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Polymorphisms in Epigenetic and Meat Quality Related Genes in Fourteen Cattle Breeds and Association with Beef Quality and Carcass Traits

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- Supplementary Data -

Supplementary Table 1 The Significant association analysis between SNP effects and meat quality traits in Snow Dragon Beef population (LSM ± SE)

SNP	Genotype	CW (kg)	CCW (kg)	DP (%)	RA (cm ²)	RW (cm)	RL (cm)	FT (cm)	CT (cm)	CS	BFT (cm)	CF (kg)	FCS	LCS	MS
SNP1	AA	343.64±11.52	276.99±23.78	0.47±0.04	33.86±1.17 ^b	5.42±0.11 ^b	8.92±0.17	5.59±0.16	2.29±0.14	3.08±0.29	2.3±0.14	2.3±0.1	4±0.07	2.63±0.14	2.29±0.23
	GG	356.43±8.92	313.05±18.42	0.53±0.03	37.46±0.9 ^a	5.84±0.09 ^a	9.15±0.13	5.79±0.12	2.27±0.11	3.18±0.22	1.94±0.11	2.46±0.07	3.95±0.05	2.63±0.11	2.5±0.18
	GA	347.11±7.11	311.45±14.68	0.53±0.02	37.11±0.72 ^a	5.69±0.07 ^a	9.28±0.11	5.62±0.1	2.42±0.09	3.11±0.18	2.13±0.09	2.49±0.06	4.02±0.04	2.89±0.09	2.65±0.14
	<i>P</i> value	>0.05	>0.05	>0.05	<0.05	<0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05
SNP4	AA	379.27±9.69 ^A	349.52±20.58	0.58±0.03	38.58±1.03	5.78±0.1	9.5±0.15 ^a	6.1±0.13 ^A	2.69±0.12 ^A	3.61±0.25	2.05±0.13	2.67±0.08 ^A	4±0.06	2.68±0.13	2.65±0.2
	GG	333.61±12.71 ^B	288.58±27	0.51±0.05	34.9±1.35	5.55±0.13	8.96±0.2 ^b	5.56±0.17 ^B	2.32±0.15 ^A	3±0.32	1.88±0.17	2.4±0.11 ^A	4±0.08	2.61±0.17	2.67±0.27
	GA	341.16±6.11 ^B	291.81±12.97	0.5±0.02	36.22±0.65	5.68±0.06	9.09±0.09 ^b	5.52±0.08 ^B	2.22±0.07 ^B	2.96±0.15	2.17±0.08	2.36±0.05 ^B	3.99±0.04	2.82±0.08	2.46±0.13
	<i>P</i> value	<0.01	>0.05	>0.05	>0.05	>0.05	<0.05	<0.01	<0.01	>0.05	>0.05	<0.01	>0.05	>0.05	>0.05
SNP5	CC	343.17±5.6	299.73±11.79	0.51±0.02	36.3±0.59	5.68±0.06	9.11±0.09	5.57±0.08 ^b	2.31±0.07	3.15±0.14	2.14±0.07	2.4±0.05	3.98±0.03	2.77±0.07	2.57±0.11
	CT	369.49±10.47	322.43±22.05	0.53±0.04	37.76±1.1	5.73±0.11	9.36±0.16	6.02±0.14 ^a	2.48±0.13	3.11±0.26	2.01±0.13	2.59±0.09	4.04±0.06	2.75±0.13	2.46±0.21
	TT	395.8±55.42	389.6±116.7	0.65±0.19	35±5.83	5±0.57	10±0.85	5.5±0.74 ^b	2.5±0.68	1±1.38	1±0.71	2.5±0.47	4±0.32	2±0.71	1±1.13
	<i>P</i> value	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	<0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05
SNP6	CC	351.36±7.13	314.07±14.74	0.53±0.02	36.24±0.74	5.64±0.07	9.15±0.11	5.6±0.1	2.28±0.09	3.22±0.18	2.13±0.09	2.39±0.06 ^b	3.98±0.04	2.75±0.09	2.57±0.14
	CT	346.57±7.63	295.11±15.77	0.5±0.03	37±0.79	5.71±0.08	9.22±0.12	5.72±0.1	2.44±0.09	3.07±0.19	2.03±0.1	2.43±0.06 ^b	4±0.04	2.84±0.09	2.56±0.15
	TT	352.87±18.87	308.16±38.99	0.51±0.06	36.77±1.95	5.8±0.19	9±0.29	5.83±0.25	2.24±0.23	2.78±0.46	2.38±0.24	2.89±0.15 ^a	4±0.11	2.33±0.23	2.11±0.38
	<i>P</i> value	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	<0.05	>0.05	>0.05	>0.05
SNP7	AA	345.45±7.84	308.61±16.25	0.53±0.03	35.8±0.81	5.62±0.08	9.08±0.12	5.57±0.11	2.27±0.09	3.25±0.19	2.06±0.1	2.35±0.06 ^b	3.98±0.04	2.75±0.1	2.63±0.16
	AG	352.45±7.18	300.19±14.88	0.5±0.02	37.42±0.74	5.74±0.07	9.29±0.11	5.73±0.1	2.43±0.09	3.13±0.18	2.08±0.09	2.46±0.06 ^b	4±0.04	2.84±0.09	2.53±0.14
	GG	350.55±15.69	317.82±32.5	0.53±0.05	35.95±1.61	5.71±0.16	8.96±0.24	5.77±0.21	2.23±0.19	2.62±0.38	2.38±0.2	2.75±0.13 ^a	4±0.09	2.38±0.19	2.15±0.31
	<i>P</i> value	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	<0.05	>0.05	>0.05	>0.05
SNP9	CC	355.08±20.01	305.55±41.36	0.5±0.07	36.37±2.07	5.78±0.2	8.94±0.3	5.88±0.27	2.25±0.24	2.75±0.49	2.49±0.25	2.96±0.16 ^A	4±0.11	2.38±0.25	2.13±0.4
	CT	346.37±7.56	295.71±15.63	0.5±0.03	37.05±0.78	5.72±0.08	9.22±0.11	5.72±0.1	2.44±0.09	3.07±0.19	2.02±0.09	2.43±0.06 ^B	4±0.04	2.82±0.09	2.55±0.15
	TT	351.36±7.13	314.07±14.74	0.53±0.02	36.24±0.74	5.64±0.07	9.15±0.11	5.6±0.1	2.28±0.09	3.22±0.18	2.13±0.09	2.39±0.06 ^B	3.98±0.04	2.75±0.09	2.57±0.14
	<i>P</i> value	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	<0.01	>0.05	>0.05	>0.05
SNP10	AA	351.36±7.13	314.07±14.74	0.53±0.02	36.24±0.74	5.64±0.07	9.15±0.11	5.6±0.1	2.28±0.09	3.22±0.17	2.13±0.09	2.39±0.06	3.98±0.04	2.75±0.09	2.57±0.14
	AG	347.32±7.71	295.01±15.92	0.5±0.03	37.14±0.8	5.73±0.08	9.23±0.12	5.74±0.1	2.46±0.09	3.13±0.19	2.03±0.1	2.44±0.06	4±0.04	2.85±0.1	2.57±0.15
	GG	348.18±17.91	307.4±36.99	0.51±0.06	36.03±1.85	5.72±0.18	8.95±0.27	5.75±0.24	2.16±0.21	2.5±0.44	2.34±0.23	2.77±0.15	4±0.1	2.3±0.22	2.1±0.36
	<i>P</i> value	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05
SNP15	CC	353.46±6.22	296.73±12.87	0.49±0.02	36.21±0.64	5.66±0.06	9.11±0.09	5.66±0.08	2.28±0.07	3.2±0.15	2.24±0.08 ^a	2.42±0.05	4.02±0.04	2.88±0.07 ^A	2.6±0.12
	CT	340.91±9.14	325.57±18.91	0.56±0.03	36.97±0.94	5.68±0.09	9.28±0.14	5.67±0.12	2.54±0.11	3.18±0.22	1.89±0.11 ^b	2.47±0.08	3.92±0.05	2.68±0.11 ^A	2.53±0.18
	TT	347.8±21.31	298.26±44.06	0.52±0.07	39.32±2.2	5.96±0.22	9.29±0.32	5.71±0.29	2.01±0.25	2±0.52	1.67±0.26 ^b	2.6±0.18	4±0.12	1.71±0.25 ^B	1.86±0.42
	<i>P</i> value	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	<0.05	>0.05	>0.05	<0.01

Carcass weight (CW), chilled carcass weight (CCW), dressing percentage (DP), rib-eye area (RA), rib-eye width (RW), rib-eye length (RL), flank thickness (FT), chuck short rib thickness (CT), chuck short rib score (CS), back-fat thickness (BFT), chuck flap weight (CF), fat color score (FCS), lean meat color score (LCS) and marbling score (MS).

Supplementary Table 2. *P* values of the effects of the combination genotypes on beef quality traits in Snow Dragon Beef population

Combined SNPs	CW (kg)	CCW (kg)	DP (%)	RA (cm ²)	RW (cm)	RL (cm)	FT (cm)	CT (cm)	CS	BFT (cm)	CF (kg)	FCS	LCS	MS
SNP1-15	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	<0.05	>0.05	>0.05	>0.05	>0.05	<0.01	>0.05
SNP2-15	>0.05	>0.05	<0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	<0.01	>0.05
SNP3-15	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	<0.05	>0.05	<0.05	>0.05	>0.05	>0.05	<0.01	>0.05
SNP4-15	<0.01	>0.05	>0.05	<0.05	>0.05	<0.01	<0.01	<0.05	>0.05	>0.05	<0.01	>0.05	<0.05	>0.05
SNP5-15	>0.05	>0.05	>0.05	>0.05	>0.05	<0.01	>0.05	>0.05	>0.05	<0.05	>0.05	>0.05	<0.01	>0.05
SNP6-15	>0.05	>0.05	>0.05	<0.01	>0.05	<0.01	>0.05	>0.05	>0.05	<0.05	<0.05	>0.05	<0.01	>0.05
SNP7-15	>0.05	>0.05	>0.05	<0.01	>0.05	<0.01	>0.05	>0.05	>0.05	>0.05	<0.01	>0.05	<0.05	>0.05
SNP8-15	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	<0.01	<0.05
SNP9-15	>0.05	>0.05	>0.05	<0.01	>0.05	<0.01	>0.05	>0.05	>0.05	<0.05	<0.05	>0.05	<0.05	>0.05
SNP10-15	>0.05	>0.05	<0.05	<0.01	>0.05	<0.01	>0.05	>0.05	>0.05	>0.05	<0.05	>0.05	<0.01	<0.05
SNP12-15	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	<0.05	>0.05	>0.05	<0.01	>0.05
SNP13-15	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	<0.01	>0.05
SNP14-15	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	>0.05	<0.01	>0.05
SNP16-15	>0.05	>0.05	>0.05	<0.05	>0.05	<0.01	<0.05	>0.05	<0.05	<0.05	>0.05	>0.05	<0.01	<0.01

Carcass weight (CW), chilled carcass weight (CCW), dressing percentage (DP), rib-eye area (RA), rib-eye width (RW), rib-eye length (RL), flank thickness (FT), chuck short rib thickness (CT), chuck short rib score (CS), back-fat thickness (BFT), chuck flap weight (CF), fat color score (FCS), lean meat color score (LCS) and marbling score (MS).