Supplementary Document

Xiang Wan,* Can Yang,* Qiang Yang,

Hong Xue, Nelson L.S. Tang[†]and Weichuan Yu[†]

In this document, we first present the details about our simulation models and procedure. Next we provide the detailed results of the real data analysis.

1 Simulation models and procedure

The interaction effect of two SNPs in association studies is generally defined using epistasis models. We consider four epistasis models whose odds tables are given in Table 1. Model 1 is a multiplicative model which has been considered in [5]. Model 2 is an epistasis model discussed in [6], which has been used to describe handedness [3] and the color of swine [2]. Model 3 is a classical epistasis model discussed in [4, 1]. Model 4 is the well known XOR model. Let

model 1	BB	Bb	bb	model 2	BB	Bb	bb
AA	α	α	α	AA	α	$\alpha(1+\theta)$	$\alpha(1+\theta)$
Aa	α	$\alpha(1+\theta)$	$\alpha(1+\theta)^2$	Aa	$\alpha(1+\theta)$	α	α
aa	α	$\alpha(1+\theta)^2$	$\alpha(1+\theta)^4$	aa	$\alpha(1+\theta)$	α	α

model 3	BB	Bb	bb	model 4	BB	Bb	bb
AA	α	α	$\alpha(1+\theta)$	AA	α	$\alpha(1+\theta)$	α
Aa	α	$\alpha(1+\theta)$	α	Aa	$\alpha(1+\theta)$	α	$\alpha(1+\theta)$
aa	$\alpha(1+\theta)$	α	α	aa	α	$\alpha(1+\theta)$	α

Table 1: The Odds tables for four epistasis models. The parameters α and θ control the prevalence $p(D)$ (Eq.(3)) and the heritability h^2 (Eq.(4))

$p(D|G_i)$ denote the probability of an individual being affected given its genotype combination G_i (i.e., the penetrance of G_i), and let $p(\bar{D}|G_i)$ denote the probability of an individual not being affected given its genotype G_i. Based on the definition of the odds of a disease

$$ODD_{G_i} = \frac{p(D|G_i)}{p(\bar{D}|G_i)} = \frac{p(D|G_i)}{1 - p(D|G_i)}, \tag{1}$$

the penetrance $p(D|G_i)$ of the genotype G_i can be calculated using

$$p(D|G_i) = \frac{ODD_{G_i}}{1 + ODD_{G_i}}. \tag{2}$$

---

*These authors contribute equally to this work.

[†]corresponding author

The disease prevalence $p(D)$ and genetic heritability h^2 are given as

$$p(D) = \sum_i p(D|G_i)p(G_i), \tag{3}$$

$$h^2 = \frac{\sum_i (p(D|G_i) - p(D))^2 p(G_i)}{p(D)(1 - p(D))}. \tag{4}$$

In our simulation, the prevalence $p(D)$ and the heritability h^2 are controlled by the parameters α and θ (see Table 1). We first specify the disease prevalence $p(D)$, genetic heritability h^2, and then numerically solve the parameters (α and θ) based on the above equations. For example, we set $p(D) = 0.1$ and $h^2 = 0.03$ in model 1. Then we obtain $\alpha = 0.09989$ and $\theta = 3.4481$ for $MAF = 0.1$ (MAF: minor allele frequency).

Figure 1: The distributions of main effects and interaction effects under different settings of four disease models.

In the simulation, we set $h^2 = 0.03$ for model 1 and $h^2 = 0.02$ for models 2, 3 and 4. We generate genotype data based on the Hardy Weinberg principle. We set the MAFs of disease associated SNPs to be $0.1, 0.2$ and 0.4. We generate the MAFs of un-associated SNPs uniformly from $[0.05, 0.5]$. We simulate 100 data sets under each setting for each disease model. Each data set contains 1000 SNPs. To take sample size into consi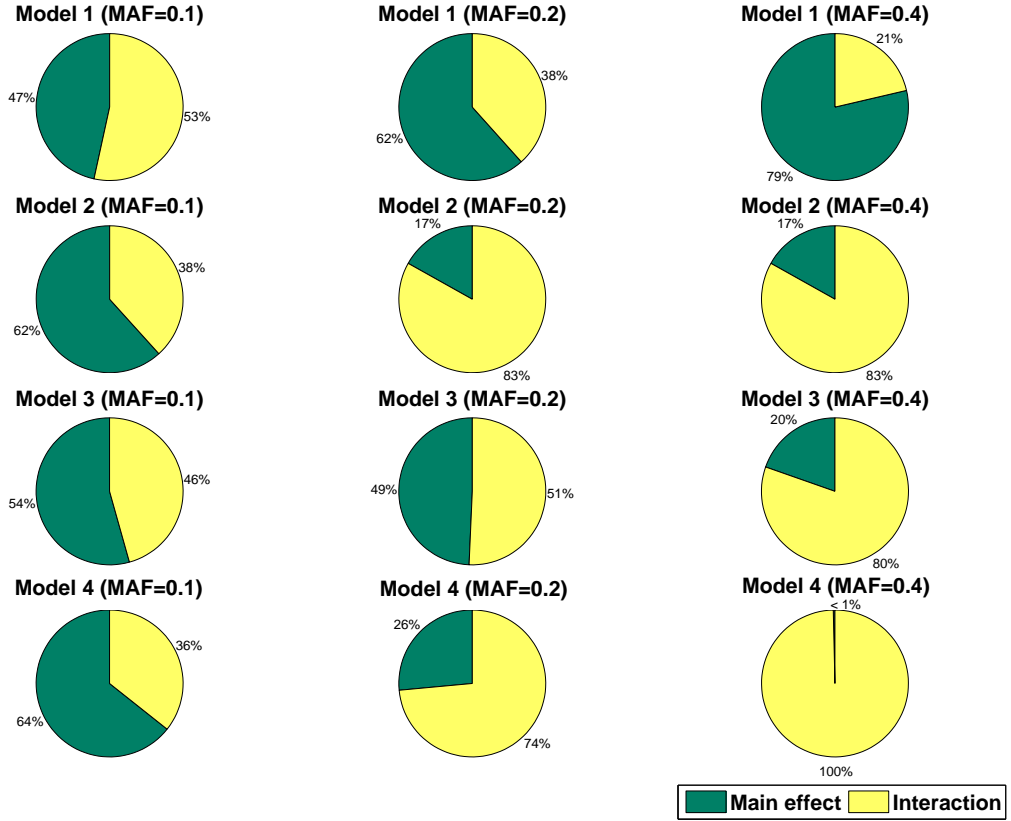deration, we simulate both 800 samples and 1600 samples with the balanced design. Figure 1 presents the distributions of main effects

and interaction effects under different settings of four disease models, which exactly match the performance of method shown in the main article.

2 Detailed results on the AMD data set

The Distributions of genotypes of rs994542 and rs9298846 is given in Table 2.

CASE	rs9298846			CONTROL	rs9298846		
rs994542	CC	CT	TT	rs994542	CC	CT	TT
CC	5	28	10	CC	15	4	0
CT	16	26	0	CT	4	10	11
TT	5	5	1	TT	0	4	2

Table 2: Distributions of genotypes of rs994542 and rs9298846 in the AMD data set.

3 Detailed results on the Parkinson's disease data set

CASE	rs10519435			CONTROL	rs10519435		
rs849523	GG	AG	AA	rs849523	GG	AA	AG
CC	78	32	10	CC	75	68	4
CT	53	61	0	CT	58	23	24
TT	7	17	1	TT	14	4	1

Table 3: Distributions of genotypes of rs849523 and rs10519435 in the Parkinson's disease data set.

Odd-ratio (95% confidence interval) of the SNP pair (rs849523, rs10519435)			
	GG	AG	AA
CC	1.00 (1.00-1.00)	0.62 (0.37-0.97)	2.99 (0.76-8.69)
CT	0.89 (0.53-1.42)	2.66 (1.46-4.80)	0.02 (0.01-0.03)
TT	0.02 (0.01-0.03)	4.83 (1.46-14.33)	1.58 (0.15-6.22)

Table 4: The the odd ratios computed for combined genotypes of rs849523 and rs10519435 in the Parkinson's disease data set.

4 Detailed results on WTCCC data sets

4.1 SNP Quality control

The control samples and case samples are separately processed. For the control samples, those genotype data with Chiamo score [7] less than 0.95 are considered as missing data. SNPs with more than 10 percent missing data are removed. We also perform the Hardy-Weinberg Equilibrium (HWE) test for each SNP. Those SNPs with P-value ≤ 0.001 are removed. For the case samples, the strategy is similar except that the P-value threshold of the HWE test is set to be P value ≤ 0.0001. This criterion is less strict because we do not want to throw away too many suspected SNPs.

After the quality control, the numbers of remaining SNPs are given in Table 5.

BD	CAD	CD	HT	RA	T1D	T2D
351,545	352,068	354,181	352,924	352,536	352,538	351,542

Table 5: The numbers of SNPs passing our quality control for the seven data sets from WTCCC.

4.2 Detailed results on the Crohn's disease data set

Associated SNP				Interacted SNP in association				Statistic	
SNP	Chr	Position	Single-locus P-value	SNP	Chr	Position	Single-locus P-value	Interaction P-value	Association P-value
rs4506508	1	76968357	5.513×10^{-5}	rs11141875	9	87396295	0.669	2.111×10^{-10}	2.827×10^{-13}
rs4506508	1	76968357	5.513×10^{-5}	rs11141877	9	87396378	0.847	1.137×10^{-9}	1.444×10^{-12}
rs7517726	1	169645234	1.332×10^{-6}	rs1952036	14	59249700	0.396	1.816×10^{-8}	7.434×10^{-13}
rs10008294	4	81173874	4.871×10^{-4}	rs1450526	3	162640611	0.498	6.176×10^{-11}	6.773×10^{-13}
rs10008294	4	81173874	4.871×10^{-4}	rs9841691	3	162641345	0.509	1.040×10^{-10}	1.126×10^{-12}
rs2390248	7	19821917	1.819×10^{-6}	rs17031187	12	100143362	0.989	2.168×10^{-8}	1.086×10^{-12}
rs9298389	8	83678771	4.550×10^{-6}	rs17543428	12	28978644	0.187	1.273×10^{-8}	1.534×10^{-12}
rs1356714	8	83679181	5.576×10^{-6}	rs17543428	12	28978644	0.187	4.767×10^{-9}	7.015×10^{-13}
rs10958116	8	83704239	7.715×10^{-7}	rs17543428	12	28978644	0.187	1.204×10^{-8}	2.570×10^{-13}

Table 6: The identified associations from the Crohn's disease data set.

4.3 Detailed results on the Rheumatoid arthritis data set

Associated SNP				Interacted SNP in association				Statistic	
SNP	Chr	Position	Single-locus P-value	SNP	Chr	Position	Single-locus P-value	Interaction P-value	Association P-value
rs4394275	6	31426156	1.836×10^{-4}	rs9276440	6	32822761	0.002	2.168×10^{-10}	9.458×10^{-13}
rs2857212	6	32848389	2.684×10^{-6}	rs2516478	6	31606716	0.005	2.018×10^{-12}	1.110×10^{-16}
rs2857212	6	32848389	2.684×10^{-6}	rs1799964	6	31650287	0.073	4.850×10^{-10}	5.884×10^{-14}

Table 7: The identified associations from the Rheumatoid arthritis data set.

4.4 Detailed results on the Type 1 diabetes data set

Associated SNP				Interacted SNP in association				Statistic	
SNP	Chr	Position	Single-locus P-value	SNP	Chr	Position	Single-locus P-value	Interaction P-value	Association P-value
rs7382533	6	28223163	4.330×10^{-7}	rs7704018	5	13644599	0.434	9.449×10^{-8}	1.119×10^{-12}
rs12193110	6	30045083	4.880×10^{-7}	rs16893666	6	28162686	8.525×10^{-7}	1.477×10^{-6}	1.065×10^{-12}
rs12193110	6	30045083	4.880×10^{-7}	rs9380052	6	28172602	1.432×10^{-6}	1.455×10^{-6}	1.154×10^{-12}
rs203885	6	28184865	4.156×10^{-6}	rs362525	6	29651625	0.296	2.667×10^{-10}	6.439×10^{-15}
rs12193110	6	30045083	4.880×10^{-7}	rs6931858	6	28186390	8.687×10^{-7}	2.104×10^{-6}	1.497×10^{-12}
rs1225709	6	28211627	3.160×10^{-6}	rs362525	6	29651625	0.296	1.482×10^{-10}	2.776×10^{-15}
rs1871695	6	28217939	3.590×10^{-6}	rs362525	6	29651625	0.296	3.441×10^{-11}	7.772×10^{-16}
rs12193110	6	30045083	4.880×10^{-7}	rs868987	6	28218127	8.233×10^{-7}	1.504×10^{-6}	1.070×10^{-12}
rs12193110	6	30045083	4.880×10^{-7}	rs9283884	6	28243639	1.327×10^{-6}	1.416×10^{-6}	1.050×10^{-12}
rs1150683	6	28263293	2.871×10^{-6}	rs362525	6	29651625	0.296	9.606×10^{-11}	1.665×10^{-15}
rs12193110	6	30045083	4.880×10^{-7}	rs1233701	6	28276705	2.139×10^{-6}	7.990×10^{-7}	1.050×10^{-12}
rs12193110	6	30045083	4.880×10^{-7}	rs1233699	6	28277137	1.492×10^{-6}	7.537×10^{-7}	9.350×10^{-13}
rs3117330	6	29333774	4.969×10^{-7}	rs4713370	6	30875517	0.017	6.391×10^{-9}	2.398×10^{-14}
rs3117330	6	29333774	4.969×10^{-7}	rs9380192	6	30880323	0.040	3.335×10^{-8}	1.453×10^{-13}
rs3117330	6	29333774	4.969×10^{-7}	rs9380197	6	30886182	0.016	4.013×10^{-9}	1.399×10^{-14}
rs1884123	6	29364399	1.427×10^{-6}	rs4713370	6	30875517	0.017	5.301×10^{-8}	4.244×10^{-13}
rs1884123	6	29364399	1.427×10^{-6}	rs9380197	6	30886182	0.016	2.080×10^{-8}	1.522×10^{-13}
rs3129683	6	29394649	3.857×10^{-5}	rs486416	6	31964049	0.002	7.877×10^{-9}	1.240×10^{-13}
rs6934993	6	29445479	5.826×10^{-4}	rs3757340	6	31029861	0.001	1.839×10^{-11}	6.303×10^{-13}
rs3095250	6	31316319	1.230×10^{-4}	rs362525	6	29651625	0.296	2.212×10^{-11}	9.392×10^{-14}
rs6937967	6	31317024	2.804×10^{-5}	rs362525	6	29651625	0.296	6.600×10^{-10}	6.574×10^{-13}
rs9267673	6	31991658	9.088×10^{-6}	rs29228	6	29731718	1.458×10^{-4}	6.343×10^{-11}	9.326×10^{-15}
rs387642	6	29753613	1.252×10^{-5}	rs753725	6	30998850	4.630×10^{-4}	4.850×10^{-12}	4.463×10^{-14}
rs387642	6	29753613	1.252×10^{-5}	rs9263715	6	31203780	0.062	2.798×10^{-10}	7.694×10^{-14}
rs387642	6	29753613	1.252×10^{-5}	rs9263716	6	31203795	0.070	1.357×10^{-10}	3.797×10^{-14}
rs387642	6	29753613	1.252×10^{-5}	rs486416	6	31964049	0.002	4.842×10^{-8}	4.488×10^{-13}
rs9267673	6	31991658	9.088×10^{-6}	rs387642	6	29753613	1.252×10^{-5}	6.602×10^{-11}	7.438×10^{-15}
rs9266406	6	31444397	1.293×10^{-6}	rs3129047	6	29778552	1.024×10^{-4}	9.895×10^{-8}	7.512×10^{-13}
rs9266409	6	31444547	1.235×10^{-6}	rs3129047	6	29778552	1.024×10^{-4}	6.831×10^{-8}	4.927×10^{-13}
rs6933050	6	31451611	8.181×10^{-7}	rs3129047	6	29778552	1.024×10^{-4}	6.405×10^{-8}	3.068×10^{-13}
rs6910516	6	31451806	1.140×10^{-6}	rs3129047	6	29778552	1.024×10^{-4}	1.185×10^{-7}	7.753×10^{-13}
rs9267673	6	31991658	9.088×10^{-6}	rs3129047	6	29778552	1.024×10^{-4}	7.015×10^{-10}	9.570×10^{-14}
rs9266406	6	31444397	1.293×10^{-6}	rs1610585	6	29783655	0.004	2.880×10^{-8}	9.114×10^{-13}
rs9266409	6	31444547	1.235×10^{-6}	rs1610585	6	29783655	0.004	3.170×10^{-8}	9.673×10^{-13}
rs6933050	6	31451611	8.181×10^{-7}	rs1610585	6	29783655	0.004	4.211×10^{-8}	8.543×10^{-13}
rs6910516	6	31451806	1.140×10^{-6}	rs1610585	6	29783655	0.004	3.888×10^{-8}	1.111×10^{-12}
rs9266406	6	31444397	1.293×10^{-6}	rs1610586	6	29784295	0.005	3.412×10^{-8}	1.071×10^{-12}
rs9266409	6	31444547	1.235×10^{-6}	rs1610586	6	29784295	0.005	3.751×10^{-8}	1.135×10^{-12}
Continued on next page									

Table 8 – continued from previous page

Associated SNP				Interacted SNP in association				Statistic	
SNP	Chr	Position	Single-locus P-value	SNP	Chr	Position	Single-locus P-value	Interaction P-value	Association P-value
rs6933050	6	31451611	8.181×10^{-7}	rs1610586	6	29784295	0.005	4.975×10^{-8}	1.001×10^{-12}
rs6910516	6	31451806	1.140×10^{-6}	rs1610586	6	29784295	0.005	4.601×10^{-8}	1.304×10^{-12}
rs486416	6	31964049	0.002	rs1737031	6	29845460	0.122	7.917×10^{-12}	6.353×10^{-13}
rs486416	6	31964049	0.002	rs1633030	6	29853773	0.183	1.703×10^{-11}	1.242×10^{-12}
rs486416	6	31964049	0.002	rs1614309	6	29853863	0.110	1.318×10^{-11}	1.051×10^{-12}
rs753725	6	30998850	4.630×10^{-4}	rs1610677	6	29897150	0.279	2.386×10^{-12}	1.232×10^{-14}
rs2524095	6	31374096	0.023	rs1610677	6	29897150	0.279	7.303×10^{-12}	1.217×10^{-12}
rs753725	6	30998850	4.630×10^{-4}	rs915668	6	29906438	0.664	1.768×10^{-11}	1.146×10^{-13}
rs753725	6	30998850	4.630×10^{-4}	rs1063320	6	29906728	0.636	1.125×10^{-11}	7.150×10^{-14}
rs3095238	6	31269189	7.911×10^{-7}	rs2253981	6	29913901	0.007	4.080×10^{-9}	8.127×10^{-14}
rs3095238	6	31269189	7.911×10^{-7}	rs2254071	6	29914041	0.008	1.912×10^{-8}	3.878×10^{-13}
rs6931717	6	30930392	8.263×10^{-6}	rs2734990	6	29920484	0.005	7.218×10^{-9}	1.078×10^{-12}
rs3095238	6	31269189	7.911×10^{-7}	rs2734990	6	29920484	0.005	5.292×10^{-11}	1.443×10^{-15}
rs6931717	6	30930392	8.263×10^{-6}	rs2523767	6	29920786	0.002	5.674×10^{-9}	8.248×10^{-13}
rs3095238	6	31269189	7.911×10^{-7}	rs2523767	6	29920786	0.002	3.652×10^{-11}	9.992×10^{-16}
rs2508052	6	29927981	3.619×10^{-5}	rs3757340	6	31029861	0.001	9.016×10^{-11}	3.147×10^{-13}
rs2508052	6	29927981	3.619×10^{-5}	rs486416	6	31964049	0.002	2.755×10^{-10}	4.996×10^{-15}
rs9267673	6	31991658	9.088×10^{-6}	rs2508052	6	29927981	3.619×10^{-5}	1.238×10^{-9}	1.553×10^{-13}
rs2524089	6	31374501	0.018	rs1611699	6	29935732	0.826	2.093×10^{-12}	7.735×10^{-13}
rs1611701	6	29935935	2.546×10^{-6}	rs486416	6	31964049	0.002	1.011×10^{-7}	7.394×10^{-14}
rs1611701	6	29935935	2.546×10^{-6}	rs9267673	6	31991658	9.088×10^{-6}	2.333×10^{-8}	8.227×10^{-13}
rs3130981	6	31191792	5.335×10^{-6}	rs9258750	6	29936951	0.421	3.768×10^{-10}	6.495×10^{-14}
rs3130558	6	31205162	1.165×10^{-6}	rs9258750	6	29936951	0.421	2.935×10^{-8}	1.184×10^{-12}
rs3095238	6	31269189	7.911×10^{-7}	rs9258750	6	29936951	0.421	3.690×10^{-9}	9.637×10^{-14}
rs2394999	6	31508914	2.414×10^{-4}	rs3094165	6	29941520	0.135	1.738×10^{-10}	1.214×10^{-12}
rs9267673	6	31991658	9.088×10^{-6}	rs2734974	6	29941758	0.002	5.517×10^{-12}	1.665×10^{-15}
rs2734970	6	29942451	4.159×10^{-5}	rs3757340	6	31029861	0.001	2.476×10^{-10}	8.963×10^{-13}
rs2734970	6	29942451	4.159×10^{-5}	rs7761068	6	31441918	0.410	6.119×10^{-10}	4.335×10^{-13}
rs2734970	6	29942451	4.159×10^{-5}	rs486416	6	31964049	0.002	8.744×10^{-11}	2.220×10^{-15}
rs9267673	6	31991658	9.088×10^{-6}	rs2734970	6	29942451	4.159×10^{-5}	1.023×10^{-9}	1.328×10^{-13}
rs3389600	6	30004978	6.404×10^{-6}	rs486416	6	31964049	0.002	5.938×10^{-10}	1.887×10^{-15}
rs3389600	6	30004978	6.404×10^{-6}	rs9267673	6	31991658	9.088×10^{-6}	1.530×10^{-8}	1.444×10^{-12}
rs3130981	6	31191792	5.335×10^{-6}	rs2975046	6	30023128	0.252	9.163×10^{-11}	1.454×10^{-14}
rs3130558	6	31205162	1.165×10^{-6}	rs2975046	6	30023128	0.252	1.521×10^{-10}	5.551×10^{-15}
rs3095238	6	31269189	7.911×10^{-7}	rs2975046	6	30023128	0.252	3.237×10^{-9}	7.727×10^{-14}
rs486416	6	31964049	0.002	rs1632882	6	30024347	0.206	8.163×10^{-12}	2.809×10^{-13}
rs1655900	6	30024597	3.567×10^{-5}	rs3757340	6	31029861	0.001	3.081×10^{-10}	1.038×10^{-12}
rs1655900	6	30024597	3.567×10^{-5}	rs486416	6	31964049	0.002	4.430×10^{-10}	7.105×10^{-15}
rs9267673	6	31991658	9.088×10^{-6}	rs1655900	6	30024597	3.567×10^{-5}	5.308×10^{-10}	6.639×10^{-14}
rs3873352	6	31130092	0.008	rs1632879	6	30025682	0.728	3.536×10^{-12}	5.216×10^{-13}
rs2517672	6	30045241	4.660×10^{-6}	rs9263715	6	31203780	0.062	1.186×10^{-11}	1.443×10^{-15}
rs2517672	6	30045241	4.660×10^{-6}	rs9263716	6	31203795	0.070	5.670×10^{-12}	7.772×10^{-16}
rs9266406	6	31444397	1.293×10^{-6}	rs2517672	6	30045241	4.660×10^{-6}	2.419×10^{-8}	2.328×10^{-13}
rs9266409	6	31444547	1.235×10^{-6}	rs2517672	6	30045241	4.660×10^{-6}	1.628×10^{-8}	1.493×10^{-13}
rs6933050	6	31451611	8.181×10^{-7}	rs2517672	6	30045241	4.660×10^{-6}	1.467×10^{-8}	8.937×10^{-14}
rs6910516	6	31451806	1.140×10^{-6}	rs2517672	6	30045241	4.660×10^{-6}	2.749×10^{-8}	2.348×10^{-13}
rs2517672	6	30045241	4.660×10^{-6}	rs2516486	6	31602181	0.469	2.194×10^{-10}	2.687×10^{-14}
rs2517672	6	30045241	4.660×10^{-6}	rs486416	6	31964049	0.002	1.223×10^{-10}	4.441×10^{-16}
rs2517672	6	30045241	4.660×10^{-6}	rs9267673	6	31991658	9.088×10^{-6}	1.129×10^{-10}	7.327×10^{-15}
rs3095238	6	31269189	7.911×10^{-7}	rs1150743	6	30100240	3.326×10^{-5}	7.351×10^{-9}	2.365×10^{-14}
rs9266406	6	31444397	1.293×10^{-6}	rs9261301	6	30149538	0.835	3.362×10^{-9}	9.770×10^{-14}
rs9266409	6	31444547	1.235×10^{-6}	rs9261301	6	30149538	0.835	2.696×10^{-9}	7.538×10^{-14}
rs6933050	6	31451611	8.181×10^{-7}	rs9261301	6	30149538	0.835	4.525×10^{-9}	8.482×10^{-14}
rs6910516	6	31451806	1.140×10^{-6}	rs9261301	6	30149538	0.835	4.901×10^{-9}	1.256×10^{-13}
rs486416	6	31964049	0.002	rs9261301	6	30149538	0.835	1.457×10^{-11}	7.083×10^{-13}
rs9366778	6	31377152	0.001	rs3132682	6	30152367	0.378	3.662×10^{-11}	1.044×10^{-12}
Continued on next page									

Table 8 – continued from previous page

Associated SNP				Interacted SNP in association				Statistic	
SNP	Chr	Position	Single-locus P-value	SNP	Chr	Position	Single-locus P-value	Interaction P-value	Association P-value
rs9366778	6	31377152	0.001	rs6457144	6	30171347	0.477	4.422×10^{-11}	1.243×10^{-12}
rs9368716	6	32414068	4.787×10^{-7}	rs6457144	6	30171347	0.477	3.264×10^{-8}	7.387×10^{-13}
rs3130991	6	31195333	0.002	rs9261394	6	30172541	0.420	6.124×10^{-12}	2.888×10^{-13}
rs9366778	6	31377152	0.001	rs9261394	6	30172541	0.420	5.263×10^{-12}	1.547×10^{-13}
rs9368716	6	32414068	4.787×10^{-7}	rs9261394	6	30172541	0.420	1.367×10^{-8}	3.387×10^{-13}
rs3095238	6	31269189	7.911×10^{-7}	rs1264704	6	30173298	1.236×10^{-4}	2.572×10^{-10}	4.330×10^{-15}
rs9266406	6	31444397	1.293×10^{-6}	rs1264703	6	30173395	0.005	3.977×10^{-9}	4.918×10^{-14}
rs9266409	6	31444547	1.235×10^{-6}	rs1264703	6	30173395	0.005	2.503×10^{-9}	3.020×10^{-14}
rs6933050	6	31451611	8.181×10^{-7}	rs1264703	6	30173395	0.005	1.012×10^{-8}	8.094×10^{-14}
rs6910516	6	31451806	1.140×10^{-6}	rs1264703	6	30173395	0.005	9.758×10^{-9}	1.114×10^{-13}
rs1264702	6	30173554	0.003	rs7761068	6	31441918	0.410	2.001×10^{-12}	1.162×10^{-13}
rs9266406	6	31444397	1.293×10^{-6}	rs1264702	6	30173554	0.003	4.753×10^{-9}	5.806×10^{-14}
rs9266409	6	31444547	1.235×10^{-6}	rs1264702	6	30173554	0.003	5.995×10^{-9}	7.039×10^{-14}
rs6933050	6	31451611	8.181×10^{-7}	rs1264702	6	30173554	0.003	2.253×10^{-8}	1.759×10^{-13}
rs6910516	6	31451806	1.140×10^{-6}	rs1264702	6	30173554	0.003	2.342×10^{-8}	2.603×10^{-13}
rs1799964	6	31650287	3.133×10^{-7}	rs1264702	6	30173554	0.003	4.611×10^{-7}	9.193×10^{-13}
rs2517592	6	30201116	1.237×10^{-4}	rs2524095	6	31374096	0.023	5.949×10^{-11}	1.021×10^{-12}
rs2517592	6	30201116	1.237×10^{-4}	rs2524089	6	31374501	0.018	6.931×10^{-11}	1.224×10^{-12}
rs9368716	6	32414068	4.787×10^{-7}	rs2517592	6	30201116	1.237×10^{-4}	2.653×10^{-11}	$< 1.0 \times 10^{-16}$
rs3095238	6	31269189	7.911×10^{-7}	rs3815081	6	30222053	0.626	2.322×10^{-10}	4.330×10^{-15}
rs2517646	6	30230554	8.796×10^{-7}	rs887466	6	31251490	0.576	3.999×10^{-8}	1.127×10^{-12}
rs2517646	6	30230554	8.796×10^{-7}	rs2524095	6	31374096	0.023	3.860×10^{-10}	9.992×10^{-15}
rs2517646	6	30230554	8.796×10^{-7}	rs2524089	6	31374501	0.018	6.211×10^{-10}	1.588×10^{-14}
rs3095238	6	31269189	7.911×10^{-7}	rs9366754	6	30260012	0.792	1.957×10^{-9}	3.453×10^{-14}
rs2517611	6	30277306	6.761×10^{-7}	rs3869109	6	31292175	0.161	5.368×10^{-8}	4.363×10^{-13}
rs2517611	6	30277306	6.761×10^{-7}	rs3130944	6	31304650	1.068×10^{-6}	4.709×10^{-12}	1.843×10^{-13}
rs2517611	6	30277306	6.761×10^{-7}	rs3130713	6	31313596	1.915×10^{-6}	1.606×10^{-11}	4.965×10^{-13}
rs2517611	6	30277306	6.761×10^{-7}	rs2524095	6	31374096	0.023	4.547×10^{-11}	1.077×10^{-14}
rs2517611	6	30277306	6.761×10^{-7}	rs2524089	6	31374501	0.018	6.627×10^{-11}	1.521×10^{-14}
rs2517611	6	30277306	6.761×10^{-7}	rs2844463	6	31723146	4.337×10^{-6}	3.587×10^{-8}	2.335×10^{-13}
rs9368716	6	32414068	4.787×10^{-7}	rs2517611	6	30277306	6.761×10^{-7}	3.792×10^{-6}	1.071×10^{-12}
rs2517611	6	30277306	6.761×10^{-7}	rs9276448	6	32823607	0.009	1.530×10^{-8}	2.381×10^{-13}
rs2517611	6	30277306	6.761×10^{-7}	rs5014418	6	32827359	0.011	1.095×10^{-8}	1.796×10^{-13}
rs2517611	6	30277306	6.761×10^{-7}	rs6919798	6	32840868	0.061	7.514×10^{-8}	1.311×10^{-12}
rs2523650	6	31557001	2.314×10^{-5}	rs2523747	6	30336917	0.342	5.968×10^{-11}	2.476×10^{-14}
rs9267673	6	31991658	9.088×10^{-6}	rs2523747	6	30336917	0.342	3.149×10^{-10}	3.286×10^{-14}
rs2844764	6	30342647	5.092×10^{-5}	rs2394963	6	31359441	0.004	4.532×10^{-11}	6.428×10^{-14}
rs2844764	6	30342647	5.092×10^{-5}	rs3905495	6	31373518	0.016	1.005×10^{-10}	1.490×10^{-13}
rs2844764	6	30342647	5.092×10^{-5}	rs16899205	6	31374340	0.005	1.056×10^{-10}	1.448×10^{-13}
rs2844764	6	30342647	5.092×10^{-5}	rs16899207	6	31374366	0.006	5.398×10^{-11}	7.572×10^{-14}
rs2844764	6	30342647	5.092×10^{-5}	rs9366778	6	31377152	0.001	6.558×10^{-12}	9.881×10^{-15}
rs2844764	6	30342647	5.092×10^{-5}	rs4394275	6	31426156	0.033	4.996×10^{-10}	4.087×10^{-13}
rs2844764	6	30342647	5.092×10^{-5}	rs16899646	6	31524899	0.256	7.528×10^{-10}	1.158×10^{-12}
rs2844762	6	30344733	6.149×10^{-5}	rs2394963	6	31359441	0.004	3.369×10^{-11}	5.773×10^{-14}
rs2844762	6	30344733	6.149×10^{-5}	rs3905495	6	31373518	0.016	6.660×10^{-11}	1.195×10^{-13}
rs2844762	6	30344733	6.149×10^{-5}	rs16899205	6	31374340	0.005	7.768×10^{-11}	1.288×10^{-13}
rs2844762	6	30344733	6.149×10^{-5}	rs16899207	6	31374366	0.006	3.951×10^{-11}	6.706×10^{-14}
rs2844762	6	30344733	6.149×10^{-5}	rs9366778	6	31377152	0.001	7.635×10^{-12}	1.354×10^{-14}
rs2844762	6	30344733	6.149×10^{-5}	rs4394275	6	31426156	0.033	3.193×10^{-10}	3.126×10^{-13}
rs2844762	6	30344733	6.149×10^{-5}	rs16899646	6	31524899	0.256	3.095×10^{-10}	5.743×10^{-13}
rs11752362	6	30368961	8.070×10^{-6}	rs16899646	6	31524899	0.256	1.144×10^{-11}	1.665×10^{-15}
rs11752362	6	30368961	8.070×10^{-6}	rs2395031	6	31545284	0.091	2.125×10^{-11}	1.887×10^{-15}
rs2523650	6	31557001	2.314×10^{-5}	rs1264616	6	30372286	0.257	2.380×10^{-11}	9.770×10^{-15}
rs9267673	6	31991658	9.088×10^{-6}	rs1264616	6	30372286	0.257	1.399×10^{-10}	1.443×10^{-14}
rs2523650	6	31557001	2.314×10^{-5}	rs261950	6	30377540	0.005	1.009×10^{-10}	2.864×10^{-14}
rs9267673	6	31991658	9.088×10^{-6}	rs261950	6	30377540	0.005	4.173×10^{-10}	1.676×10^{-14}

7

Table 8 – continued from previous page

Associated SNP				Interacted SNP in association				Statistic	
SNP	Chr	Position	Single-locus P-value	SNP	Chr	Position	Single-locus P-value	Interaction P-value	Association P-value
rs2523650	6	31557001	2.314×10^{-5}	rs261948	6	30378588	0.267	2.646×10^{-11}	1.088×10^{-14}
rs9267673	6	31991658	9.088×10^{-6}	rs261948	6	30378588	0.267	1.710×10^{-10}	1.821×10^{-14}
rs2523650	6	31557001	2.314×10^{-5}	rs261947	6	30379123	0.004	5.373×10^{-11}	1.510×10^{-14}
rs9267673	6	31991658	9.088×10^{-6}	rs261947	6	30379123	0.004	3.138×10^{-10}	1.266×10^{-14}
rs2523650	6	31557001	2.314×10^{-5}	rs261943	6	30381350	0.174	2.604×10^{-11}	1.021×10^{-14}
rs9267673	6	31991658	9.088×10^{-6}	rs261943	6	30381350	0.174	1.860×10^{-10}	1.943×10^{-14}
rs2523650	6	31557001	2.314×10^{-5}	rs9295843	6	30389213	0.257	2.380×10^{-11}	9.770×10^{-15}
rs9267673	6	31991658	9.088×10^{-6}	rs9295843	6	30389213	0.257	1.399×10^{-10}	1.443×10^{-14}
rs2523650	6	31557001	2.314×10^{-5}	rs6912771	6	30392354	0.005	6.270×10^{-11}	1.754×10^{-14}
rs9267673	6	31991658	9.088×10^{-6}	rs6912771	6	30392354	0.005	5.663×10^{-10}	2.298×10^{-14}
rs2523650	6	31557001	2.314×10^{-5}	rs1473102	6	30393384	0.241	1.493×10^{-11}	6.217×10^{-15}
rs9267673	6	31991658	9.088×10^{-6}	rs1473102	6	30393384	0.241	3.642×10^{-10}	3.864×10^{-14}
rs2523650	6	31557001	2.314×10^{-5}	rs6924453	6	30393934	0.004	2.842×10^{-10}	8.404×10^{-14}
rs9267673	6	31991658	9.088×10^{-6}	rs6924453	6	30393934	0.004	1.327×10^{-10}	5.884×10^{-15}
rs2523650	6	31557001	2.314×10^{-5}	rs6905389	6	30427909	0.898	2.728×10^{-11}	1.643×10^{-14}
rs2516688	6	30472503	4.997×10^{-7}	rs805297	6	31730585	0.047	8.806×10^{-8}	1.302×10^{-12}
rs2516688	6	30472503	4.997×10^{-7}	rs707939	6	31834667	5.894×10^{-4}	1.419×10^{-8}	1.869×10^{-13}
rs2516688	6	30472503	4.997×10^{-7}	rs2075800	6	31885925	2.314×10^{-5}	2.285×10^{-8}	2.389×10^{-13}
rs9368716	6	32414068	4.787×10^{-7}	rs2516688	6	30472503	4.997×10^{-7}	1.340×10^{-9}	2.331×10^{-15}
rs1264563	6	30476071	5.100×10^{-5}	rs486416	6	31964049	0.002	3.278×10^{-12}	1.221×10^{-15}
rs1799964	6	31650287	3.133×10^{-7}	rs2844720	6	30583696	0.030	2.142×10^{-8}	9.143×10^{-13}
rs1799964	6	31650287	3.133×10^{-7}	rs996589	6	30585214	0.039	2.401×10^{-9}	9.848×10^{-14}
rs1799964	6	31650287	3.133×10^{-7}	rs996588	6	30585235	0.042	1.741×10^{-9}	6.894×10^{-14}
rs1799964	6	31650287	3.133×10^{-7}	rs2844718	6	30585255	0.040	2.021×10^{-9}	8.138×10^{-14}
rs2534812	6	30590972	0.028	rs2516486	6	31602181	0.469	2.178×10^{-12}	1.256×10^{-12}
rs1799964	6	31650287	3.133×10^{-7}	rs1058318	6	30620142	0.074	1.483×10^{-9}	5.551×10^{-14}
rs9368716	6	32414068	4.787×10^{-7}	rs1264432	6	30670000	0.802	1.020×10^{-7}	1.017×10^{-12}
rs9368716	6	32414068	4.787×10^{-7}	rs2252745	6	30687294	0.840	2.556×10^{-8}	2.641×10^{-13}
rs415929	6	32297010	9.819×10^{-5}	rs1075496	6	30766218	0.018	1.765×10^{-11}	5.684×10^{-14}
rs9262152	6	30788895	5.722×10^{-7}	rs9385559	6	131131688	0.272	8.396×10^{-8}	1.345×10^{-12}
rs9267673	6	31991658	9.088×10^{-6}	rs4713370	6	30875517	0.017	6.175×10^{-10}	2.295×10^{-13}
rs2071286	6	32287874	4.742×10^{-5}	rs4713370	6	30875517	0.017	3.307×10^{-10}	1.442×10^{-12}
rs9267673	6	31991658	9.088×10^{-6}	rs9380192	6	30880323	0.040	6.330×10^{-11}	2.498×10^{-14}
rs2071286	6	32287874	4.742×10^{-5}	rs9380192	6	30880323	0.040	1.996×10^{-11}	7.405×10^{-14}
rs9267673	6	31991658	9.088×10^{-6}	rs9380197	6	30886182	0.016	5.682×10^{-10}	2.175×10^{-13}
rs9267673	6	31991658	9.088×10^{-6}	rs1264344	6	30908556	0.222	3.298×10^{-10}	9.048×10^{-14}
rs9276825	6	32937692	1.661×10^{-5}	rs1264344	6	30908556	0.222	1.084×10^{-11}	6.217×10^{-15}
rs6931717	6	30930392	8.263×10^{-6}	rs1035798	6	32259200	1.877×10^{-4}	1.850×10^{-11}	4.663×10^{-15}
rs6931717	6	30930392	8.263×10^{-6}	rs2071286	6	32287874	4.742×10^{-5}	3.063×10^{-10}	6.739×10^{-14}
rs9267673	6	31991658	9.088×10^{-6}	rs1264303	6	30990492	0.126	4.006×10^{-10}	9.126×10^{-14}
rs9276825	6	32937692	1.661×10^{-5}	rs1264303	6	30990492	0.126	1.533×10^{-9}	4.612×10^{-13}
rs9276825	6	32937692	1.661×10^{-5}	rs7738138	6	30995323	0.114	2.513×10^{-9}	7.422×10^{-13}
rs9276825	6	32937692	1.661×10^{-5}	rs2532921	6	31030549	0.097	3.140×10^{-9}	8.236×10^{-13}
rs9368716	6	32414068	4.787×10^{-7}	rs2530709	6	31048548	0.003	6.798×10^{-9}	2.565×10^{-14}
rs1894407	6	32895014	4.551×10^{-7}	rs2530709	6	31048548	0.003	2.288×10^{-8}	5.514×10^{-13}
rs427037	6	32320242	0.036	rs2256514	6	31080450	0.324	2.696×10^{-12}	1.068×10^{-12}
rs2517538	6	31121520	8.948×10^{-7}	rs17421624	6	32174155	1.066×10^{-4}	4.378×10^{-11}	5.551×10^{-16}
rs1894407	6	32895014	4.551×10^{-7}	rs2517538	6	31121520	8.948×10^{-7}	6.795×10^{-9}	1.376×10^{-13}
rs2517538	6	31121520	8.948×10^{-7}	rs1044043	6	32901959	0.863	1.810×10^{-8}	2.309×10^{-13}
rs3130981	6	31191792	5.335×10^{-6}	rs415929	6	32297010	9.819×10^{-5}	3.377×10^{-12}	4.441×10^{-16}
rs9368716	6	32414068	4.787×10^{-7}	rs3130991	6	31195333	0.002	1.403×10^{-10}	$< 1.0 \times 10^{-16}$
rs3130558	6	31205162	1.165×10^{-6}	rs415929	6	32297010	9.819×10^{-5}	1.353×10^{-11}	3.331×10^{-16}
rs2073723	6	31238057	1.831×10^{-5}	rs415929	6	32297010	9.819×10^{-5}	3.559×10^{-12}	6.661×10^{-16}
rs9368716	6	32414068	4.787×10^{-7}	rs2073723	6	31238057	1.831×10^{-5}	4.903×10^{-9}	1.488×10^{-13}
rs9263804	6	31243685	3.098×10^{-5}	rs415929	6	32297010	9.819×10^{-5}	1.791×10^{-12}	6.661×10^{-16}
rs9368716	6	32414068	4.787×10^{-7}	rs9263804	6	31243685	3.098×10^{-5}	2.795×10^{-8}	8.441×10^{-13}

Table 8 – continued from previous page

Associated SNP				Interacted SNP in association				Statistic	
SNP	Chr	Position	Single-locus P-value	SNP	Chr	Position	Single-locus P-value	Interaction P-value	Association P-value
rs3130501	6	31244432	2.806×10^{-5}	rs415929	6	32297010	9.819×10^{-5}	1.880×10^{-12}	5.551×10^{-16}
rs9368716	6	32414068	4.787×10^{-7}	rs3130501	6	31244432	2.806×10^{-5}	1.501×10^{-8}	4.526×10^{-13}
rs3132524	6	31244693	2.702×10^{-5}	rs415929	6	32297010	9.819×10^{-5}	6.341×10^{-12}	1.887×10^{-15}
rs9368716	6	32414068	4.787×10^{-7}	rs3132524	6	31244693	2.702×10^{-5}	1.489×10^{-8}	4.380×10^{-13}
rs3095238	6	31269189	7.911×10^{-7}	rs2071286	6	32287874	4.742×10^{-5}	2.383×10^{-10}	3.220×10^{-15}
rs3095238	6	31269189	7.911×10^{-7}	rs9268302	6	32432795	0.080	2.278×10^{-8}	4.319×10^{-13}
rs3095238	6	31269189	7.911×10^{-7}	rs6907322	6	32432923	0.008	7.509×10^{-9}	1.197×10^{-13}
rs3095238	6	31269189	7.911×10^{-7}	rs2857210	6	32849720	0.846	9.923×10^{-9}	1.735×10^{-13}
rs2894180	6	31280634	0.008	rs2857210	6	32849720	0.846	8.274×10^{-12}	1.331×10^{-12}
rs9368716	6	32414068	4.787×10^{-7}	rs7452890	6	31285073	2.176×10^{-4}	5.610×10^{-7}	3.175×10^{-14}
rs9276825	6	32937692	1.661×10^{-5}	rs3869109	6	31292175	0.161	2.366×10^{-9}	1.027×10^{-12}
rs9368716	6	32414068	4.787×10^{-7}	rs3130944	6	31304650	1.068×10^{-6}	1	4.049×10^{-13}
rs1894407	6	32895014	4.551×10^{-7}	rs3130944	6	31304650	1.068×10^{-6}	1.069×10^{-8}	8.098×10^{-13}
rs3130944	6	31304650	1.068×10^{-6}	rs9276832	6	32940378	0.106	1.289×10^{-8}	7.033×10^{-13}
rs9368716	6	32414068	4.787×10^{-7}	rs3130713	6	31313596	1.915×10^{-6}	1	2.379×10^{-13}
rs1894407	6	32895014	4.551×10^{-7}	rs3130713	6	31313596	1.915×10^{-6}	1.914×10^{-9}	1.477×10^{-13}
rs3130713	6	31313596	1.915×10^{-6}	rs9276832	6	32940378	0.106	5.062×10^{-9}	4.813×10^{-13}
rs3095250	6	31316319	1.230×10^{-4}	rs427037	6	32320242	0.036	9.834×10^{-11}	6.319×10^{-13}
rs3095250	6	31316319	1.230×10^{-4}	rs6907322	6	32432923	0.008	2.669×10^{-11}	1.443×10^{-15}
rs6937967	6	31317024	2.804×10^{-5}	rs427037	6	32320242	0.036	1.687×10^{-10}	2.943×10^{-13}
rs6937967	6	31317024	2.804×10^{-5}	rs6907322	6	32432923	0.008	8.485×10^{-12}	1.110×10^{-16}
rs9276448	6	32823607	0.009	rs2844615	6	31350938	0.141	2.160×10^{-12}	6.266×10^{-13}
rs9276825	6	32937692	1.661×10^{-5}	rs2524057	6	31359874	0.481	1.222×10^{-11}	6.550×10^{-15}
rs5014418	6	32827359	0.011	rs2524051	6	31363479	0.100	2.731×10^{-12}	1.021×10^{-12}
rs9276448	6	32823607	0.009	rs2524132	6	31372891	0.088	2.581×10^{-12}	6.144×10^{-13}
rs5014418	6	32827359	0.011	rs2524115	6	31373533	0.121	1.751×10^{-12}	6.379×10^{-13}
rs2523536	6	31443979	3.274×10^{-7}	rs9276448	6	32823607	0.009	1	2.065×10^{-14}
rs2523536	6	31443979	3.274×10^{-7}	rs5014418	6	32827359	0.011	1	4.474×10^{-14}
rs2523536	6	31443979	3.274×10^{-7}	rs6919798	6	32840868	0.061	1	4.864×10^{-13}
rs9266406	6	31444397	1.293×10^{-6}	rs9276448	6	32823607	0.009	5.646×10^{-12}	5.551×10^{-16}
rs9266406	6	31444397	1.293×10^{-6}	rs5014418	6	32827359	0.011	7.098×10^{-12}	6.661×10^{-16}
rs9266406	6	31444397	1.293×10^{-6}	rs6919798	6	32840868	0.061	7.036×10^{-12}	5.551×10^{-16}
rs9266409	6	31444547	1.235×10^{-6}	rs9276448	6	32823607	0.009	5.956×10^{-12}	5.551×10^{-16}
rs9266409	6	31444547	1.235×10^{-6}	rs5014418	6	32827359	0.011	7.462×10^{-12}	6.661×10^{-16}
rs9266409	6	31444547	1.235×10^{-6}	rs6919798	6	32840868	0.061	7.474×10^{-12}	5.551×10^{-16}
rs6933050	6	31451611	8.181×10^{-7}	rs9276448	6	32823607	0.009	7.607×10^{-12}	5.551×10^{-16}
rs6933050	6	31451611	8.181×10^{-7}	rs5014418	6	32827359	0.011	9.548×10^{-12}	5.551×10^{-16}
rs6933050	6	31451611	8.181×10^{-7}	rs6919798	6	32840868	0.061	9.318×10^{-12}	4.441×10^{-16}
rs6910516	6	31451806	1.140×10^{-6}	rs9276448	6	32823607	0.009	6.218×10^{-12}	5.551×10^{-16}
rs6910516	6	31451806	1.140×10^{-6}	rs5014418	6	32827359	0.011	7.794×10^{-12}	6.661×10^{-16}
rs6910516	6	31451806	1.140×10^{-6}	rs6919798	6	32840868	0.061	7.722×10^{-12}	5.551×10^{-16}
rs2523693	6	31526103	0.003	rs6919798	6	32840868	0.061	4.177×10^{-12}	2.499×10^{-13}
rs2516460	6	31526679	3.388×10^{-4}	rs6919798	6	32840868	0.061	3.636×10^{-12}	3.231×10^{-14}
rs2523650	6	31557001	2.314×10^{-5}	rs6919798	6	32840868	0.061	8.616×10^{-12}	2.998×10^{-15}
rs2523650	6	31557001	2.314×10^{-5}	rs1044043	6	32901959	0.863	1.102×10^{-10}	5.129×10^{-14}
rs9267247	6	31563813	0.002	rs9276227	6	32808662	0.060	8.662×10^{-12}	4.770×10^{-13}
rs9267247	6	31563813	0.002	rs9276299	6	32811086	0.092	2.034×10^{-12}	1.155×10^{-13}
rs9267247	6	31563813	0.002	rs6919798	6	32840868	0.061	3.255×10^{-11}	1.411×10^{-12}
rs1799964	6	31650287	3.133×10^{-7}	rs9276448	6	32823607	0.009	3.485×10^{-8}	6.779×10^{-13}
rs1799964	6	31650287	3.133×10^{-7}	rs5014418	6	32827359	0.011	9.003×10^{-8}	1.607×10^{-12}
rs1799964	6	31650287	3.133×10^{-7}	rs6919798	6	32840868	0.061	1.247×10^{-8}	1.800×10^{-13}
rs1799964	6	31650287	3.133×10^{-7}	rs241432	6	32910181	1.097×10^{-5}	1.285×10^{-9}	1.465×10^{-14}
rs2844463	6	31723146	4.337×10^{-6}	rs2621384	6	32867251	1.154×10^{-4}	5.770×10^{-9}	1.177×10^{-14}
rs2844463	6	31723146	4.337×10^{-6}	rs2857154	6	32870594	0.131	2.748×10^{-8}	5.485×10^{-13}
rs2844463	6	31723146	4.337×10^{-6}	rs7382347	6	32883664	0.079	1.346×10^{-8}	2.245×10^{-13}
rs2844463	6	31723146	4.337×10^{-6}	rs2857129	6	32884601	0.084	1.328×10^{-8}	2.215×10^{-13}
Continued on next page									

Table 8 – continued from previous page									
Associated SNP				Interacted SNP in association				Statistic	
SNP	Chr	Position	Single-locus P-value	SNP	Chr	Position	Single-locus P-value	Interaction P-value	Association P-value
rs2844463	6	31723146	4.337×10^{-6}	rs241432	6	32910181	1.097×10^{-5}	8.196×10^{-8}	4.152×10^{-13}
rs2844463	6	31723146	4.337×10^{-6}	rs9276825	6	32937692	1.661×10^{-5}	1.391×10^{-10}	8.438×10^{-15}
rs1894407	6	32895014	4.551×10^{-7}	rs805297	6	31730585	0.047	1.475×10^{-7}	5.643×10^{-13}
rs9267673	6	31991658	9.088×10^{-6}	rs458679	6	33350470	0.643	5.427×10^{-9}	1.596×10^{-12}

Table 8: The identified associations from the Type 1 diabetes data set.

4.5   Detailed results on the Type 2 diabetes data set

Associated SNP				Interacted SNP in association				Statistic	
SNP	Chr	Position	Single-locus P-value	SNP	Chr	Position	Single-locus P-value	Interaction P-value	Association P-value
rs9586155	13	102841976	5.329×10^{-6}	rs7031174	9	36651528	8.304×10^{-5}	8.239×10^{-10}	9.954×10^{-13}
rs17232271	10	107442867	3.225×10^{-7}	rs9586155	13	102841976	5.329×10^{-6}	1.176×10^{-8}	1.403×10^{-12}

Table 9: The identified associations from the Type 2 diabetes data set.

References

[1] W. N. Frankel and N.J. Schork. Who's afraid of epistasis? *Nature Genetics*, 14:371–373, 1996.

[2] I.M. Lerner. *Heredity, Evolution, and Society.* W.H. Freeman, San Francisco, 1968.

[3] J. Levy and T. Nagylaki. A model for the genetics of handedness. *Genetics*, 72:117–128, 1992.

[4] W. Li and J. Reich. A complete enumeration and classification of two-locus disease models. *Human Heredity*, 50:334–349, 2000.

[5] J. Marchini, P. Donnelly, and L. R. Cardon. Genome-wide strategies for detecting multiple loci that influence complex diseases. *Nature Genetics*, 37(4):413–417, 2005.

[6] R.J. Neuman and J.P. Rice. Two-locus models of disease. *Genetic Epidemiology*, 9:347–365, 1992.

[7] WTCCC. Genome-wide association study of 14,000 cases of seven common diseases and 3,000 shared controls. *Nature*, 447:661–678, 2007.