	C	60.34	1.94346E-07	1,068
4	154511832	G	A	5	159084262	A	C	60.34	1.63447E-07	1,104
5	159084262	A	C	7	145946544	CTTG	C	60.32	1.14442E-07	0,833
4	154515856	A	G	5	159084262	A	C	60.32	2.20398E-07	1,392
1	62365217	C	T	5	159100342	A	G	60.32	7.17648E-09	0,855
1	62365217	C	T	5	159100029	G	A	60.32	7.01398E-09	0,856
1	62365217	C	T	5	159100352	A	G	60.32	7.17648E-09	0,804
1	62365217	C	T	5	159100079	C	T	60.32	6.44993E-09	0,805
5	168849733	A	G	16	81538637	C	A	60.32	2.97548E-09	0,747
5	33120048	C	A	10	123348355	C	C	60.32	1.95322E-07	0,809
5	159088581	C	T	16	3615897	C	C	60.3	8.9981E-08	0,800
5	159078346	G	A	7	38912411	C	A	60.26	8.07273E-09	0,752

1	238011928	T	G	10	95470199	A	T	60.24	3.41549E-08	0,932
1	238011928	T	G	10	95471558	A	T	60.24	3.41549E-08	1,464
1	238011928	T	G	10	95471338	C	T	60.24	3.83111E-08	1,546
5	159084262	A	C	15	42316336	GGAGCA	A	60.24	1.34221E-10	0,715
8	106511690	T	C	21	27679318	A	T	60.22	1.19136E-07	1,229
5	178340304	A	G	22	29595442	G	A	60.22	2.51187E-09	0,641
5	159088581	C	T	16	3620927	T	C	60.22	1.21242E-07	0,807
5	159084262	A	C	10	113090278	G	A	60.16	2.50011E-07	2,019
5	159084262	A	C	13	95895950	G	A	60.16	2.7157E-07	0,707
5	159084262	A	C	15	42315991	A	A	60.16	1.40248E-10	0,615
5	178340304	A	G	22	29592200	C	A	60.14	3.068E-09	1,505
5	159070111	A	G	7	145946544	CTTG	C	60.14	4.45607E-07	1,505
5	159084262	A	C	21	46121183	G	A	60.14	2.97621E-07	0,614
5	159070111	A	G	13	95895950	G	A	60.14	2.62062E-07	1,505
5	178340304	A	G	22	29589654	T	A	60.14	2.65132E-09	1,502
19	2948515	G	A	20	37336474	C	T	60.14	3.91678E-08	0,692
10	10950320	C	G	16	21222941	A	C	60.08	3.90703E-07	0,648
5	159084262	A	C	10	113090316	TA	A	60.08	2.80505E-07	0,648
5	159084262	A	C	15	42319284	T	A	60.06	2.09099E-10	0,768
5	159078346	G	A	11	47823674	T	G	60.06	4.55375E-07	0,648
5	159084262	A	C	15	42310911	A	A	60.06	1.62261E-10	0,666

5	159078346	G	A	11	47850491	A	G	60.06	5.10309E-07	0,707
5	159070111	A	G	13	95897161	A	A	60.06	3.59339E-07	2,014
5	159070111	A	G	13	95895533	G	A	60.06	3.33384E-07	2,023
3	71656927	C	T	5	159084262	A	C	60.06	2.14284E-07	1,097
5	159084262	A	C	18	59133554	A	A	60.06	2.87933E-07	1,336
19	2947679	C	T	20	37336474	C	T	60.06	3.32355E-08	0,648
5	159078346	G	A	11	47814648	C	G	60.06	4.55375E-07	0,648
4	154515395	A	AT	5	159078346	G	A	60.04	3.47923E-07	1,012
2	203051234	CA	C	12	55741827	C	CA	60.02	1.82406E-07	1,012
5	159084262	A	C	7	38772273	T	A	59.98	1.12375E-07	0,836
5	159084262	A	C	7	38794767	A	G	59.98	3.3636E-08	0,748
5	159084262	A	C	7	38799229	A	G	59.98	4.43471E-08	1,212
5	159084262	A	C	7	38780278	T	C	59.98	3.3636E-08	0,912
5	159078346	G	A	11	47727748	C	G	59.98	4.31827E-07	0,712
5	159070111	A	G	13	95894627	G	A	59.98	2.1172E-07	0,759
5	159084262	A	C	7	38784793	T	G	59.98	3.3636E-08	0,783
2	155603154	A	G	12	132125504	G	A	59.96	1.9669E-07	1,209
5	159070111	A	G	15	42316336	GGAGCA	A	59.96	3.8622E-10	1,209
1	238011928	T	G	10	95470087	C	T	59.9	3.30663E-08	0,880
5	159097213	C	T	13	52175923	C	C	59.9	4.53915E-07	1,387
5	159095678	T	C	13	52175923	C	T	59.9	4.53915E-07	0,880

5	159098523	C	T	13	52175923	C	C	59.9	4.53915E-07	0,880
5	159094162	G	T	13	52175923	C	G	59.9	4.53915E-07	0,880
5	159093883	A	C	13	52175923	C	A	59.9	4.53915E-07	0,880
5	159098318	T	C	13	52175923	C	T	59.9	4.53915E-07	0,880
5	159097054	C	T	13	52175923	C	C	59.9	4.53915E-07	0,880
5	159097067	T	A	13	52175923	C	T	59.9	4.53915E-07	0,880
5	159099186	C	T	13	52175923	C	C	59.9	4.53915E-07	0,880
5	159098870	G	A	13	52175923	C	G	59.9	4.53915E-07	0,880
5	159098864	C	A	13	52175923	C	C	59.9	4.53915E-07	0,880
5	159095562	G	A	13	52175923	C	G	59.9	4.53915E-07	0,880
5	159097664	A	C	13	52175923	C	A	59.9	4.53915E-07	0,880
5	159097515	G	A	13	52175923	C	G	59.9	4.53915E-07	0,880
5	159091285	T	C	13	52175923	C	T	59.9	4.53915E-07	0,880
5	159098961	C	CAGA	13	52175923	C	C	59.9	4.53915E-07	0,880
5	159093781	T	TA	13	52175923	C	T	59.9	4.53915E-07	0,880
1	83531713	C	A	14	54226108	T	C	59.88	7.34001E-07	0,840
5	159078346	G	A	15	42316336	GGAGCA	G	59.88	4.55156E-10	0,839
5	14335941	G	A	6	162308477	A	T	59.88	4.66522E-07	0,839
4	163074129	G	A	5	159084262	A	C	59.8	3.76089E-07	0,712
5	159088581	C	T	9	14876692	A	G	59.8	2.89439E-07	1,310
5	159088581	C	T	10	101753934	C	C	59.64	4.82459E-07	1,211

5	159091330	A	C	22	24751240	A	A	59.6	2.85942E-07	0,780
5	159089819	G	A	22	24751240	A	G	59.6	2.85942E-07	0,747

*OR: Odds ratios are calculated as the ratio between the combinations where both variants have the alternative allele present versus the combinations where only 1 or none of them present the alternative allele. See Supplementary Table II and Supplementary equation (1) as follows.

Supplementary Table II. Variant combinations and the presence of the alternative allele.

	AA	Aa	aa
BB	Absent	Absent	Absent
Bb	Absent	Present	Present
bb	Absent	Present	Present

Supplementary Equations. Odds ratio.

$$OR = \frac{\text{Odds (Cases if the alternative allele is "Present" in both variants)}}{\text{Odds (Cases if the alternative allele is "Absent" in one of the variants)}} \quad (1)$$

Where both odds are calculated as follows:

$$\text{Odds (Cases if the alternative allele is "Present" in both variants)} = \frac{\text{Cases if the alternative allele is "Present" in both variants}}{\text{Controls if the alternative allele is "Present" in both variants}} \quad (2)$$

$$\text{Odds (Cases if the alternative allele is "Absent" in one of the variants)} = \frac{\text{Cases if the alternative allele is "Absent" in one of the variants}}{\text{Controls if the alternative allele is "Absent" in one of the variants}} \quad (3)$$