Table S1. Simulation settings based on 15 genetic models. OR_{j1} is presented as odd ratio of class *j* against class 1 for each two-locus genotype along with the corresponding penetrance ($p_{j|i}$) in parentheses. Minor allele frequencies of 0.5 are used in models with patterns 1 and 2; MAFs of 0.3 are used in models with other patterns.

Pattern 1	Model 11				Model 12				Model 13			
Genotype	OR_{21}	($p_{2\|i}$)	OR_{31}	($p_{3\|i}$)	OR_{21}	($p_{2\|i}$)	OR_{31}	($p_{3\|i}$)	OR_{21}	($p_{2\|i}$)	OR_{31}	($p_{3\|i}$)
AABB	0.33	(0.233)	0.452	(0.239)	0.32	(0.178)	0.995	(0.410)	0.33	(0.202)	0.72	(0.334)
AABb	10	(0.690)	5	(0.259)	3.04	(0.575)	2	(0.284)	2	(0.548)	1.2	(0.247)
AAbb	0.4	(0.291)	0.3	(0.164)	0.61	(0.371)	0.38	(0.173)	0.8	(0.400)	0.6	(0.225)
AaBB	10	(0.690)	5	(0.259)	3.04	(0.575)	2	(0.284)	2	(0.548)	1.2	(0.247)
AaBb	0.4	(0.291)	0.3	(0.164)	0.61	(0.371)	0.38	(0.173)	0.8	(0.400)	0.6	(0.225)
Aabb	5	(0.377)	10	(0.566)	2	(0.398)	3.04	(0.453)	1.2	(0.348)	2	(0.435)
aaBB	0.3	(0.222)	0.4	(0.222)	0.38	(0.239)	0.61	(0.288)	0.6	(0.308)	0.8	(0.308)
aaBb	5	(0.377)	10	(0.566)	2	(0.398)	3.04	(0.453)	1.2	(0.348)	2	(0.435)
aabb	0.3	(0.222)	0.4	(0.222)	0.38	(0.239)	0.61	(0.288)	0.6	(0.308)	0.8	(0.308)
Pattern 2	Model 21				Model 22				Model 23			
Genotype	OR_{21}	($p_{2\|i}$)	OR_{31}	($p_{3\|i}$)	OR_{21}	($p_{2\|i}$)	OR_{31}	($p_{3\|i}$)	OR_{21}	($p_{2\|i}$)	OR_{31}	($p_{3\|i}$)
AABB	0.7	(0.338)	0.83	(0.299)	0.14	(0.098)	0.76	(0.388)	0.28	(0.243)	0.15	(0.098)
AABb	0.6	(0.364)	0.4	(0.182)	0.7	(0.384)	0.5	(0.205)	0.9	(0.414)	0.7	(0.241)
AAbb	8	(0.640)	5	(0.300)	5	(0.625)	3	(0.281)	3	(0.645)	1.2	(0.194)
AaBB	0.6	(0.364)	0.4	(0.182)	0.7	(0.384)	0.5	(0.205)	0.9	(0.414)	0.7	(0.241)
AaBb	5	(0.377)	10	(0.566)	3	(0.400)	5	(0.500)	1.2	(0.286)	3	(0.536)
Aabb	0.6	(0.364)	0.4	(0.182)	0.7	(0.384)	0.5	(0.205)	0.9	(0.414)	0.7	(0.241)
aaBB	8	(0.640)	5	(0.300)	5	(0.625)	3	(0.281)	3	(0.645)	1.2	(0.194)
aaBb	0.6	(0.364)	0.4	(0.182)	0.7	(0.384)	0.5	(0.205)	0.9	(0.414)	0.7	(0.241)
aabb	0.6	(0.364)	0.4	(0.182)	0.7	(0.384)	0.5	(0.205)	0.9	(0.414)	0.7	(0.241)
Pattern 3	Model 31				Model 32				Model 33			
Genotype	OR_{21}	($p_{2\|i}$)	OR_{31}	($p_{3\|i}$)	OR_{21}	($p_{2\|i}$)	OR_{31}	($p_{3\|i}$)	OR_{21}	($p_{2\|i}$)	OR_{31}	($p_{3\|i}$)
AABB	3.27	(0.659)	1.25	(0.189)	2.28	(0.543)	1.56	(0.278)	1.15	(0.441)	0.94	(0.271)
AABb	1.5	(0.250)	5	(0.625)	1.2	(0.286)	3	(0.536)	1.2	(0.348)	2	(0.435)
AAbb	0.2	(0.170)	0.3	(0.191)	0.2	(0.170)	0.3	(0.191)	0.2	(0.170)	0.3	(0.191)
AaBB	4	(0.640)	2	(0.240)	3	(0.645)	1.2	(0.194)	2	(0.548)	1.2	(0.247)
AaBb	0.1	(0.108)	0.1	(0.081)	0.2	(0.182)	0.2	(0.136)	0.5	(0.308)	0.5	(0.231)
Aabb	1.5	(0.250)	5	(0.625)	1.2	(0.286)	3	(0.536)	1.2	(0.348)	2	(0.435)
aaBB	0.3	(0.250)	0.2	(0.125)	0.5	(0.323)	0.3	(0.194)	0.9	(0.414)	0.7	(0.241)
aaBb	1.5	(0.250)	1.5	(0.625)	1.2	(0.286)	3	(0.536)	1.2	(0.348)	2	(0.435)
aabb	0.3	(0.250)	0.2	(0.125)	0.5	(0.323)	0.3	(0.194)	0.9	(0.414)	0.7	(0.241)
Pattern 4	Model 41				Model 42				Model 43			
Genotype	OR_{21}	($p_{2\|i}$)	OR_{31}	($p_{3\|i}$)	OR_{21}	($p_{2\|i}$)	OR_{31}	($p_{3\|i}$)	OR_{21}	($p_{2\|i}$)	OR_{31}	($p_{3\|i}$)
AABB	0.67	(0.319)	0.91	(0.325)	0.54	(0.320)	0.54	(0.240)	0.77	(0.375)	0.7	(0.258)
AABb	0.6	(0.348)	0.5	(0.217)	0.8	(0.372)	0.8	(0.279)	0.9	(0.387)	0.9	(0.290)
AAbb	6	(0.615)	4	(0.308)	3	(0.571)	2	(0.286)	1.5	(0.476)	1.2	(0.286)
AaBB	0.5	(0.308)	0.5	(0.231)	0.8	(0.372)	0.8	(0.279)	0.9	(0.387)	0.9	(0.290)
AaBb	6	(0.615)	4	(0.308)	3	(0.571)	2	(0.286)	1.5	(0.476)	1.2	(0.286)
Aabb	3	(0.377)	8	(0.615)	1.2	(0.211)	5	(0.658)	1.2	(0.286)	3	(0.536)
aaBB	6	(0.615)	4	(0.308)	3	(0.571)	2	(0.286)	1.5	(0.476)	1.2	(0.286)
aaBb	3	(0.377)	8	(0.615)	1.2	(0.211)	5	(0.658)	1.2	(0.286)	3	(0.536)
aabb	0.5	(0.308)	0.5	(0.231)	0.8	(0.372)	0.8	(0.279)	0.9	(0.387)	0.9	(0.290)
Pattern 5	Model 51				Model 52				Model 53			
Genotype	OR_{21}	($p_{2\|i}$)	OR_{31}	($p_{3\|i}$)	OR_{21}	($p_{2\|i}$)	OR_{31}	($p_{3\|i}$)	OR_{21}	($p_{2\|i}$)	OR_{31}	($p_{3\|i}$)
AABB	0.01	(0.009)	0.15	(0.128)	0.11	(0.101)	0.26	(0.184)	0.46	(0.280)	0.58	(0.265)
AABb	6	(0.615)	4	(0.308)	3	(0.571)	2	(0.286)	1.5	(0.476)	1.2	(0.286)
AAbb	0.6	(0.364)	0.4	(0.182)	0.9	(0.414)	0.7	(0.241)	0.9	(0.400)	0.8	(0.267)
AaBB	6	(0.615)	4	(0.308)	3	(0.571)	2	(0.286)	1.5	(0.476)	1.2	(0.286)
AaBb	4	(0.432)	6	(0.486)	2	(0.400)	3	(0.450)	1.2	(0.390)	1.5	(0.366)
Aabb	4	(0.432)	6	(0.486)	2	(0.400)	3	(0.450)	1.2	(0.390)	1.5	(0.366)
aaBB	0.6	(0.364)	0.4	(0.182)	0.9	(0.414)	0.7	(0.241)	0.9	(0.400)	0.8	(0.267)
aaBb	4	(0.432)	6	(0.486)	2	(0.400)	3	(0.450)	1.2	(0.390)	1.5	(0.366)
aabb	4	(0.432)	6	(0.486)	2	(0.400)	3	(0.450)	1.2	(0.390)	1.5	(0.366)