Supplementary Data

Supplementary Table S1. The average marker density of adjacent SNPs on each chromosome

SSC[1]	SNP no.[2]	Physical size(Mb)[3]	Mb/SNP[3]
1	3,670	315.32	0.0859
2	2,447	162.57	0.0664
3	1,872	144.79	0.0773
4	2,499	143.47	0.0574
5	1,524	111.51	0.0732
6	2,047	157.77	0.0771
7	2,268	134.76	0.0594
8	2,159	148.49	0.0688
9	2,144	153.67	0.0717
10	1,361	79.1	0.0581
11	1,448	87.69	0.0606
12	1,141	63.59	0.0557
13	2,751	218.64	0.0795
14	2,806	153.85	0.0548
15	2,100	157.68	0.0751
16	1,370	86.9	0.0634
17	1,259	69.7	0.0554
18	925	61.22	0.0662
X	750	144.28	0.1924
Unmapped	5,252		
	41,793	2595	0.0621

[1]SSC, *Sus scrofa* chromosome;

[2]SNP no., number of single nucleotide polymorphism;

[3]The physical size and the Mb/SNP are based on *Sus scrof* 10.2 (http://www.ncbi.nlm.nih.gov/genome).

Supplementary Table S2. Positional information of other genes in haplotype blocks

Gene	SSC[1]	Start Location(bp)[2]	End Location(bp)[2]
DDX31	1	306,414,455	306,486,475
GTF3C4	1	306,486,802	306,506,690
ENSSSCG00000005732	1	306,530,099	306,530,326
ENSSSCG00000023474	1	306,637,564	306,641,266
ENSSSCG00000027595	1	306,696,779	306,698,101
RALGDS	1	306,700,486	306,714,090
CEL	1	306,719,763	306,726,596
ENSSSCG00000022250	1	306,779,660	306,788,316
ENSSSCG00000005733	1	306,794,635	306,820,070
GFI1B	1	306,853,465	306,857,748
ENSSSCG00000005735	1	306,897,871	306,903,460
ENSSSCG00000018696	5	33,410,619	33,410,738
ENSSSCG00000000474	5	33,591,661	33,592,061
LLPH	5	33,719,383	3,3726,019
ENSSSCG00000000473	5	33,731,435	33,785,129
ENSSSCG00000000476	5	33,800,479	33,800,874
IRAK3	5	33,800,191	33,872,499
HELB	5	33,919,784	3,3965,258

[1]SSC, *Sus scrofa* chromosome;

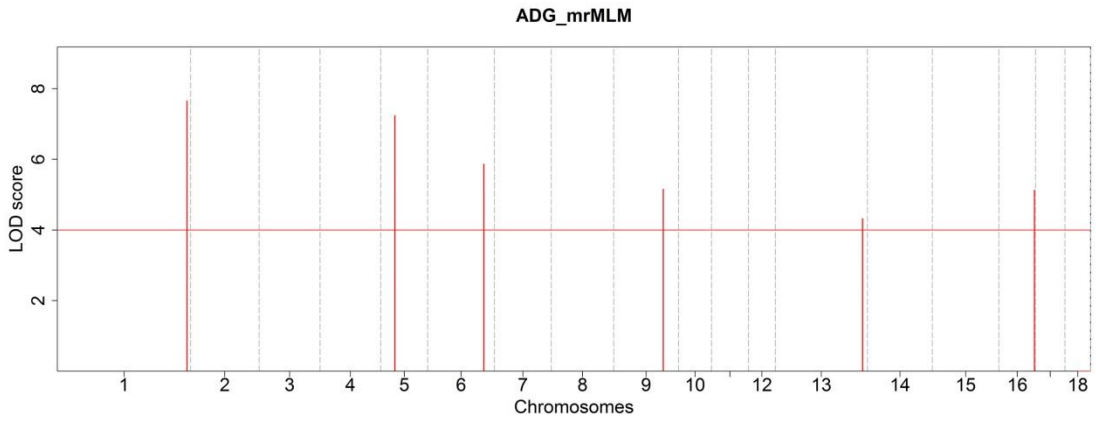
[2]The physical size are based on *Sus scrof*10.2.

Supplementary Table S3. Information of SNPs that LOD over the threshold value identified through mrMLM-based GWA

SNP	SSC[1]	Location(bp)[2]	LOD score[3]	Nearest gene
DRGA0006936	6	132729420	5.865	*ENSSSCG00000031548*
DRGA0009666	9	117106487	5.1539	*NAMPT*
INRA0041583	13	206728944	4.322	*OLIG1*
ASGA0074790	16	84312059	5.1263	*PLEKHG4B*

1SSC, Sus scrofa chromosome;

2 The physical size and the bp/SNP are based on *Sus scrof* 10.2

3 Log of odds scores of each SNPs

Supplementary Figure S1. Significant SNPs found identified by through mrMLM-based GWAS based on mrMLM