



Sequencing and Characterization of Divergent Marbling Levels in the Beef Cattle (*Longissimus dorsi* Muscle) Transcriptome

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- Supplementary Data -

TABLE OF CONTENTS

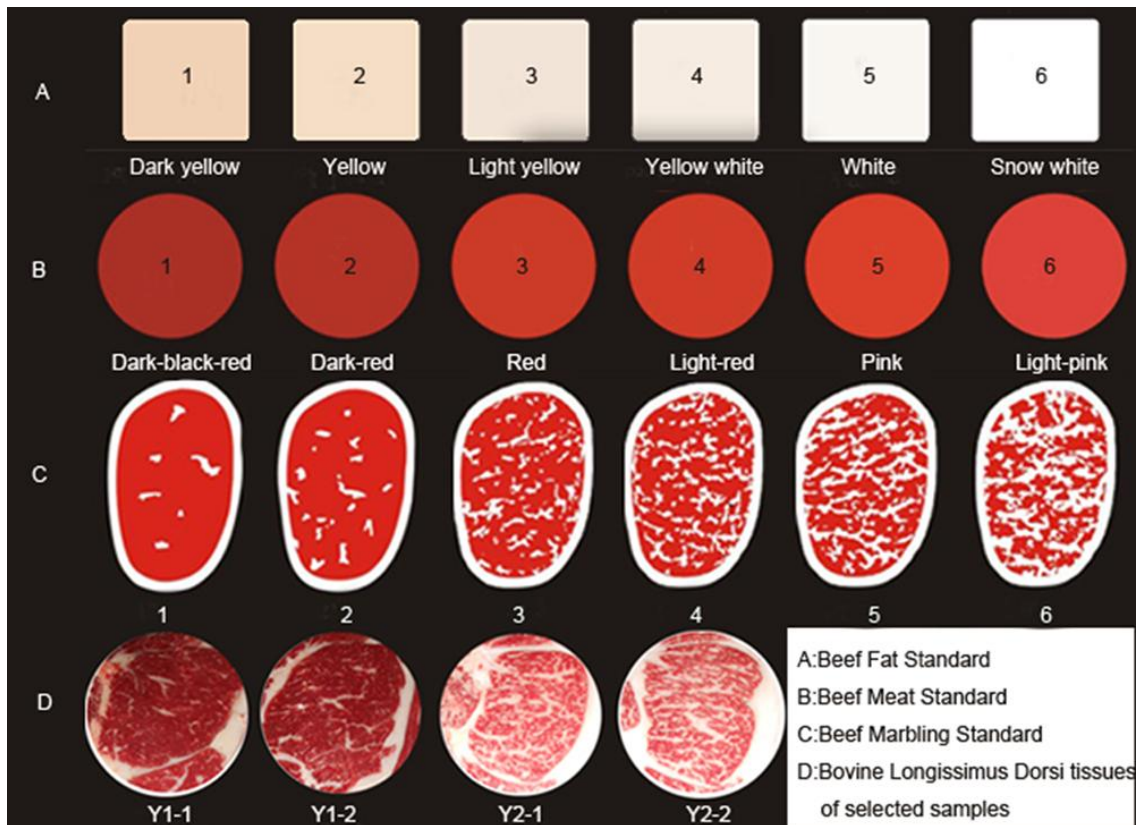
Supplementary Figure

SUPPLEMENTARY FIGURE 1.....	2
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Supplementary Tables

SUPPLEMENTARY TABLE 1A.....	3
SUPPLEMENTARY TABLE 1B.....	4
SUPPLEMENTARY TABLE 1C.....	4
SUPPLEMENTARY TABLE 2.....	6
SUPPLEMENTARY TABLE 3.....	33
SUPPLEMENTARY TABLE 4.....	49
SUPPLEMENTARY TABLE 5.....	49

Supplementary Figure



Supplementary Figure 1. Standard and Selected Samples

Supplementary Tables

Supplementary Table 1a. Total population, L and H group mean values \pm standard deviation for the traits used in the selection index

	Population n=569		Low group ⁴ n=26		High Group ⁵ n=46	
<i>Carcass traits</i>						
LW -Live weight(Kg)	606.21	\pm 74.70	568.63	\pm 79.15	618.93	\pm 73.71
BW -Body Weight(Kg)	396.78	\pm 54.68	370.93	\pm 57.21	413.25	\pm 55.22
BWBC -Body Weight before Cutting(Kg)	378.32	\pm 54.02	356.75	\pm 56.39	395.9	\pm 54.60
EMA -Eye Muscle Area (cm*cm)	52.76	\pm 8.40	49.53	\pm 10.56	55.05	\pm 7.68
BFT -Back Fat Thickness 6th-7th ribs(mm)	26.52	\pm 0.76	22.31	\pm 0.96	25.59	\pm 0.72
DFC -Degree of Fat Color ¹	5.09	\pm 1.03	3	\pm 1.14	6	\pm 0.00
DMC -Degree of Meat Color ²	4.86	\pm 1.08	2.63	\pm 1.18	6	\pm 0.00
DM -Degree of Marbling ³	3.48	\pm 1.21	1	\pm 1.33	6	\pm 0.00
AS -Age at slaughter (Months)	28.13	\pm 0.77	28.25	\pm 0.94	28.15	\pm 0.73

Supplementary Table 1b. Sixty-nine animals, L and H group mean values \pm standard deviation for the traits used in the selection index

	Population n=69		Low group ⁴ n=10		High Group ⁵ n=6	
<i>Meat Quality Traits(Longissimus Dorsi)</i> ⁶						
Water-g/100g	63.21	\pm 1.20	66.47	\pm 0.04	53.71	\pm 0.06
CF-g/100g Crude Fat	24.53	\pm 0.56	22.75	\pm 0.12	30.38	\pm 0.11
SFA-% Saturated Fatty Acids	44.79	\pm 2.03	46.71	\pm 1.34	42.03	\pm 2.22
PUFA-% Polyunsaturated Fatty Acids	6.03	\pm 1.78	8.95	\pm 2.14	5.83	\pm 0.72
MUFA-% Monounsaturated Fatty Acids	48.94	\pm 2.97	44.34	\pm 1.57	52.13	\pm 2.76

Supplementary Table 1c. Primer pairs used to validate RNA-Seq results for selected genes by quantitative real-time PCR

Primer	Sequence	PL ⁷ (bp)	Accession No. ⁸
PPARGC1 β	F ⁹ -5'-TTCCAGAGACTCTCCCAGGT-3'	159	XM_005209630.1
	R ¹⁰ -5'-TCTGTGGGCTTGTATGGAGG-3'		
SPP2	F-5'-CAGTTACCTGCTTGGCCTCA-3'	115	NM_174188.3
	R-5'-CCACGGGTTCGAGTACCTTC-3'		
MYOD1	F 5'-AGCAAGTTTCTGGCAACCCT-3'	143	NM_001040478.2
	R 5'-AAGTTGCAGAGAGAGCCGTC-3'		
CLCN4	F 5'-CCACGAAGCTGAAAGCAGAAG-3'	336	NM_001031757.1
	R 5'-CCGCATCCTAGAGCATCCTT-3'		

SCD5	F 5'-TCTGCTCTGGGCTACTTCT-3' R 5'-TCCCTCGACCACTCGAAGAT-3'	168	NM_001076945.1
SCD	F 5'-CCAGAGGAGGTACTACAAACCTG-3' R 5'-AGCCAGGTGACGTTGAGC-3'	150	NM_173959
GAPDH	F 5'- CCTGGAGAAACCTGCCAAGT -3' R 5'- AGCCGTATTCATTGTCATACCA -3'	197	NM_001034034
COL1A1	F 5'-CCACCCAGCCGCAAAGAGT-3' R 5'-ACGCAGGTGACTGGTGGGATGTC-3'	163	NM_001034039.1
MYOG	F 5'- TACAGACGCCACAATCTGCAC -3' R 5'- AGCGACATCCTCCACTGTGATG -3'	67	NM_001111325.1

¹Standard Fig.1A; ²Standard Fig.1B; ³Standard Fig.1C; ⁴Low group= animals with lowest degree of marbling; ⁵High group= animals with highest degree of marbling; ⁶the analysis based on fresh beef ; ⁷PL = Product Length; ⁸Gene Bank Accession Number; ⁹F=Forward; ¹⁰R=Reverse.

Supplementary Table 1. Differential expression of genes between L and H groups

Ensembl ID	GS ¹	Chr. ²	STAR	END	RPKM-Y1	RPKM-Y2	FC(Y2/Y1)	p	FDR	Trend
ENSBTAG00000025258	LOC515676	19	14514199	14548145	1.20E+02	2.36E+00	0.019548963	0.00005	0.00965806	Down
ENSBTAG00000002030	SPP2	3	114309327	114336917	6.20E+01	3.03E+00	0.04888467	0.00005	0.00965806	Down
ENSBTAG00000000071	PMP2	14	46801774	46806914	5.37E+00	2.94E-01	0.054791848	0.00005	0.00965806	Down
ENSBTAG00000039035	HSPA6	3	8027844	8029776	9.95E+00	7.97E-01	0.080084931	0.00005	0.00965806	Down
ENSBTAG000000036111	-	28	21867758	21868711	1.91E+00	1.57E-01	0.081819702	0.00005	0.00965806	Down
ENSBTAG000000024420	COL28A1	4	15332615	15511692	5.54E-01	5.28E-02	0.095339381	0.00005	0.00965806	Down
ENSBTAG000000017504	FAIM2	5	30155762	30185025	1.50E+00	1.85E-01	0.123759353	0.00005	0.00965806	Down
ENSBTAG000000001517	BT.65129	5	27171924	27175575	2.83E+00	3.55E-01	0.125303705	0.00005	0.00965806	Down
ENSBTAG000000017390	LGI2	6	46127371	46155777	1.21E+00	1.55E-01	0.128608262	0.00005	0.00965806	Down
ENSBTAG000000043555	-	MT	3023	3098	3.64E+03	5.05E+02	0.138725998	0.00005	0.00965806	Down
ENSBTAG000000032051	BT.76987	11	44724158	44731845	2.20E+00	3.25E-01	0.147486368	0.00005	0.00965806	Down
ENSBTAG000000012624	PDZRN4	5	39422869	39442801	7.20E-01	1.10E-01	0.152907086	0.00005	0.00965806	Down
ENSBTAG000000018312	PFN1	1	104146630	104147374	1.17E+00	1.84E-01	0.156763659	0.00005	0.00965806	Down
ENSBTAG000000037533	BT.105154	23	27175688	27196793	1.08E+01	1.73E+00	0.160051001	0.00005	0.00965806	Down
ENSBTAG000000004905	KRT19	19	42366659	42370493	3.46E+00	6.25E-01	0.180454573	0.00005	0.00965806	Down
ENSBTAG000000006864	-	23	27152082	27165021	1.14E+00	2.09E-01	0.182691887	0.00005	0.00965806	Down
ENSBTAG000000018966	PLCE1	26	15372111	15701216	1.29E+00	2.41E-01	0.187190417	0.00005	0.00965806	Down
ENSBTAG000000020430	GLT1D1	17	49197828	49313590	3.30E+00	6.22E-01	0.188390843	0.00005	0.00965806	Down
ENSBTAG000000003568	CLDN10	12	76758753	76864805	6.21E-01	1.20E-01	0.193424793	0.00005	0.00965806	Down
ENSBTAG000000000836	BT.87815	5	27213749	27221177	2.49E+00	5.02E-01	0.201573209	0.00005	0.00965806	Down
ENSBTAG000000011457	-	28	777721	778166	8.35E-01	1.75E-01	0.208975153	0.00005	0.00965806	Down
ENSBTAG000000021077	BOLA-DQB	23	25375269	25388620	3.26E+00	7.03E-01	0.215988019	0.00005	0.00965806	Down
ENSBTAG000000006453	CD3G	15	29462575	29469747	1.66E+00	3.66E-01	0.220379872	0.00005	0.00965806	Down
ENSBTAG000000002216	MYOD1	15	35331400	35334046	1.80E+01	3.99E+00	0.221668762	0.00005	0.00965806	Down
ENSBTAG000000033529	SCN2B	15	29291351	29303246	1.37E+00	3.06E-01	0.224289092	0.00005	0.00965806	Down

ENSBTAG00000033835	MPZ	3	8229235	8234089	2.93E+01	6.58E+00	0.224917911	0.00005	0.00965806	Down
ENSBTAG00000009658	PLEK	11	66762700	66788487	2.17E+00	4.93E-01	0.227214945	0.00005	0.00965806	Down
ENSBTAG00000015988	BT.100599	25	14189694	14343745	3.57E+01	8.14E+00	0.228183202	0.00005	0.00965806	Down
ENSBTAG00000017280	BT.19562	7	18989688	19025591	1.20E+00	2.79E-01	0.232779155	0.00005	0.00965806	Down
ENSBTAG00000009289	MS4A8B	29	37638816	37654922	6.93E-01	1.62E-01	0.234269728	0.00005	0.00965806	Down
ENSBTAG00000015441	ACTB	11	10717553	10732398	3.07E+01	7.23E+00	0.23578405	0.00005	0.00965806	Down
ENSBTAG00000018465	KCNAB1	1	112013083	112455492	2.58E+00	6.16E-01	0.238958606	0.00005	0.00965806	Down
ENSBTAG00000017333	PRX	18	50017094	50025049	2.47E+00	6.04E-01	0.24434671	0.00005	0.00965806	Down
ENSBTAG00000015074	PTGDS	11	106247576	106250629	3.16E+01	7.75E+00	0.244977452	0.00005	0.00965806	Down
ENSBTAG00000007103	BT.64660	25	26910423	26961727	6.07E-01	1.56E-01	0.256426053	0.00005	0.00965806	Down
ENSBTAG00000000575	TNC	8	105965497	106067887	3.49E+00	9.57E-01	0.274490882	0.00005	0.00965806	Down
ENSBTAG000000031217	MYL6B	5	57489468	57492173	1.06E+03	2.91E+02	0.274850316	0.00005	0.00965806	Down
ENSBTAG000000022514	BT.9455	3	12546983	12563851	5.51E+00	1.52E+00	0.275587594	0.00005	0.00965806	Down
ENSBTAG00000006546	BT.73429	23	24823642	24837430	4.58E+00	1.27E+00	0.276457963	0.00005	0.00965806	Down
ENSBTAG000000024957	SNCA	6	36285493	36432426	1.90E+00	5.40E-01	0.283796221	0.00005	0.00965806	Down
ENSBTAG00000000144	BT.90060	4	83307118	83318051	8.94E-01	2.59E-01	0.289590878	0.00005	0.00965806	Down
ENSBTAG00000010161	BT.26536	8	77421388	77422532	7.09E+00	2.09E+00	0.295490883	0.00005	0.00965806	Down
ENSBTAG00000015129	KLK10	18	57448224	57454197	1.55E+00	4.64E-01	0.298858645	0.00005	0.00965806	Down
ENSBTAG00000015366	SFRP4	4	50009881	50020466	9.04E+00	2.72E+00	0.30078724	0.00005	0.00965806	Down
ENSBTAG00000007450	C2	23	27231724	27243367	1.54E+00	4.65E-01	0.301784473	0.00005	0.00965806	Down
ENSBTAG00000011500	CASQ2	3	27658861	27729416	9.03E+00	2.78E+00	0.307911369	0.00005	0.00965806	Down
ENSBTAG00000004558	bta-mir-147	10	65243194	65246838	3.14E+00	9.69E-01	0.308290639	0.00005	0.00965806	Down
ENSBTAG00000006354	HP	18	39173134	39179293	2.58E+00	8.01E-01	0.311078194	0.00005	0.00965806	Down
ENSBTAG00000014614	ACTA2	26	10662361	10748014	2.41E+02	7.55E+01	0.313490505	0.00005	0.00965806	Down
ENSBTAG00000014857	BT.34069	3	54031911	54058648	1.28E+00	4.02E-01	0.315050631	0.00005	0.00965806	Down
ENSBTAG000000030483	KLK7	18	57419934	57425155	6.02E-01	1.90E-01	0.316048091	0.00005	0.00965806	Down
ENSBTAG000000046295	BT.88245	18	48891578	48894035	1.16E+00	3.70E-01	0.318613918	0.00005	0.00965806	Down
ENSBTAG00000011207	CNN1	7	17106393	17114222	4.15E+01	1.33E+01	0.319919163	0.00005	0.00965806	Down

ENSBTAG00000020116	BT.102070	23	28469734	28473401	6.13E+01	1.98E+01	0.322587069	0.00005	0.00965806	Down
ENSBTAG00000032140	SBK1	25	26077326	26081192	1.13E+00	3.67E-01	0.323724627	0.00005	0.00965806	Down
ENSBTAG00000012004	TGFB3	10	88242179	88266347	6.64E+00	2.15E+00	0.324217121	0.00005	0.00965806	Down
ENSBTAG00000009137	NKG7	18	57812528	57815281	9.75E-01	3.19E-01	0.326857824	0.00005	0.00965806	Down
ENSBTAG00000043951	IMPA2	24	43189864	43209021	1.21E+01	3.95E+00	0.327726967	0.00005	0.00965806	Down
ENSBTAG00000009733	FBP1	8	82460863	82491694	6.15E+00	2.03E+00	0.329477533	0.00005	0.00965806	Down
ENSBTAG00000015984	CADM4	18	52178834	52183405	2.95E+00	9.80E-01	0.331602142	0.00005	0.00965806	Down
ENSBTAG00000013462	L1CAM	X	39990126	40004312	1.38E+00	4.57E-01	0.331947287	0.00005	0.00965806	Down
ENSBTAG00000021252	TMEM35	X	54954894	54967415	1.87E+00	6.29E-01	0.33577428	0.00005	0.00965806	Down
ENSBTAG00000013534	GFAP	19	45241324	45250609	7.37E-01	2.50E-01	0.338501481	0.0001	0.0176118	Down
ENSBTAG00000018356	SYT15	28	42111713	42119577	8.47E-01	2.88E-01	0.339977532	0.0001	0.0176118	Down
ENSBTAG00000008959	MGC126945	23	27600054	27604052	2.58E+00	8.78E-01	0.340213378	0.0001	0.0176118	Down
ENSBTAG00000000432	BT.104278	10	22106908	23304334	2.13E+00	7.37E-01	0.345920907	0.0001	0.0176118	Down
ENSBTAG000000037743	BT.99192	5	103664842	103687826	3.17E+00	1.11E+00	0.349877826	0.0001	0.0176118	Down
ENSBTAG00000001803	FHL5	9	53977188	54030371	3.25E+00	1.15E+00	0.353712288	0.0001	0.0176118	Down
ENSBTAG00000008833	APOM	23	27459276	27461382	1.80E+00	6.42E-01	0.355798105	0.00015	0.0246082	Down
ENSBTAG00000048155	FCN2	11	106822996	106831824	9.61E-01	3.45E-01	0.359128023	0.00015	0.0246082	Down
ENSBTAG00000010543	FGFR4	7	39936163	39946911	2.76E+00	9.93E-01	0.360067022	0.00015	0.0246082	Down
ENSBTAG00000026637	BT.103816	9	41263085	41332371	2.40E+00	8.66E-01	0.360522013	0.00015	0.0246082	Down
ENSBTAG00000014340	KERA	5	20995379	21002991	3.49E+00	1.26E+00	0.361121768	0.00015	0.0246082	Down
ENSBTAG00000025329	IRF2BPL	10	89245838	89248163	1.18E+01	4.29E+00	0.363890209	0.0002	0.0295704	Down
ENSBTAG00000011465	BT.54476	16	760055	768350	6.44E+01	2.35E+01	0.36472325	0.0002	0.0295704	Down
ENSBTAG00000015402	GREB1	11	86199419	86268193	1.49E+00	5.45E-01	0.365281219	0.0002	0.0295704	Down
ENSBTAG00000040512	PCP4L1	3	8249980	8276724	1.01E+00	3.70E-01	0.365379143	0.0002	0.0295704	Down
ENSBTAG00000015710	CD3E	15	29441564	29452179	2.23E+00	8.17E-01	0.366058253	0.0002	0.0295704	Down
ENSBTAG00000000919	HEY2	9	25873434	25884617	1.24E+00	4.59E-01	0.369128132	0.0002	0.0295704	Down
ENSBTAG00000045492	ANG	10	26423873	26445634	3.79E+01	1.40E+01	0.369549629	0.0002	0.0295704	Down
ENSBTAG00000032613	SCG5	10	30077157	30135194	1.13E+00	4.23E-01	0.372784352	0.0002	0.0295704	Down

ENSBTAG0000004048	BT.37989	5	112510410	112513883	4.09E+00	1.53E+00	0.373362643	0.00025	0.0352235	Down
ENSBTAG00000034501	BT.64790	6	16765033	16815352	6.07E-01	2.27E-01	0.373706219	0.00025	0.0352235	Down
ENSBTAG00000034366	RGS2	16	13041920	13045220	3.74E+01	1.41E+01	0.375618083	0.00025	0.0352235	Down
ENSBTAG00000011912	SLC25A25	11	98750458	98760803	4.27E+01	1.61E+01	0.3774536	0.00025	0.0352235	Down
ENSBTAG0000006977	PLP1	X	57865110	57880915	1.71E+00	6.45E-01	0.377531886	0.0003	0.0412966	Down
ENSBTAG00000013760	COL4A6	X	61054246	61125754	5.15E-01	1.95E-01	0.378201457	0.0003	0.0412966	Down
ENSBTAG00000015434	DSTN	13	38259751	38284536	7.93E+01	3.04E+01	0.382983043	0.00035	0.0460615	Down
ENSBTAG00000046158	CFB	23	27225269	27231292	3.74E+00	1.43E+00	0.383377801	0.00035	0.0460615	Down
ENSBTAG00000011766	BT.69954	20	33549494	33606517	1.17E+01	4.48E+00	0.383788317	0.00035	0.0460615	Down
ENSBTAG00000023270	CDH19	24	10434673	10515343	8.92E-01	3.44E-01	0.385223234	0.00035	0.0460615	Down
ENSBTAG00000017524	CBLN4	13	84024136	84031205	2.19E+00	8.44E-01	0.385389103	0.0004	0.0504253	Down
ENSBTAG00000002025	AMIGO2	5	33340317	33341883	1.96E+00	7.56E-01	0.386728171	0.0004	0.0504253	Down
ENSBTAG00000046100	-	26	14093094	14093609	5.72E+00	2.21E+00	0.386908652	0.0004	0.0504253	Down
ENSBTAG00000011473	MYL9	13	66306259	66314230	7.33E+01	2.86E+01	0.390217815	0.0004	0.0504253	Down
ENSBTAG00000046041	BT.61919	12	73574461	73704802	8.50E-01	3.33E-01	0.391076918	0.00045	0.053892	Down
ENSBTAG00000018020	GNAT1	22	50723439	50728454	8.17E-01	3.21E-01	0.392916874	0.00045	0.053892	Down
ENSBTAG00000000717	PPAP2C	7	44591315	44601348	1.39E+00	5.49E-01	0.394205083	0.00045	0.053892	Down
ENSBTAG00000013429	CLEC4G	7	17785971	17789026	1.47E+00	5.83E-01	0.398181136	0.00045	0.053892	Down
ENSBTAG00000009148	BT.42118	3	1726503	1779667	9.46E-01	3.77E-01	0.398648813	0.00045	0.053892	Down
ENSBTAG00000009617	SLC2A1	3	103902889	103931096	1.81E+00	7.24E-01	0.399395236	0.0005	0.0575769	Down
ENSBTAG00000004787	METRNL	19	50243828	50258586	2.10E+01	8.40E+00	0.399816214	0.0005	0.0575769	Down
ENSBTAG00000015828	FKBP11	5	31048545	31052006	4.46E+00	1.79E+00	0.40201624	0.0005	0.0575769	Down
ENSBTAG00000017741	BT.45949	8	23339674	23369117	1.28E+00	5.16E-01	0.403034732	0.0005	0.0575769	Down
ENSBTAG00000020755	SELP	16	38049258	38080862	2.91E+00	1.18E+00	0.404629212	0.00055	0.0621396	Down
ENSBTAG00000017599	NR2F1	7	95454539	95464057	1.87E+00	7.56E-01	0.404690153	0.00055	0.0621396	Down
ENSBTAG00000000431	TRD@	10	22106908	23304334	2.74E+00	1.11E+00	0.405867337	0.0006	0.0671551	Down
ENSBTAG00000012944	USP35	29	17893258	17949875	5.60E-01	2.27E-01	0.40603019	0.00065	0.0695036	Down
ENSBTAG00000015769	VSIG4	X	99894565	99933646	1.69E+00	6.90E-01	0.408511041	0.00065	0.0695036	Down

ENSBTAG00000011238	CD48	3	9022903	9053379	1.93E+00	7.88E-01	0.408526075	0.00065	0.0695036	Down
ENSBTAG00000018181	CCDC8	18	54124478	54127099	9.04E+00	3.70E+00	0.408762386	0.00065	0.0695036	Down
ENSBTAG00000004291	41523	X	3819816	3889945	1.73E+00	7.08E-01	0.409695012	0.00065	0.0695036	Down
ENSBTAG00000026326	SPN	25	26765630	26769345	8.60E-01	3.53E-01	0.410154288	0.0007	0.072269	Down
ENSBTAG00000013406	CSRP2	5	6266017	6274473	1.48E+01	6.07E+00	0.411508203	0.0007	0.072269	Down
ENSBTAG00000012071	ASGR1	19	27529096	27532634	1.75E+00	7.19E-01	0.412051802	0.0007	0.072269	Down
ENSBTAG00000002647	RGS10	26	39976324	40017296	1.72E+00	7.11E-01	0.412614883	0.0007	0.072269	Down
ENSBTAG00000038128	BOLA-DQA5	23	25404019	25411643	7.50E+00	3.11E+00	0.414298339	0.00075	0.0767692	Down
ENSBTAG00000001489	BT.53243	5	30821250	30825700	5.50E+00	2.28E+00	0.414482136	0.0008	0.0811932	Down
ENSBTAG00000012465	FOXC2	18	12422845	12425239	7.54E-01	3.13E-01	0.414708878	0.00085	0.0820935	Down
ENSBTAG00000001864	NR4A3	8	65341201	65373695	4.09E+00	1.70E+00	0.415822389	0.00085	0.0820936	Down
ENSBTAG00000020752	CEP78	8	54433664	54468588	8.58E-01	3.59E-01	0.418850297	0.00085	0.0820936	Down
ENSBTAG00000002041	SASH3	X	13681410	13695769	7.02E-01	2.95E-01	0.420053815	0.00085	0.0820936	Down
ENSBTAG00000008493	AQP3	8	76525368	76531334	2.70E+00	1.14E+00	0.420972813	0.00085	0.0820936	Down
ENSBTAG00000022622	CISH	22	50320204	50325617	2.00E+01	8.42E+00	0.421200374	0.00085	0.0820936	Down
ENSBTAG00000000667	APOL3	5	75056434	75084280	1.18E+00	4.95E-01	0.421209957	0.0009	0.0855429	Down
ENSBTAG00000015950	ISOC2	18	62502066	62508467	4.75E+01	2.00E+01	0.421888681	0.0009	0.0855429	Down
ENSBTAG00000003920	TGM1	10	20735502	20750260	7.36E-01	3.13E-01	0.424674227	0.001	0.0942992	Down
ENSBTAG00000007596	GEM	14	72386750	72399660	4.56E+00	1.94E+00	0.424958248	0.00105	0.0967292	Down
ENSBTAG00000005716	CRABP2	3	14173129	14178630	2.07E+00	8.82E-01	0.426029958	0.00105	0.0967292	Down
ENSBTAG00000018223	BT.60417	16	771322	781451	2.85E+00	1.22E+00	0.426387656	0.00105	0.0967292	Down
ENSBTAG00000004093	TUBB2B	23	50354842	50357631	1.83E+00	7.80E-01	0.426599662	0.0011	0.100562	Down
ENSBTAG00000011115	CH25H	26	10976194	10978251	2.73E+00	1.17E+00	0.427675953	0.00115	0.103552	Down
ENSBTAG00000003396	BT.59779	13	70068209	70069181	6.03E+00	2.59E+00	0.429176583	0.00115	0.103552	Down
ENSBTAG00000004997	CTNNAL1	8	100221979	100277722	9.71E+00	4.18E+00	0.430046423	0.0012	0.106453	Down
ENSBTAG00000011190	FLNA	X	40310756	40332714	3.41E+01	1.47E+01	0.43055686	0.0012	0.106453	Down
ENSBTAG00000007444	C1H21ORF7	1	6366368	6414544	6.54E+00	2.82E+00	0.430646058	0.00125	0.110074	Down
ENSBTAG00000006026	NGFRAP1	X	57269279	57270782	2.66E+00	1.15E+00	0.431296978	0.0013	0.112817	Down

ENSBTAG0000005288	GFRA3	7	51278945	51308203	1.40E+00	6.05E-01	0.433620282	0.0013	0.112817	Down
ENSBTAG0000005498	SQLE	14	16723392	16745626	1.16E+00	5.06E-01	0.434198528	0.00135	0.116314	Down
ENSBTAG0000002258	APOA1	15	27932199	27934085	4.69E+00	2.04E+00	0.434938402	0.0014	0.11976	Down
ENSBTAG00000015406	ZNF750	19	50388666	50536976	7.55E+00	3.30E+00	0.436797848	0.00145	0.123157	Down
ENSBTAG00000012137	NTN1	19	29084418	29269338	1.82E+00	7.97E-01	0.437071338	0.0015	0.126507	Down
ENSBTAG00000009987	INTB3	19	46968836	47027388	7.99E-01	3.50E-01	0.437372765	0.00155	0.128908	Down
ENSBTAG00000001139	ACHE	25	36300531	36305041	8.20E-01	3.60E-01	0.439605603	0.00155	0.128908	Down
ENSBTAG00000003217	CADM3	3	10652467	10683411	3.15E+00	1.38E+00	0.440017675	0.0016	0.131244	Down
ENSBTAG000000030257	SH3BP1	5	109985807	109998234	7.97E-01	3.51E-01	0.440614364	0.0016	0.131244	Down
ENSBTAG00000015654	PON1	4	12389566	12423459	1.84E+00	8.13E-01	0.441230789	0.00165	0.133516	Down
ENSBTAG00000016766	TMEM176B	4	114199461	114207377	4.76E+00	2.11E+00	0.443600927	0.00165	0.133516	Down
ENSBTAG000000032548	SYBU	14	56909761	56997967	7.32E-01	3.25E-01	0.44370717	0.0017	0.133942	Down
ENSBTAG00000007196	TAGLN	15	28318410	28323666	2.01E+02	8.94E+01	0.444660909	0.0017	0.133942	Down
ENSBTAG00000014291	WNT2B	3	30942960	30957520	9.05E-01	4.04E-01	0.446116548	0.0017	0.133942	Down
ENSBTAG00000008940	NPTX1	19	52679103	52685498	1.41E+00	6.29E-01	0.446368628	0.0017	0.133942	Down
ENSBTAG00000005870	FANCL	11	40656143	40744419	1.70E+00	7.58E-01	0.446431033	0.00175	0.13698	Down
ENSBTAG00000012007	SOCS2	5	23523980	23528860	2.10E+00	9.41E-01	0.448357718	0.0018	0.137612	Down
ENSBTAG00000007115	GSR	27	25943819	25973543	4.38E+00	1.97E+00	0.449436997	0.0018	0.137612	Down
ENSBTAG00000015103	BT.26801	2	122146964	122149800	3.10E+00	1.40E+00	0.451970793	0.0018	0.137612	Down
ENSBTAG000000037651	S100A2	3	16869279	16872613	1.52E+02	6.89E+01	0.453414572	0.00185	0.137612	Down
ENSBTAG000000044027	ITGBL1	12	81980947	82108529	5.07E+00	2.30E+00	0.453845032	0.00185	0.137612	Down
ENSBTAG00000005714	ACTC1	10	30361780	30367052	3.18E+00	1.44E+00	0.454459675	0.00185	0.137612	Down
ENSBTAG00000009112	TRAM2	23	24637968	24702830	3.27E+00	1.50E+00	0.457938548	0.00185	0.137612	Down
ENSBTAG000000020590	FZD2	19	44954981	44956760	1.96E+00	9.00E-01	0.457989506	0.00185	0.137612	Down
ENSBTAG00000005628	CD52	2	127396372	127397972	5.62E+00	2.59E+00	0.461829288	0.0019	0.140459	Down
ENSBTAG00000009051	MMP19	5	57751505	57757615	8.10E-01	3.76E-01	0.465020591	0.00195	0.143271	Down
ENSBTAG000000034586	BT.73167	11	1821485	1846701	5.68E+00	2.64E+00	0.465490175	0.002	0.146049	Down
ENSBTAG00000005260	SPP1	6	38120577	38127577	3.00E+00	1.40E+00	0.4668966	0.00205	0.148793	Down

ENSBTAG00000047229	CRIP1	21	71390599	71392110	3.82E+01	1.78E+01	0.467097194	0.0021	0.1497	Down
ENSBTAG00000016881	BT.27994	21	21620138	21637144	2.06E+00	9.63E-01	0.467383878	0.0021	0.1497	Down
ENSBTAG00000010343	BT.19274	6	115276057	115404039	1.68E+00	7.89E-01	0.468482938	0.0021	0.1497	Down
ENSBTAG00000002096	FCGR3A	3	7996518	8005228	2.62E+00	1.24E+00	0.470805507	0.0022	0.154984	Down
ENSBTAG00000047766	G0S2	16	75539495	75540404	1.73E+01	8.13E+00	0.471413667	0.0022	0.154984	Down
ENSBTAG00000001975	DRP2	X	55090124	55118981	6.73E-01	3.17E-01	0.471506147	0.0023	0.160144	Down
ENSBTAG00000009124	FEZ1	29	29274998	29317604	1.27E+00	5.98E-01	0.47195553	0.0023	0.160144	Down
ENSBTAG00000016874	DNAJB1	7	12366855	12370535	4.13E+01	1.95E+01	0.47318797	0.00255	0.176525	Down
ENSBTAG00000030845	-	15	83667091	83671187	2.97E+00	1.40E+00	0.473408396	0.0026	0.177929	Down
ENSBTAG00000007101	F3	3	49110155	49121034	5.20E+00	2.46E+00	0.473722403	0.0026	0.177929	Down
ENSBTAG00000014713	RARRES1	1	109661961	109704520	3.26E+00	1.55E+00	0.474298299	0.00265	0.179302	Down
ENSBTAG00000018169	ITGB4	19	56472337	56506801	4.03E+00	1.91E+00	0.47478857	0.00265	0.179302	Down
ENSBTAG00000015856	CIORF192	3	8160870	8193427	3.97E+00	1.89E+00	0.475956964	0.0027	0.181658	Down
ENSBTAG00000019049	AATK	19	52181457	52196943	5.83E-01	2.78E-01	0.476137589	0.00275	0.183989	Down
ENSBTAG00000004280	SRPX	X	110531878	110672966	3.62E+00	1.72E+00	0.476300201	0.0028	0.186293	Down
ENSBTAG00000037996	ARMCX3	X	55421777	55426607	1.39E+01	6.62E+00	0.476643408	0.00285	0.187536	Down
ENSBTAG00000039196	-	16	4939774	4950977	3.96E+00	1.90E+00	0.47962266	0.00285	0.187536	Down
ENSBTAG00000016319	CYB5D2	19	25323255	25329033	5.60E+00	2.70E+00	0.481541106	0.0029	0.189784	Down
ENSBTAG00000016514	CPE	17	546397	697915	3.87E+00	1.87E+00	0.483056848	0.00295	0.190969	Down
ENSBTAG00000009725	BT.45005	2	89517810	89589090	5.80E+01	2.81E+01	0.484742007	0.00295	0.190969	Down
ENSBTAG00000000604	BT.99652	4	32010891	32037150	1.36E+00	6.64E-01	0.487158306	0.00305	0.19124	Down
ENSBTAG00000017592	AGPAT9	6	100070894	100141603	3.72E+00	1.82E+00	0.48750141	0.00305	0.19124	Down
ENSBTAG00000013213	OSR2	14	67533221	67540870	1.19E+01	5.82E+00	0.488148764	0.00305	0.19124	Down
ENSBTAG00000020704	RAMP3	4	77171036	77193849	2.13E+00	1.04E+00	0.488606442	0.00305	0.19124	Down
ENSBTAG00000013050	BT.65232	4	55994118	56128665	1.77E+01	8.73E+00	0.493161408	0.00305	0.19124	Down
ENSBTAG00000016057	CSRP1	16	49332769	49353517	3.88E+01	1.92E+01	0.495290656	0.00305	0.19124	Down
ENSBTAG00000005892	ZAP70	11	3016324	3056118	6.16E-01	3.07E-01	0.498168159	0.0031	0.192361	Down
ENSBTAG00000031441	FXYD5	18	46067592	46078935	7.07E+00	3.56E+00	0.503416673	0.0031	0.192361	Down

ENSBTAG00000033248	CDH3	18	36095733	36140923	1.12E+00	5.62E-01	0.50343759	0.00315	0.194456	Down
ENSBTAG00000003458	CDCA7	2	23377567	23390741	1.05E+00	5.31E-01	0.506322634	0.00325	0.1996	Down
ENSBTAG00000001801	SYT4	24	12950390	12960186	4.09E+00	2.07E+00	0.506976721	0.0033	0.201637	Down
ENSBTAG00000007675	NPHP1	11	1670783	1735642	8.73E-01	4.43E-01	0.507728206	0.0034	0.206692	Down
ENSBTAG00000003093	RDH13	18	62787902	62804872	1.56E+00	7.98E-01	0.511863558	0.00345	0.208673	Down
ENSBTAG00000003049	BT.28275	25	42015482	42035250	8.46E-01	4.33E-01	0.512035425	0.00355	0.212196	Down
ENSBTAG00000008612	C1R	5	103737160	103747996	3.12E+01	1.60E+01	0.512158332	0.00355	0.212196	Down
ENSBTAG000000020764	CNN2	7	45159980	45162941	7.67E+00	3.93E+00	0.512649535	0.0036	0.212196	Down
ENSBTAG000000033174	TFAP4	25	3438924	3451041	1.81E+00	9.30E-01	0.513746739	0.0036	0.212196	Down
ENSBTAG000000024272	BT.37579	3	54790801	54816647	1.41E+00	7.26E-01	0.514621773	0.00365	0.212196	Down
ENSBTAG00000002391	TGFB1I1	25	27760810	27766954	5.65E+00	2.91E+00	0.515361206	0.00365	0.212196	Down
ENSBTAG000000047621	BT.30402	16	4998444	5005553	2.12E+01	1.09E+01	0.515790618	0.00365	0.212196	Down
ENSBTAG000000034645	PON3	4	12441125	12478659	1.44E+01	7.43E+00	0.517384399	0.00365	0.212196	Down
ENSBTAG000000046803	GAS1	8	81511016	81512051	3.67E+00	1.92E+00	0.521294024	0.0038	0.219849	Down
ENSBTAG000000014575	COL4A5	X	61685326	61824307	9.93E-01	5.19E-01	0.522133863	0.00385	0.221671	Down
ENSBTAG000000005182	BOLA	23	27647068	27652297	2.55E+01	1.34E+01	0.525680754	0.0039	0.223476	Down
ENSBTAG000000002885	MSR1	27	19976213	20056927	2.51E+00	1.33E+00	0.52794947	0.004	0.228114	Down
ENSBTAG000000008333	ETV4	19	44068483	44083638	2.11E+00	1.11E+00	0.528850669	0.0041	0.231611	Down
ENSBTAG000000015104	CCDC28B	2	122150083	122154154	1.83E+01	9.69E+00	0.52929155	0.0041	0.231611	Down
ENSBTAG000000003183	NTN4	5	60372424	60502966	2.53E+00	1.34E+00	0.52992572	0.00415	0.233335	Down
ENSBTAG000000001745	LUM	5	21037442	21044658	5.19E+01	2.75E+01	0.530057267	0.0044	0.246236	Down
ENSBTAG000000016267	BT.22969	15	82159473	82172143	5.40E+01	2.87E+01	0.530581509	0.0045	0.248816	Down
ENSBTAG000000012637	ECRG4	11	45690019	45699417	7.27E+00	3.87E+00	0.531981691	0.0045	0.248816	Down
ENSBTAG000000012237	BT.103111	4	77881912	77891706	5.67E+00	3.02E+00	0.53318554	0.00455	0.248816	Down
ENSBTAG000000003894	NDRG4	18	26369829	26383749	5.91E+00	3.18E+00	0.53783364	0.00455	0.248816	Down
ENSBTAG000000006720	BT.103132	3	21983347	21999397	6.31E+00	3.40E+00	0.538398069	0.00455	0.248816	Down
ENSBTAG000000025441	HSPA1A	23	27331772	27333698	9.93E+02	5.36E+02	0.539461273	0.00465	0.253129	Down
ENSBTAG000000011458	CPXM	13	52844181	52850549	2.61E+00	1.41E+00	0.542145719	0.0047	0.254693	Down

ENSBTAG00000002080	NOV	14	47005559	47013935	1.24E+01	6.75E+00	0.54376546	0.0049	0.263789	Down
ENSBTAG00000004305	RGS16	16	65128480	65134057	1.90E+00	1.03E+00	0.544935076	0.00495	0.263789	Down
ENSBTAG00000000448	BDH1	1	72572940	72608810	2.33E+00	1.27E+00	0.54553265	0.005	0.263789	Down
ENSBTAG000000011869	CSRP3	29	25994181	26014859	1.17E+03	6.39E+02	0.546342777	0.005	0.263789	Down
ENSBTAG000000012088	BT.61392	5	116616199	116695692	3.10E+01	1.70E+01	0.547400336	0.005	0.263789	Down
ENSBTAG00000004776	DUSP23	3	10029473	10030882	1.13E+01	6.19E+00	0.548173087	0.005	0.263789	Down
ENSBTAG000000010155	LOC504773	19	14735717	14741999	2.18E+01	1.20E+01	0.550717046	0.00515	0.270511	Down
ENSBTAG00000006676	FIBIN	15	58477426	58481142	2.65E+00	1.46E+00	0.551039501	0.0052	0.271944	Down
ENSBTAG000000017680	NOS3	4	114375966	114394483	3.27E+00	1.80E+00	0.551292024	0.0053	0.275969	Down
ENSBTAG00000007602	ITGA8	13	30340779	30527982	9.54E-01	5.28E-01	0.553327188	0.00535	0.276171	Down
ENSBTAG00000006969	TUBB5	23	28101726	28105320	8.27E+01	4.58E+01	0.553441572	0.00535	0.276171	Down
ENSBTAG00000004676	TMEM184A	25	41946138	41956711	1.93E+00	1.07E+00	0.553499868	0.0054	0.276369	Down
ENSBTAG000000018245	SLC1A3	20	37596603	37679976	4.24E+00	2.35E+00	0.553544797	0.0054	0.276369	Down
ENSBTAG000000012519	XDH	11	14176297	14281717	4.48E+01	2.49E+01	0.555631185	0.0055	0.277131	Down
ENSBTAG000000010123	APOE	18	53040104	53042792	3.62E+01	2.01E+01	0.556218008	0.0055	0.277131	Down
ENSBTAG000000004840	C1S	5	103768065	103779250	3.10E+01	1.72E+01	0.556296155	0.00555	0.277131	Down
ENSBTAG000000032092	CDH11	18	32798825	32888927	2.96E+00	1.65E+00	0.557184027	0.00555	0.277131	Down
ENSBTAG000000018563	SFRP2	17	3829563	3838136	3.34E+00	1.86E+00	0.557621943	0.0056	0.277131	Down
ENSBTAG000000021467	IGFBP6	5	27044008	27047853	4.66E+01	2.61E+01	0.559511511	0.0056	0.277131	Down
ENSBTAG000000000271	BT.51770	10	53958911	54043420	5.73E+00	3.21E+00	0.559600464	0.0056	0.277131	Down
ENSBTAG000000004038	BT.93332	25	7647411	7689263	1.36E+01	7.61E+00	0.560111272	0.0056	0.277131	Down
ENSBTAG000000022449	SCD5	6	99233278	99410753	2.50E+00	1.40E+00	0.560431286	0.0057	0.280919	Down
ENSBTAG00000005586	GATM	10	65325341	65341352	4.20E+00	2.36E+00	0.561139272	0.00575	0.282221	Down
ENSBTAG00000005250	BGN	X	39639905	39653687	1.84E+01	1.04E+01	0.562001399	0.00585	0.285958	Down
ENSBTAG000000032369	BT.87159	2	44930494	44950481	3.75E+00	2.11E+00	0.562743551	0.0059	0.287229	Down
ENSBTAG000000002069	BT.73422	23	28502523	28506312	7.97E+01	4.49E+01	0.563695031	0.00595	0.288491	Down
ENSBTAG000000045550	TSPAN6	X	50904004	50912844	8.93E+00	5.04E+00	0.563760651	0.006	0.289742	Down
ENSBTAG000000017746	SLIT3	20	324517	507045	1.91E+00	1.08E+00	0.564351782	0.00605	0.290983	Down

ENSBTAG0000002985	KCNMB1	20	2158462	2172275	1.83E+00	1.04E+00	0.565659823	0.00615	0.292328	Down
ENSBTAG00000013919	BT.88538	23	25458593	25476944	4.75E+01	2.69E+01	0.56645335	0.00615	0.292328	Down
ENSBTAG00000000460	BT.43006	29	9806834	9927317	2.26E+00	1.28E+00	0.567480193	0.0062	0.292328	Down
ENSBTAG00000020294	PTPN6	5	103862678	103872171	2.23E+00	1.27E+00	0.567664188	0.0062	0.292328	Down
ENSBTAG00000009126	YBX2	19	27622772	27628780	3.03E+00	1.72E+00	0.567720939	0.0062	0.292328	Down
ENSBTAG00000008091	SELENBP1	3	19484699	19493477	9.64E+00	5.47E+00	0.567893726	0.0063	0.295878	Down
ENSBTAG00000023144	PTPRC	16	79522521	79592696	1.96E+00	1.11E+00	0.569031994	0.00635	0.297061	Down
ENSBTAG00000019017	IFITM2	11	107191849	107193047	1.26E+01	7.16E+00	0.569775882	0.0064	0.298235	Down
ENSBTAG00000016169	ID1	13	61726124	61727283	3.99E+01	2.28E+01	0.571393505	0.0065	0.301721	Down
ENSBTAG00000011617	MAMSTR	18	55803983	55809104	5.40E+00	3.09E+00	0.571514846	0.0066	0.303971	Down
ENSBTAG00000012774	RAB7B	16	3574453	3605372	2.36E+00	1.35E+00	0.571586104	0.0066	0.303971	Down
ENSBTAG00000013472	COL1A2	4	11624469	11661163	4.55E+01	2.60E+01	0.571836745	0.00665	0.303971	Down
ENSBTAG00000011578	CD44	15	66454330	66541790	9.28E+00	5.31E+00	0.572270862	0.00665	0.303971	Down
ENSBTAG00000001966	BT.47512	27	18701955	18775559	6.32E+00	3.62E+00	0.572633755	0.0068	0.308405	Down
ENSBTAG00000016081	PTMA	2	47998613	47999416	2.54E+01	1.45E+01	0.572704881	0.0068	0.308405	Down
ENSBTAG00000020983	RRAS	18	56497093	56501119	8.12E+01	4.66E+01	0.574450632	0.00685	0.308405	Down
ENSBTAG00000004215	RARRES2	4	113564406	113567496	3.46E+01	1.99E+01	0.574560049	0.00685	0.308405	Down
ENSBTAG00000017493	BT.95514	17	29368415	29421827	4.71E+00	2.71E+00	0.575090759	0.0069	0.309492	Down
ENSBTAG000000031461	SNX7	3	44657521	44775833	3.43E+00	1.98E+00	0.575935137	0.00705	0.313869	Down
ENSBTAG00000004275	DKK3	15	41241521	41291990	3.53E+00	2.03E+00	0.576821883	0.00705	0.313869	Down
ENSBTAG00000018661	TMC6	19	54647277	54666987	1.58E+00	9.14E-01	0.577737028	0.0071	0.314924	Down
ENSBTAG00000007417	GDF11	5	57830914	57837708	1.08E+01	6.26E+00	0.577740554	0.00725	0.319213	Down
ENSBTAG00000011193	C1QC	2	130783986	130788357	1.35E+01	7.81E+00	0.579366987	0.00725	0.319213	Down
ENSBTAG00000010661	DPYSL3	7	60588658	60703487	9.33E+00	5.43E+00	0.581472682	0.00735	0.32094	Down
ENSBTAG000000021799	RCN3	18	56422332	56430760	5.99E+00	3.49E+00	0.582761704	0.0074	0.32094	Down
ENSBTAG00000010719	ANGPTL1	16	61559976	61718623	6.78E+00	3.95E+00	0.582853129	0.0074	0.32094	Down
ENSBTAG000000022890	MBP	24	2558225	2590450	1.14E+01	6.63E+00	0.583592718	0.00745	0.32094	Down
ENSBTAG000000026919	BT.89412	23	50077252	50095625	4.04E+00	2.36E+00	0.584163152	0.00745	0.32094	Down

ENSBTAG00000007153	C1QA	2	130792854	130795743	2.65E+01	1.55E+01	0.584500848	0.00745	0.32094	Down
ENSBTAG00000021576	LMOD1	16	49624531	49651879	2.62E+01	1.53E+01	0.584533512	0.0075	0.321935	Down
ENSBTAG00000016299	ZNF784	18	62371837	62374877	1.09E+01	6.35E+00	0.584868451	0.00755	0.322924	Down
ENSBTAG00000016177	FGL1	27	18454361	18472436	1.19E+01	6.99E+00	0.585454089	0.0078	0.33243	Down
ENSBTAG00000038496	CR2	16	5253452	5302725	2.04E+00	1.20E+00	0.587178584	0.00785	0.333374	Down
ENSBTAG00000000246	BT.24594	29	8947351	9168579	4.99E+00	2.94E+00	0.589419626	0.008	0.334922	Down
ENSBTAG00000004896	ABLIM3	7	62502506	62637900	6.80E+00	4.01E+00	0.589514433	0.008	0.334922	Down
ENSBTAG00000015745	RAB3IL1	29	41112114	41130629	5.09E+00	3.01E+00	0.590398131	0.00805	0.334922	Down
ENSBTAG00000019771	PALM	7	44926930	44939347	5.79E+00	3.42E+00	0.590846438	0.0081	0.334922	Down
ENSBTAG00000020419	BT.21842	X	134994767	135018042	4.43E+00	2.63E+00	0.592426211	0.0081	0.334922	Down
ENSBTAG00000019754	PRKCDBP	15	47329715	47331334	3.69E+01	2.19E+01	0.593330389	0.00815	0.334922	Down
ENSBTAG00000002092	PII6	23	10836789	10848749	2.38E+01	1.42E+01	0.59511547	0.00815	0.334922	Down
ENSBTAG00000025372	C10H14ORF169	10	85310598	85350659	4.75E+00	2.83E+00	0.59551964	0.0082	0.334922	Down
ENSBTAG00000002758	THBD	13	42217370	42221004	7.83E+00	4.69E+00	0.598677682	0.00825	0.334922	Down
ENSBTAG00000013103	COL1A1	19	37088245	37104998	3.12E+01	1.87E+01	0.598984755	0.00825	0.334922	Down
ENSBTAG00000014176	REM1	13	61619568	61628687	5.49E+00	3.30E+00	0.600910996	0.00825	0.334922	Down
ENSBTAG00000014396	BT.101967	14	63951757	63957275	1.22E+02	7.34E+01	0.601671638	0.00825	0.334922	Down
ENSBTAG00000017457	STK10	20	3759205	3880974	3.93E+00	2.37E+00	0.602071442	0.00825	0.334922	Down
ENSBTAG00000010050	COL16A1	2	122557457	122611951	2.74E+00	1.65E+00	0.602284896	0.0083	0.335814	Down
ENSBTAG00000030650	TST	5	75810520	75817101	1.05E+01	6.32E+00	0.60275889	0.00845	0.340731	Down
ENSBTAG00000019574	MAPK12	5	119821434	119829363	5.70E+01	3.43E+01	0.602762545	0.0085	0.341597	Down
ENSBTAG00000008665	DIXDC1	15	22614859	22659906	5.46E+00	3.29E+00	0.602817902	0.00865	0.346463	Down
ENSBTAG00000023776	C11H9orf116	11	106451396	106455940	1.16E+01	6.99E+00	0.602865624	0.0087	0.347304	Down
ENSBTAG00000035998	BT.5084	21	69809415	69812653	6.32E+00	3.82E+00	0.604184442	0.00875	0.34814	Down
ENSBTAG00000019707	GATA2	22	60016984	60024586	2.25E+00	1.36E+00	0.6045441	0.00885	0.350952	Down
ENSBTAG00000015002	POLR2I	18	46961969	46963214	1.87E+02	1.13E+02	0.60466561	0.0089	0.35177	Down
ENSBTAG00000002869	ARL4A	4	20296430	20297969	1.73E+01	1.05E+01	0.60543178	0.00895	0.351892	Down

ENSBTAG0000000078	GLIPR2	8	60797958	60816816	1.56E+01	9.46E+00	0.605572202	0.009	0.351892	Down
ENSBTAG00000012265	VWF	5	104603431	104727301	2.19E+01	1.33E+01	0.607759289	0.00905	0.351892	Down
ENSBTAG00000015549	BT.69526	17	20602271	20616261	2.15E+00	1.31E+00	0.608836457	0.00905	0.351892	Down
ENSBTAG00000012244	TUBA1B	5	30864528	30868119	3.10E+01	1.89E+01	0.610013884	0.00905	0.351892	Down
ENSBTAG00000019948	AFAP1L1	7	62661627	62736415	4.45E+00	2.72E+00	0.611218495	0.0092	0.355417	Down
ENSBTAG00000014150	C11H9orf16	11	98801790	98805189	2.08E+01	1.28E+01	0.612716264	0.0092	0.355417	Down
ENSBTAG00000011196	CIQB	2	130769171	130775911	1.89E+01	1.16E+01	0.614332389	0.00935	0.36005	Down
ENSBTAG00000021745	RAPSN	15	78463173	78475425	1.05E+02	6.47E+01	0.614422036	0.00945	0.361576	Down
ENSBTAG00000019612	RNASE4	10	26423873	26445634	5.05E+01	3.11E+01	0.615710546	0.00945	0.361576	Down
ENSBTAG00000008625	bta-mir-2901	18	40424604	40434171	7.96E+00	4.90E+00	0.615855589	0.0095	0.361933	Down
ENSBTAG00000017165	BT.65258	14	68478179	68651684	3.47E+00	2.14E+00	0.617421808	0.00955	0.361933	Down
ENSBTAG00000004950	BRN	10	26288222	26289852	4.03E+01	2.49E+01	0.618259576	0.00955	0.361933	Down
ENSBTAG00000021202	ACOT7	16	47827123	47934930	8.02E+00	4.98E+00	0.620669932	0.00965	0.364569	Down
ENSBTAG00000008061	BT.62192	17	54358763	54400473	1.98E+02	1.23E+02	0.623398861	0.0099	0.371669	Down
ENSBTAG00000006030	MYOG	16	596919	599757	2.18E+01	1.36E+01	0.625275516	0.0099	0.371669	Down
ENSBTAG00000013533	CLIC1	23	27376010	27398934	1.59E+01	9.92E+00	0.625435221	0.01005	0.376121	Down
ENSBTAG00000010948	CLIC2	X	38498586	38523525	2.93E+00	1.83E+00	0.626331796	0.01015	0.37868	Down
ENSBTAG00000012344	RPL26	19	28590313	28595213	2.36E+02	1.48E+02	0.628206977	0.0102	0.379364	Down
ENSBTAG00000047930	UBE2E1	27	42203625	42288998	2.84E+01	1.79E+01	0.628599354	0.0103	0.381897	Down
ENSBTAG00000005280	ADA	13	73750478	73773983	9.50E+00	5.98E+00	0.629580262	0.01035	0.382567	Down
ENSBTAG00000005434	PLVAP	7	5685230	5704120	6.34E+00	4.00E+00	0.630767291	0.0105	0.386917	Down
ENSBTAG00000019037	AQP4	24	30362737	30377272	3.47E+00	2.20E+00	0.633185846	0.0106	0.389404	Down
ENSBTAG00000030164	RPL38	19	57835001	57839034	5.67E+02	3.59E+02	0.63353067	0.0107	0.391875	Down
ENSBTAG00000019627	THY1	15	30509503	30515399	1.81E+01	1.14E+01	0.634153502	0.0108	0.394332	Down
ENSBTAG00000031184	CDKN1C	29	49368786	49370785	1.50E+01	9.54E+00	0.634354155	0.01095	0.398036	Down
ENSBTAG00000000225	POLB	27	36877979	36902798	5.59E+01	3.54E+01	0.634463583	0.01105	0.398036	Down
ENSBTAG00000018451	PTMS	5	104039251	104040499	7.19E+01	4.57E+01	0.636045963	0.01105	0.398036	Down
ENSBTAG00000012594	MRPS6	1	669919	733729	4.03E+01	2.56E+01	0.63625983	0.0111	0.398036	Down

ENSBTAG00000017656	SIAT6	3	102718270	102744545	1.25E+02	7.94E+01	0.636961142	0.01115	0.398036	Down
ENSBTAG00000013108	HK2	11	9723268	9766920	1.42E+01	9.07E+00	0.638441668	0.0112	0.398036	Down
ENSBTAG00000013369	COL14A1	14	83892852	84109620	6.02E+00	3.84E+00	0.63856024	0.01125	0.398036	Down
ENSBTAG00000047330	FABP5	14	46644608	46649827	6.08E+01	3.88E+01	0.638678598	0.01125	0.398036	Down
ENSBTAG00000044083	LIMK1	25	33750877	33775707	6.62E+00	4.23E+00	0.639082621	0.01125	0.398036	Down
ENSBTAG00000030425	ID3	2	129895412	129897012	2.51E+01	1.61E+01	0.639889285	0.01125	0.398036	Down
ENSBTAG00000007213	SIRPA	13	53667569	53710792	1.39E+01	8.94E+00	0.642443991	0.01135	0.398036	Down
ENSBTAG00000048157	BT.104783	1	45522504	45642829	6.32E+00	4.06E+00	0.642761467	0.01135	0.398036	Down
ENSBTAG00000007397	BT.40283	29	5904661	5977332	2.94E+00	1.89E+00	0.642952051	0.01135	0.398036	Down
ENSBTAG00000013761	STMN1	2	127773910	127779431	1.40E+01	9.03E+00	0.642994313	0.0114	0.398036	Down
ENSBTAG00000003228	RPL3	5	111261437	111267705	8.97E+01	5.77E+01	0.643533309	0.0114	0.398036	Down
ENSBTAG00000005142	RPL37	20	33667204	33669805	6.72E+02	4.33E+02	0.645337062	0.01145	0.39862	Down
ENSBTAG00000038034	ZNF628	18	62475321	62481823	4.76E+00	3.07E+00	0.645911738	0.0115	0.3992	Down
ENSBTAG00000004553	TPM4	7	7923142	7948265	3.65E+01	2.36E+01	0.646216825	0.0117	0.404919	Down
ENSBTAG00000011963	RPS19	18	51689626	51697161	4.74E+02	3.06E+02	0.646819893	0.01175	0.404919	Down
ENSBTAG00000019203	S100A4	3	16887101	16888570	7.47E+01	4.83E+01	0.646982655	0.0118	0.404919	Down
ENSBTAG00000012370	MGP	5	95456443	95459983	2.74E+02	1.78E+02	0.649527661	0.0118	0.404919	Down
ENSBTAG00000013150	THOC5	17	70837283	70867949	2.67E+01	1.73E+01	0.649670307	0.01195	0.408273	Down
ENSBTAG00000026344	MAFA	14	2426856	2427912	2.20E+01	1.43E+01	0.650710478	0.012	0.408273	Down
ENSBTAG00000010447	LSP1	29	50238210	50276209	2.05E+01	1.33E+01	0.651032564	0.012	0.408273	Down
ENSBTAG00000015844	TFPI2	4	11035478	11039782	3.20E+01	2.09E+01	0.651670927	0.0121	0.409883	Down
ENSBTAG00000015794	NES	3	14208424	14215064	2.93E+01	1.91E+01	0.65222771	0.01215	0.409883	Down
ENSBTAG00000046467	PTP4A3	14	3578345	3586015	7.79E+01	5.08E+01	0.652379241	0.01215	0.409883	Down
ENSBTAG00000010957	LHPP	26	44431213	44558731	2.42E+01	1.58E+01	0.652927205	0.01235	0.413139	Down
ENSBTAG00000014567	BT.105316	1	68580143	68667822	7.35E+00	4.80E+00	0.65362293	0.01235	0.413139	Down
ENSBTAG00000020733	RPS15A	25	16531760	16537583	1.59E+02	1.04E+02	0.653667694	0.01235	0.413139	Down
ENSBTAG00000010645	BOLA-DRA	23	25587525	25592227	6.53E+01	4.27E+01	0.654590826	0.0124	0.413656	Down
ENSBTAG00000013479	BT.67331	25	1575648	1589619	2.72E+01	1.78E+01	0.655691242	0.01275	0.42415	Down

ENSBTAG0000004852	BT.20245	3	20519725	20528784	1.24E+01	8.17E+00	0.656352663	0.0128	0.424634	Down
ENSBTAG00000034691	TSTA3	14	2288554	2293395	1.98E+01	1.30E+01	0.657583064	0.01285	0.425115	Down
ENSBTAG00000022902	RPL17	24	49617410	49621972	1.77E+02	1.17E+02	0.66135501	0.0129	0.425593	Down
ENSBTAG00000018530	TUBA8	5	109876441	109894993	1.82E+02	1.20E+02	0.661660305	0.013	0.427714	Down
ENSBTAG00000020795	RPS21	13	55358719	55359979	6.66E+02	4.41E+02	0.661724067	0.0131	0.428649	Down
ENSBTAG00000046394	RPL23A	19	20703987	20706890	1.02E+02	6.78E+01	0.66259231	0.0131	0.428649	Down
ENSBTAG00000011726	CRYL1	12	36187099	36243551	2.96E+01	1.96E+01	0.662776413	0.0132	0.430744	Down
ENSBTAG00000002082	BT.95322	9	37022763	37026932	1.19E+01	7.91E+00	0.663199705	0.0133	0.431655	Down
ENSBTAG00000002549	PTMA	2	120227919	120232987	7.66E+01	5.09E+01	0.663911795	0.0133	0.431655	Down
ENSBTAG00000007354	-	19	50009721	50010311	8.58E-01	0.00E+00	#NAME?	0.0479	0.740012	Down
ENSBTAG00000009599	LCN1	11	106427894	106430697	1.77E+00	0.00E+00	#NAME?	0.0479	0.740012	Down
ENSBTAG00000020592	BT.63808	3	120133412	120134255	2.69E+00	0.00E+00	#NAME?	0.0479	0.740012	Down
ENSBTAG00000039028	PI3	13	74272868	74274940	7.44E-01	0.00E+00	#NAME?	0.04795	0.740012	Down
ENSBTAG00000040367	RPL15	2	92993921	92995706	3.32E+00	0.00E+00	#NAME?	0.0483	0.742543	Down
ENSBTAG00000044109	ACCN5	17	44427938	44483562	4.57E+00	0.00E+00	#NAME?	0.0486	0.744289	Down
ENSBTAG00000047887	-	12	89870159	89870234	2.36E+02	0.00E+00	#NAME?	0.04875	0.744681	Down
ENSBTAG00000039487	-	3	17320182	17340116	3.37E+01	0.00E+00	#NAME?	0.04885	0.7447	Down
ENSBTAG00000043566	-	MT	12037	12108	6.92E+02	0.00E+00	#NAME?	0.04895	0.7447	Down
ENSBTAG00000023530	-	14	78599362	78699784	9.70E+00	0.00E+00	#NAME?	0.049	0.744701	Down
ENSBTAG00000043544	-	MT	11906	11976	5.47E+02	0.00E+00	#NAME?	0.04915	0.744904	Down
ENSBTAG00000042649	SNORD15	15	55370366	55375306	2.04E+00	0.00E+00	#NAME?	0.04945	0.747744	Down
ENSBTAG00000043187	SNORA3	21	31740509	31740635	2.26E+01	0.00E+00	#NAME?	0.04955	0.748311	Down
ENSBTAG00000042812	SNORD116	21	2133093	2133185	1.16E+02	0.00E+00	#NAME?	0.05	0.753208	Down
ENSBTAG00000016229	KLF9	8	46883355	46907760	4.03E+01	6.05E+01	1.50093291	0.0134	0.433725	Up
ENSBTAG00000011121	CLCN4	X	142758547	142827683	7.47E+00	1.12E+01	1.501354019	0.01355	0.436223	Up
ENSBTAG00000017086	BT.24356	4	5104898	5244348	3.62E+01	5.44E+01	1.502549301	0.01355	0.436223	Up
ENSBTAG00000018093	MLL	15	29667706	29715637	2.06E+00	3.09E+00	1.503688728	0.0136	0.436658	Up
ENSBTAG00000013142	MYNN	1	98377177	98392775	6.59E+00	9.91E+00	1.503871157	0.01385	0.442314	Up

ENSBTAG0000000094	ATPAF1	3	100065496	100090042	5.58E+01	8.40E+01	1.504609137	0.01385	0.442314	Up
ENSBTAG00000003495	JHDM1D	4	104370183	104406730	4.66E+00	7.02E+00	1.505549025	0.0139	0.44273	Up
ENSBTAG00000002610	FKBP3	21	55325020	55335301	1.81E+02	2.73E+02	1.507394691	0.01405	0.44632	Up
ENSBTAG00000007071	RAI14	20	39352840	39413736	1.19E+01	1.81E+01	1.512131389	0.0143	0.451865	Up
ENSBTAG000000021140	RMND5A	11	48010204	48066194	6.73E+01	1.02E+02	1.51266559	0.0143	0.451865	Up
ENSBTAG000000016140	PPFIBP2	15	45663895	45799991	3.47E+00	5.26E+00	1.51582667	0.0144	0.453778	Up
ENSBTAG000000011876	MORC3	1	150307554	150349311	6.41E+00	9.73E+00	1.516666225	0.01445	0.453778	Up
ENSBTAG000000034885	MGC148992	12	11625777	11641053	1.78E+01	2.70E+01	1.517805999	0.0145	0.453778	Up
ENSBTAG000000012987	ULK1	17	46171843	46193233	1.74E+01	2.64E+01	1.518574669	0.01455	0.453778	Up
ENSBTAG000000019680	ZYG11B	3	94123285	94197896	1.61E+01	2.45E+01	1.521020435	0.01455	0.453778	Up
ENSBTAG000000000911	UBE2H	4	94467622	94565768	1.69E+01	2.57E+01	1.522051325	0.01465	0.454902	Up
ENSBTAG000000007635	PLCL1	2	86718340	87086748	9.02E+00	1.37E+01	1.522229751	0.0147	0.454902	Up
ENSBTAG000000015200	L2HGDH	10	43211977	43265008	5.47E+00	8.32E+00	1.522432527	0.0147	0.454902	Up
ENSBTAG000000046545	MEF2D	3	14380071	14413740	3.62E+01	5.52E+01	1.526108824	0.01475	0.455273	Up
ENSBTAG000000021226	SAR1B	7	47717605	47747828	9.43E+01	1.44E+02	1.527219394	0.0151	0.464878	Up
ENSBTAG000000014021	BT.43088	4	103594500	103689157	2.36E+00	3.60E+00	1.527645888	0.01515	0.465222	Up
ENSBTAG000000001368	LGALS3BP	19	54035258	54045168	5.56E+00	8.50E+00	1.527795898	0.0153	0.468626	Up
ENSBTAG000000019124	EIF4EBP2	28	26764784	26786028	4.96E+01	7.59E+01	1.528298542	0.01535	0.468958	Up
ENSBTAG000000007177	EMP2	25	9330474	9359612	2.12E+01	3.25E+01	1.529883348	0.01545	0.470812	Up
ENSBTAG000000002988	TMEM57	2	128137417	128203726	8.38E+00	1.28E+01	1.530426961	0.01575	0.477524	Up
ENSBTAG000000008291	PROCR	13	65052809	65106553	8.34E+00	1.28E+01	1.533619035	0.01575	0.477524	Up
ENSBTAG000000019759	IDE	26	13920374	14012061	1.02E+01	1.57E+01	1.534008839	0.016	0.483879	Up
ENSBTAG000000002606	LGR4	15	58873842	58977292	6.84E+00	1.05E+01	1.534777648	0.0161	0.485677	Up
ENSBTAG000000015419	ARHGEF37	7	62923975	62978142	5.16E+00	7.93E+00	1.534852285	0.01635	0.490746	Up
ENSBTAG000000021678	SLC31A1	8	104172061	104206275	6.03E+00	9.25E+00	1.535703026	0.01635	0.490746	Up
ENSBTAG000000021020	RIF1	2	44763140	44818737	2.87E+00	4.42E+00	1.537338617	0.0164	0.491016	Up
ENSBTAG000000040131	CD58	3	26825752	26889208	6.30E+00	9.69E+00	1.53873841	0.01655	0.494271	Up
ENSBTAG000000013303	ACSS2	13	64794727	64841518	1.36E+01	2.09E+01	1.539108507	0.0166	0.494531	Up

ENSBTAG0000003268	PELO	20	26278616	26280571	1.45E+01	2.23E+01	1.539315832	0.0167	0.495048	Up
ENSBTAG00000020914	CPNE8	5	42421553	42698411	2.98E+00	4.58E+00	1.540291637	0.0167	0.495048	Up
ENSBTAG00000012272	TMEM19	5	1303244	1321239	7.18E+00	1.11E+01	1.541343219	0.01685	0.497033	Up
ENSBTAG00000045699	BT.102825	28	22419202	24270401	4.19E+00	6.47E+00	1.545089817	0.01685	0.497034	Up
ENSBTAG00000015177	PRSS23	29	8788702	8797308	6.65E+01	1.03E+02	1.547334805	0.01695	0.498755	Up
ENSBTAG00000013464	CEP97	1	46431093	46452391	8.53E+00	1.32E+01	1.548225968	0.017	0.499	Up
ENSBTAG00000000363	BDP1	20	9930158	10012592	3.00E+00	4.65E+00	1.548739694	0.01725	0.503108	Up
ENSBTAG00000013863	BT.85182	20	4449108	4452189	8.99E+01	1.39E+02	1.548880742	0.0173	0.503108	Up
ENSBTAG00000038794	TMEM245	8	100295619	100362311	4.43E+00	6.88E+00	1.55108591	0.0173	0.503108	Up
ENSBTAG00000013319	BT.60977	1	71654673	71661825	3.67E+01	5.70E+01	1.551798918	0.01735	0.503108	Up
ENSBTAG00000015509	BT.33608	4	47597859	47635332	8.93E+01	1.39E+02	1.553124213	0.01735	0.503108	Up
ENSBTAG00000011765	GABARAPL 1	5	100205185	100215034	3.85E+01	5.98E+01	1.554423351	0.0175	0.506232	Up
ENSBTAG00000021975	INADL	3	84099475	84457652	1.77E+00	2.75E+00	1.555602054	0.0176	0.507771	Up
ENSBTAG00000019091	RNPC3	3	39998005	40025400	7.00E+00	1.09E+01	1.555787368	0.01765	0.507771	Up
ENSBTAG00000015094	VNN1	9	71833314	71851906	1.17E+01	1.82E+01	1.555927817	0.0177	0.507771	Up
ENSBTAG00000027569	BT.24324	6	61362545	61744231	1.43E+01	2.23E+01	1.55646171	0.01775	0.507771	Up
ENSBTAG00000017024	PPARGC1A	6	44854112	44960668	2.54E+00	3.96E+00	1.558021338	0.01785	0.507771	Up
ENSBTAG00000001486	ZNF280D	10	53738933	53840711	4.31E+00	6.73E+00	1.560260609	0.01785	0.507771	Up
ENSBTAG00000000902	OGT	X	84387998	84429228	2.94E+01	4.58E+01	1.560572683	0.01785	0.507771	Up
ENSBTAG00000004189	MLXIP	17	55472595	55528501	4.10E+01	6.41E+01	1.56068698	0.01795	0.509406	Up
ENSBTAG00000014649	CPT2	3	93601358	93625434	9.03E+00	1.41E+01	1.560898188	0.018	0.509617	Up
ENSBTAG00000017455	ADAM9	27	33816037	33896288	1.51E+01	2.36E+01	1.561347276	0.01805	0.509827	Up
ENSBTAG00000021435	MAFF	5	110475769	110484826	2.56E+01	3.99E+01	1.56240951	0.0183	0.515672	Up
ENSBTAG00000006193	IRAK2	22	16694677	16750676	1.00E+01	1.57E+01	1.562483158	0.01835	0.515868	Up
ENSBTAG00000027024	ARHGAP5	21	42937759	43000529	4.58E+00	7.16E+00	1.563259796	0.01845	0.516448	Up
ENSBTAG00000001042	MXD1	11	68232861	68255606	3.40E+00	5.34E+00	1.568884473	0.0185	0.516448	Up
ENSBTAG00000005980	RREB1	23	47900594	47959504	4.97E+00	7.81E+00	1.573015202	0.0185	0.516448	Up

ENSBTAG0000003690	NHLRC2	26	34584584	34640028	6.05E+00	9.53E+00	1.574402014	0.0188	0.522387	Up
ENSBTAG0000008739	SAMD11	16	52776142	52794718	4.71E+00	7.43E+00	1.575602833	0.0188	0.522387	Up
ENSBTAG00000010819	HMBOX1	8	9500634	9691300	4.52E+00	7.13E+00	1.576519707	0.01885	0.522416	Up
ENSBTAG0000005998	CCRN4L	17	18892762	18910926	4.93E+00	7.79E+00	1.577723105	0.0189	0.522416	Up
ENSBTAG00000013922	MOSPD1	X	18524574	18549242	1.03E+01	1.62E+01	1.57883961	0.019	0.522416	Up
ENSBTAG00000030529	FAM53C	7	51349484	51358857	2.44E+01	3.85E+01	1.580004675	0.01905	0.522416	Up
ENSBTAG00000011108	USP54	28	29641418	29703405	3.96E+00	6.25E+00	1.580848993	0.01905	0.522416	Up
ENSBTAG00000004899	ABLIM1	26	35198880	35385824	6.46E+00	1.02E+01	1.5813929	0.0191	0.522416	Up
ENSBTAG00000032515	PLA2R1	2	36373938	36508295	1.52E+00	2.41E+00	1.58154123	0.01915	0.522415	Up
ENSBTAG00000014429	MLL2	5	30931916	30964080	3.87E+00	6.13E+00	1.582203027	0.01915	0.522416	Up
ENSBTAG00000025443	FNIP1	7	23993127	24063506	9.81E+00	1.55E+01	1.584284278	0.01925	0.522952	Up
ENSBTAG00000016775	SLC27A1	7	5532596	5571775	1.82E+01	2.88E+01	1.584625543	0.0193	0.522952	Up
ENSBTAG00000001576	TMEM140	4	99699930	99719088	3.00E+01	4.75E+01	1.585500092	0.01935	0.522952	Up
ENSBTAG00000024426	PPP1R9A	4	12038498	12381524	1.64E+00	2.60E+00	1.58871721	0.0195	0.522952	Up
ENSBTAG00000015744	CCNC	9	50920351	50946139	8.98E+00	1.43E+01	1.589578643	0.0195	0.522952	Up
ENSBTAG00000009065	BT.31917	9	75549282	75778418	2.28E+00	3.63E+00	1.59045797	0.01955	0.522952	Up
ENSBTAG00000020947	RNF103	11	48149254	48171946	1.33E+01	2.12E+01	1.594191434	0.0196	0.522952	Up
ENSBTAG00000002023	NOS1	17	60047140	60131472	1.92E+00	3.06E+00	1.594478944	0.0196	0.522952	Up
ENSBTAG00000000570	RET	28	13562992	13615888	2.53E+00	4.04E+00	1.597470626	0.0196	0.522952	Up
ENSBTAG00000004471	ST3GAL6	1	42678532	42742169	8.73E+00	1.39E+01	1.597484464	0.01965	0.522952	Up
ENSBTAG00000010677	LIMCH1	6	61872552	62222095	3.72E+01	5.95E+01	1.597732805	0.01965	0.522952	Up
ENSBTAG00000003499	ENPP4	23	19369191	19384102	2.91E+00	4.65E+00	1.597844349	0.01985	0.526258	Up
ENSBTAG00000011622	C24H18ORF 21	24	21448770	21456736	1.71E+01	2.73E+01	1.601095492	0.0199	0.526258	Up
ENSBTAG00000020355	KLF4	8	98843683	98847740	2.49E+01	4.00E+01	1.605336222	0.01995	0.526258	Up
ENSBTAG00000043961	MPDZ	8	31109335	31280538	4.71E+00	7.58E+00	1.607270374	0.01995	0.526258	Up
ENSBTAG00000021223	CRY2	15	76753524	76790450	1.32E+01	2.12E+01	1.607902528	0.02005	0.526375	Up
ENSBTAG00000044105	FOXO1	12	21915746	22005338	1.55E+01	2.49E+01	1.60978889	0.0201	0.526375	Up

ENSBTAG00000012866	THBS4	10	10945424	10999244	3.28E+01	5.28E+01	1.60992447	0.0202	0.526375	Up
ENSBTAG00000001936	PCK1	13	59144593	59150719	2.20E+00	3.54E+00	1.610072812	0.02025	0.526375	Up
ENSBTAG00000013580	KDM3A	11	48248719	48304335	6.79E+00	1.09E+01	1.610947889	0.0203	0.526375	Up
ENSBTAG000000038640	HIGD1D	22	15511914	15518283	6.62E+00	1.07E+01	1.610953644	0.02025	0.526375	Up
ENSBTAG000000021176	CRISPLD2	18	10985131	11050904	1.56E+01	2.52E+01	1.611287591	0.02035	0.526375	Up
ENSBTAG000000025931	NEU3	15	55029089	55043623	4.37E+00	7.05E+00	1.612948613	0.02035	0.526375	Up
ENSBTAG00000007761	ZBTB5	8	61954946	61981732	1.76E+00	2.85E+00	1.61303025	0.02035	0.526375	Up
ENSBTAG000000002917	PRKAG2	4	114885500	114925565	9.37E+00	1.51E+01	1.615148027	0.0204	0.526531	Up
ENSBTAG00000014041	G3BP2	6	92205906	92241546	3.10E+01	5.01E+01	1.617581836	0.02055	0.529262	Up
ENSBTAG000000004413	RHOBTB3	7	97345763	97436844	2.58E+01	4.17E+01	1.618526433	0.02065	0.530696	Up
ENSBTAG00000017764	HDAC4	3	118937214	119412428	3.07E+00	4.97E+00	1.619838185	0.02095	0.537253	Up
ENSBTAG000000045889	-	3	28737676	28745359	1.02E+02	1.66E+02	1.621254045	0.0211	0.538792	Up
ENSBTAG00000018688	CBR3	1	150144148	150153934	8.38E+00	1.36E+01	1.62228051	0.0211	0.538792	Up
ENSBTAG00000010284	AGXT2L1	6	17710834	17729747	4.36E+01	7.07E+01	1.623369408	0.0212	0.538795	Up
ENSBTAG000000021658	GRASP	5	28019960	28027764	4.01E+00	6.51E+00	1.623591482	0.0213	0.538795	Up
ENSBTAG00000013191	AGRN	16	52674206	52712338	3.19E+00	5.18E+00	1.623668921	0.02135	0.538795	Up
ENSBTAG000000000283	CSF1	3	33607138	33621030	5.17E+00	8.40E+00	1.624216982	0.02135	0.538795	Up
ENSBTAG00000010255	ZNF24	24	22025793	22100704	1.34E+01	2.17E+01	1.624764299	0.0214	0.538795	Up
ENSBTAG000000000725	USP42	25	38638459	38673274	1.20E+00	1.95E+00	1.625429725	0.0214	0.538795	Up
ENSBTAG000000002151	ASB15	4	88697391	88729365	1.41E+01	2.29E+01	1.625640334	0.02145	0.538795	Up
ENSBTAG00000019818	BT.104317	16	43786498	43839928	4.20E+00	6.83E+00	1.627210982	0.0215	0.538795	Up
ENSBTAG000000020035	RCAN1	1	351707	362907	7.80E+01	1.27E+02	1.631585964	0.02155	0.538795	Up
ENSBTAG000000003581	SETD7	17	18463313	18515964	9.63E+01	1.57E+02	1.631930921	0.02155	0.538795	Up
ENSBTAG000000009145	SLC7A4	17	74366169	74369086	3.94E+00	6.43E+00	1.632083345	0.02165	0.540167	Up
ENSBTAG00000015942	BT.18516	21	31177693	31192961	2.02E+01	3.30E+01	1.632778256	0.0218	0.542779	Up
ENSBTAG00000013793	NEDD4	10	54536536	54624769	9.94E+00	1.62E+01	1.632850319	0.02185	0.542895	Up
ENSBTAG000000031940	RSBN1	3	29725838	29765019	2.77E+00	4.52E+00	1.633259526	0.02195	0.544251	Up
ENSBTAG000000005376	FBXO30	9	84176751	84182674	1.08E+01	1.76E+01	1.634578388	0.0221	0.546572	Up

ENSBTAG00000010361	DLL4	10	36577284	36586360	3.94E+00	6.45E+00	1.636068054	0.0222	0.546572	Up
ENSBTAG00000009109	CASD1	4	11735527	11787909	9.42E+00	1.54E+01	1.637399398	0.0222	0.546572	Up
ENSBTAG00000011482	SLC43A2	19	23261579	23301008	5.19E+01	8.50E+01	1.63803577	0.02225	0.546572	Up
ENSBTAG00000047147	BT.41849	1	41700078	41756925	1.23E+00	2.01E+00	1.638489341	0.0223	0.546572	Up
ENSBTAG00000023867	BT.43222	11	94010160	94058169	2.39E+00	3.91E+00	1.638586535	0.02245	0.546572	Up
ENSBTAG00000005863	ATF7	5	26580497	26671702	3.37E+00	5.53E+00	1.640113321	0.02245	0.546572	Up
ENSBTAG00000012065	BT.68903	12	76958977	77024110	1.36E+01	2.24E+01	1.644130862	0.0225	0.546572	Up
ENSBTAG00000010493	SERTAD1	18	50040252	50043146	1.36E+01	2.24E+01	1.644336945	0.0225	0.546572	Up
ENSBTAG00000010423	LIFR	20	35917478	35966671	6.14E+00	1.01E+01	1.644458634	0.0225	0.546572	Up
ENSBTAG00000011904	HCFC1	X	40075765	40095591	5.55E+00	9.12E+00	1.645010576	0.02255	0.546678	Up
ENSBTAG00000046838	-	X	115892939	116081425	1.07E+01	1.77E+01	1.648415872	0.02275	0.549302	Up
ENSBTAG00000024826	TECRL	6	81511553	81653990	7.36E+00	1.21E+01	1.648774986	0.02275	0.549302	Up
ENSBTAG00000014249	BT.106092	16	67765815	67785616	3.28E+02	5.41E+02	1.650899356	0.02285	0.550607	Up
ENSBTAG00000017662	EEF2K	25	20115007	20165902	4.72E+01	7.80E+01	1.651233012	0.02295	0.5508	Up
ENSBTAG00000014023	SIRT1	28	24556239	24582756	5.50E+00	9.09E+00	1.651458448	0.02295	0.5508	Up
ENSBTAG00000020561	KLHL15	X	126287039	126303727	2.58E+00	4.27E+00	1.652431805	0.02305	0.550992	Up
ENSBTAG00000004238	TACC1	27	33597618	33659545	4.86E+00	8.06E+00	1.656458872	0.02305	0.550992	Up
ENSBTAG00000001003	CKMT2	7	83554314	83579633	6.70E+02	1.11E+03	1.656880772	0.02315	0.55228	Up
ENSBTAG00000033077	NUFIP2	19	21160803	21183796	6.17E+00	1.02E+01	1.659374346	0.02335	0.554841	Up
ENSBTAG00000021364	BT.64988	1	71207394	71230157	1.11E+01	1.84E+01	1.659398062	0.02335	0.55484	Up
ENSBTAG00000006663	CYTH1	19	54240688	54261902	1.12E+01	1.87E+01	1.669299359	0.0234	0.554928	Up
ENSBTAG00000021752	DNAJB4	3	66922999	66931737	6.57E+01	1.10E+02	1.66995691	0.0237	0.560931	Up
ENSBTAG00000018937	HMOX2	25	3621446	3649596	1.56E+01	2.61E+01	1.672124206	0.024	0.565795	Up
ENSBTAG00000037937	BT.97476	15	46854182	46858574	1.05E+00	1.77E+00	1.675532369	0.024	0.565795	Up
ENSBTAG00000015258	P2RX5	19	24983918	24996301	1.92E+01	3.23E+01	1.679794672	0.0241	0.567037	Up
ENSBTAG00000012450	RAPGEF2	17	40483942	40580445	5.51E+00	9.27E+00	1.680837711	0.02415	0.567099	Up
ENSBTAG00000032436	BT.106367	17	53142510	53143425	5.21E+02	8.78E+02	1.684406582	0.02435	0.569562	Up
ENSBTAG00000008346	CRYBG3	1	41758530	41824958	2.03E+00	3.42E+00	1.684488	0.02435	0.569562	Up

ENSBTAG00000016943	NEK7	16	79057372	79136394	2.31E+01	3.90E+01	1.685710703	0.0246	0.574288	Up
ENSBTAG00000011509	SERAC1	9	96101794	96140851	1.78E+00	3.01E+00	1.690175757	0.02465	0.574335	Up
ENSBTAG00000002362	APOLD1	5	97520909	97524789	6.46E+00	1.09E+01	1.690546897	0.02475	0.57443	Up
ENSBTAG00000001851	BT.62268	18	24066408	24098654	3.89E+00	6.58E+00	1.690812912	0.02475	0.57443	Up
ENSBTAG00000010442	PANK1	26	11280206	11335233	5.51E+00	9.33E+00	1.693590909	0.02495	0.576836	Up
ENSBTAG00000001305	ATP2B2	22	55001026	55302080	3.64E+00	6.18E+00	1.69567055	0.02495	0.576836	Up
ENSBTAG00000014123	ZNF507	18	43038545	43068295	2.78E+00	4.71E+00	1.695672037	0.025	0.576879	Up
ENSBTAG00000015582	HMOX1	5	73980775	73987841	3.55E+01	6.06E+01	1.703860234	0.0251	0.578072	Up
ENSBTAG00000003711	EPAS1	11	28576346	28668899	1.90E+01	3.24E+01	1.709460992	0.0252	0.579261	Up
ENSBTAG00000004118	ALAS1	22	49242705	49256766	4.20E+01	7.19E+01	1.710460538	0.02525	0.579299	Up
ENSBTAG00000014508	FBXO40	1	66712456	66717255	5.35E+01	9.16E+01	1.711419949	0.02545	0.582499	Up
ENSBTAG00000004037	JUN	3	87841041	87843087	7.95E+01	1.36E+02	1.712389831	0.0255	0.582499	Up
ENSBTAG00000010971	MGC142792	11	44577635	44658623	5.91E+00	1.01E+01	1.718502864	0.02565	0.582499	Up
ENSBTAG00000002126	PFKFB2	16	4725742	4752781	4.03E+00	6.93E+00	1.718553678	0.0257	0.582499	Up
ENSBTAG00000010564	MGC139109	6	16376641	16510240	3.13E+00	5.38E+00	1.719551845	0.0259	0.582499	Up
ENSBTAG00000021768	BT.87531	6	93746806	93758039	8.61E+00	1.48E+01	1.721611679	0.026	0.582499	Up
ENSBTAG00000025424	NOTCH4	23	26973190	26998620	1.59E+00	2.74E+00	1.727764313	0.026	0.582499	Up
ENSBTAG00000004735	BT.60810	18	40565285	40574820	4.06E+00	7.04E+00	1.734776889	0.02605	0.582499	Up
ENSBTAG00000013455	SPOPL	2	58798301	58846989	5.46E+00	9.50E+00	1.741031819	0.0261	0.582499	Up
ENSBTAG00000020330	BTG1	5	22086070	22088781	6.29E+01	1.10E+02	1.745893675	0.02615	0.582499	Up
ENSBTAG00000008172	EGLN3	21	44805297	44834310	4.74E+01	8.27E+01	1.74658769	0.02615	0.582499	Up
ENSBTAG00000013669	KIF22	25	26694337	26709145	7.91E+00	1.39E+01	1.751353168	0.02625	0.582499	Up
ENSBTAG00000030913	MX1	1	143176082	143204865	1.95E+00	3.41E+00	1.753152848	0.0263	0.582499	Up
ENSBTAG00000012757	BT.91783	8	52848303	52850731	2.66E+00	4.67E+00	1.755131193	0.0263	0.582499	Up
ENSBTAG00000010630	MGC165715	17	30106833	30143868	1.15E+01	2.03E+01	1.755862117	0.02635	0.582499	Up
ENSBTAG00000016194	FBXO32	14	17919822	17951894	1.42E+02	2.49E+02	1.757308785	0.0264	0.582499	Up
ENSBTAG00000008573	ZFP36	18	49335051	49375317	7.60E+01	1.34E+02	1.760220976	0.0264	0.582499	Up
ENSBTAG00000018088	SETBP1	24	45025455	45141793	1.58E+00	2.79E+00	1.76482562	0.02645	0.582499	Up

ENSBTAG00000008409	MYC	14	13769243	13774438	5.58E+00	9.86E+00	1.76591602	0.0265	0.582499	Up
ENSBTAG00000014218	DKK1	26	6852969	6855647	2.62E+00	4.63E+00	1.770884295	0.0265	0.582499	Up
ENSBTAG00000013117	CACNA2D3	22	46480005	46922778	7.78E-01	1.38E+00	1.773907565	0.02655	0.582499	Up
ENSBTAG00000005259	UCP3	15	54213565	54224051	4.35E+02	7.73E+02	1.775797132	0.02665	0.582499	Up
ENSBTAG00000006695	VCIPI1	14	32884898	32908633	4.67E+00	8.30E+00	1.77638549	0.0267	0.582499	Up
ENSBTAG00000014143	ASB5	27	6692313	6736965	1.41E+02	2.50E+02	1.777679941	0.0267	0.582499	Up
ENSBTAG00000013412	NFAT5	18	36847729	36898690	1.70E+00	3.03E+00	1.778717613	0.02675	0.582499	Up
ENSBTAG00000020747	ASS1	11	100791338	100843336	2.22E+01	3.94E+01	1.779459806	0.02675	0.582499	Up
ENSBTAG00000001687	STC1	8	71854904	71868618	1.73E+00	3.08E+00	1.779859404	0.0268	0.582499	Up
ENSBTAG00000043567	-	MT	430	1385	5.78E+02	1.03E+03	1.781933382	0.0268	0.582499	Up
ENSBTAG00000001344	-	12	83099333	83115415	2.57E+00	4.58E+00	1.785037004	0.0268	0.582499	Up
ENSBTAG000000046121	-	14	79340382	79345452	7.71E+00	1.38E+01	1.785234394	0.02695	0.583668	Up
ENSBTAG00000001405	GLCE	10	16108198	16117541	5.95E+00	1.07E+01	1.792511784	0.027	0.583668	Up
ENSBTAG00000003808	HDAC9	4	27174249	27457097	2.14E+00	3.84E+00	1.792642702	0.027	0.583668	Up
ENSBTAG00000009080	ITGB6	2	36256324	36348759	4.09E+00	7.35E+00	1.795465707	0.0271	0.58383	Up
ENSBTAG00000004860	SLC27A6	7	26237928	26329594	1.63E+01	2.94E+01	1.799445844	0.02715	0.58383	Up
ENSBTAG00000025964	MAST4	20	12379228	12461102	4.30E+00	7.76E+00	1.803289512	0.0272	0.58383	Up
ENSBTAG00000010977	FRZB	2	13724667	13761787	1.35E+01	2.44E+01	1.804702442	0.02725	0.58383	Up
ENSBTAG00000007689	LPIN1	11	86051194	86128538	2.49E+01	4.50E+01	1.805334307	0.0273	0.58383	Up
ENSBTAG00000001294	BT.59327	18	55925890	55929294	1.58E+01	2.87E+01	1.814474716	0.0273	0.58383	Up
ENSBTAG00000014911	OB	4	93249873	93266624	3.53E+00	6.41E+00	1.814591861	0.0274	0.583883	Up
ENSBTAG00000046730	-	17	64247472	64279571	3.04E+00	5.53E+00	1.818040783	0.0274	0.583883	Up
ENSBTAG000000031135	CTXN3	7	27491081	27503407	8.06E+00	1.48E+01	1.83026387	0.0275	0.584973	Up
ENSBTAG00000017639	RPS6KA3	X	130193740	130300294	1.21E+01	2.22E+01	1.837764375	0.0276	0.58606	Up
ENSBTAG00000016658	ABHD4	10	22045426	22056366	3.26E+01	6.01E+01	1.841697055	0.02765	0.586082	Up
ENSBTAG00000046307	-	14	20738813	20740407	3.41E+01	6.34E+01	1.860371123	0.0277	0.586105	Up
ENSBTAG00000022598	NRADD	22	53073617	53077228	1.52E+00	2.82E+00	1.862843386	0.0278	0.586149	Up
ENSBTAG00000014538	HPCAL4	3	106976316	106988248	5.51E-01	1.03E+00	1.866309228	0.0278	0.586149	Up

ENSBTAG00000012681	CORO2B	10	15470658	15537499	1.23E+00	2.30E+00	1.871007341	0.02785	0.586172	Up
ENSBTAG00000008437	PCDH12	7	54690460	54702923	7.32E-01	1.37E+00	1.878813637	0.02815	0.58844	Up
ENSBTAG00000011187	FAM13A	6	37355567	37457493	5.58E+00	1.05E+01	1.881866507	0.02815	0.58844	Up
ENSBTAG00000016857	ADAMTS15	29	37143461	37165575	6.03E-01	1.14E+00	1.883648471	0.0282	0.58844	Up
ENSBTAG00000017719	AKAP6	21	43132860	43630707	6.26E+00	1.18E+01	1.884889626	0.02825	0.58844	Up
ENSBTAG00000011721	MED13	19	11288859	11379955	5.06E+00	9.57E+00	1.888766683	0.0283	0.58844	Up
ENSBTAG00000018332	PPTC7	17	56659324	56700484	1.66E+01	3.15E+01	1.894710903	0.0283	0.58844	Up
ENSBTAG00000013420	FSD1L	8	96964124	97006477	2.77E+00	5.30E+00	1.911795808	0.02835	0.58844	Up
ENSBTAG00000014003	MYF6	5	10330468	10331983	1.58E+02	3.02E+02	1.91378643	0.0284	0.58844	Up
ENSBTAG00000021766	HBEGF	7	53216664	53227848	1.17E+01	2.24E+01	1.916207522	0.0284	0.58844	Up
ENSBTAG00000001619	SERINC5	10	11052482	11103578	2.83E+00	5.44E+00	1.923890819	0.0285	0.589492	Up
ENSBTAG00000015127	SDC4	13	74393119	74412880	2.32E+01	4.46E+01	1.925236468	0.02855	0.589508	Up
ENSBTAG00000009055	BT.66635	23	38952209	39043167	3.38E+01	6.52E+01	1.929056264	0.0286	0.589524	Up
ENSBTAG00000005040	SMEK1	21	56800877	56835145	1.39E+01	2.71E+01	1.943760681	0.0287	0.589572	Up
ENSBTAG00000024958	FAM214A	10	57828792	57912139	2.60E+01	5.05E+01	1.944480578	0.02875	0.589572	Up
ENSBTAG00000009482	AFF4	7	46082729	46161887	6.51E+00	1.27E+01	1.948163052	0.02875	0.589572	Up
ENSBTAG00000008401	PFKFB3	13	17380742	17406594	1.72E+02	3.34E+02	1.950280753	0.02885	0.590611	Up
ENSBTAG00000020658	LNX1	6	70656588	70783547	1.12E+00	2.18E+00	1.956376139	0.02895	0.590639	Up
ENSBTAG00000016498	PHACTR2	9	82244597	82330643	1.06E+00	2.08E+00	1.957619867	0.02895	0.590639	Up
ENSBTAG00000004139	BT.84482	1	6157624	6174155	4.92E+00	9.65E+00	1.959169664	0.029	0.590653	Up
ENSBTAG000000046123	BT.78843	X	143103986	143315918	1.77E+00	3.48E+00	1.966758032	0.02915	0.5927	Up
ENSBTAG00000019187	ZNF462	8	98331863	98426787	2.46E+00	4.84E+00	1.969149256	0.02935	0.592741	Up
ENSBTAG00000004322	FOS	10	86883738	86887169	8.25E+01	1.63E+02	1.972263604	0.02935	0.592741	Up
ENSBTAG00000008416	ABHD5	22	14451241	14492710	6.29E+00	1.25E+01	1.981107029	0.02935	0.592741	Up
ENSBTAG000000046814	ACOT2	10	85358157	85365337	4.53E+00	8.98E+00	1.983304731	0.02935	0.592741	Up
ENSBTAG00000002020	C5ORF41	20	4684743	4740893	3.65E+00	7.28E+00	1.993202287	0.02945	0.592782	Up
ENSBTAG00000006013	NT5DC3	5	67791378	67850986	4.32E+00	8.63E+00	1.998144665	0.02955	0.592782	Up
ENSBTAG00000011337	ANKRD33B	20	62725183	62820226	4.68E+00	9.37E+00	2.004305431	0.02955	0.592782	Up

ENSBTAG00000046333	BT.87502	6	26345280	26350653	1.50E+01	3.02E+01	2.007811202	0.02955	0.592782	Up
ENSBTAG00000004901	PIK3C2A	15	35867459	35912334	1.38E+00	2.77E+00	2.01453558	0.0297	0.594795	Up
ENSBTAG00000016799	ERN1	19	48924510	48971838	4.37E-01	8.80E-01	2.015318303	0.02995	0.5988	Up
ENSBTAG00000003845	BT.102977	22	12520392	12532806	5.55E+00	1.12E+01	2.015901938	0.03	0.5988	Up
ENSBTAG00000008182	FOSB	18	53501994	53508395	3.25E+00	6.60E+00	2.029975776	0.0301	0.599795	Up
ENSBTAG00000047908	Metazoa_SRP	10	42863855	42864152	1.26E+01	2.56E+01	2.034448538	0.03015	0.599795	Up
ENSBTAG00000020099	STMN2	14	44969001	45027081	7.45E-01	1.51E+00	2.034483036	0.03025	0.600786	Up
ENSBTAG00000018334	PLAGL2	13	62226993	62236866	9.92E-01	2.02E+00	2.037832453	0.0306	0.606731	Up
ENSBTAG00000010981	CIB2	21	31017715	31023825	1.01E+01	2.06E+01	2.041303659	0.0308	0.607635	Up
ENSBTAG00000011677	HIST1H1C	23	31636946	31637588	2.75E+00	5.61E+00	2.042119565	0.03085	0.607635	Up
ENSBTAG00000015980	BT.30099	19	51384921	51403614	6.71E+00	1.37E+01	2.043085279	0.03085	0.607635	Up
ENSBTAG00000009749	USP2	15	30464925	30487308	4.20E+01	8.59E+01	2.044431546	0.03085	0.607635	Up
ENSBTAG00000047957	SCD	26	21132750	21133969	2.02E+01	4.14E+01	2.04579436	0.0309	0.607635	Up
ENSBTAG00000006385	BAIL	14	2948971	3014380	5.77E-01	1.18E+00	2.048969943	0.03095	0.607635	Up
ENSBTAG00000045661	Metazoa_SRP	10	42671323	42671620	1.60E+01	3.29E+01	2.052199311	0.03105	0.6086	Up
ENSBTAG00000010350	BT.95206	6	7151717	7207800	8.89E+00	1.84E+01	2.065406392	0.03135	0.613057	Up
ENSBTAG00000015384	PHF13	16	47632252	47635715	1.45E+00	3.00E+00	2.067668759	0.0315	0.613057	Up
ENSBTAG00000011666	THRSP	29	18084680	18090595	1.66E+01	3.44E+01	2.069630832	0.03155	0.613057	Up
ENSBTAG00000012508	OSGIN1	18	10294995	10305608	1.01E+00	2.10E+00	2.07429315	0.03155	0.613057	Up
ENSBTAG00000017012	-	13	17788336	17800446	1.83E+00	3.79E+00	2.075724721	0.03165	0.613057	Up
ENSBTAG00000012120	TIPARP	1	111830979	111853985	3.72E+00	7.73E+00	2.076341252	0.0317	0.613057	Up
ENSBTAG00000043462	SNORD14	15	34216277	34220705	4.25E+01	8.82E+01	2.077582188	0.03175	0.613057	Up
ENSBTAG00000022590	BT.102557	23	27863066	27867532	8.75E+00	1.82E+01	2.083844947	0.03175	0.613057	Up
ENSBTAG00000021777	DOC2G	29	46114977	46119340	1.91E+00	3.99E+00	2.087441646	0.0318	0.613057	Up
ENSBTAG00000011628	EGFR	22	892004	1069280	2.84E+00	5.93E+00	2.08814917	0.03195	0.613057	Up
ENSBTAG00000012943	PPARGC1B	7	63153226	63182560	1.76E+00	3.69E+00	2.099186631	0.032	0.613057	Up
ENSBTAG00000045544	BT.89732	X	144159055	144234222	1.94E+01	4.08E+01	2.109934576	0.0321	0.613057	Up
ENSBTAG00000010958	C12ORF51	17	64230115	64247469	1.43E+00	3.02E+00	2.117835646	0.0321	0.613057	Up

ENSBTAG00000030543	SLC6A16	18	56224968	56250611	4.59E-01	9.73E-01	2.1182005	0.03215	0.613057	Up
ENSBTAG00000019504	ADRA1D	13	51370889	51392113	4.82E-01	1.03E+00	2.12834994	0.03215	0.613057	Up
ENSBTAG00000026909	-	10	87344475	87346625	6.55E-01	1.39E+00	2.129570815	0.03215	0.613057	Up
ENSBTAG00000005523	XYLT1	25	15820834	15992972	5.01E-01	1.07E+00	2.131440778	0.0322	0.613057	Up
ENSBTAG00000018841	PTPN3	8	100604291	100681999	1.62E+00	3.47E+00	2.140998032	0.0322	0.613057	Up
ENSBTAG00000000817	SYNJ2	9	96023879	96091443	5.93E-01	1.29E+00	2.170698494	0.03225	0.613057	Up
ENSBTAG00000000770	PGM2L1	15	54484805	54537330	1.30E+01	2.83E+01	2.172802791	0.0325	0.615747	Up
ENSBTAG00000002144	ADRB2	7	62229185	62230442	8.62E+00	1.88E+01	2.181047001	0.03255	0.615747	Up
ENSBTAG00000002880	SORBS1	26	16721038	16919269	1.19E+01	2.60E+01	2.184929375	0.03265	0.615747	Up
ENSBTAG00000021516	GSTA1	23	24875607	24890466	7.02E+00	1.54E+01	2.188287804	0.03265	0.615747	Up
ENSBTAG00000010069	EGR1	7	51438726	51442500	1.25E+01	2.73E+01	2.190186361	0.0327	0.615747	Up
ENSBTAG00000010392	ESRRG	16	20595767	20789340	6.06E-01	1.33E+00	2.193921413	0.03335	0.624875	Up
ENSBTAG00000015849	BT.80762	X	146050000	146099080	1.27E+00	2.80E+00	2.203622082	0.03335	0.624875	Up
ENSBTAG00000013240	SLC3A2	29	41855870	41896760	4.43E+01	9.79E+01	2.210995223	0.03335	0.624875	Up
ENSBTAG00000045728	BT.65021	26	21141591	21148318	2.85E+01	6.33E+01	2.220617138	0.0334	0.624875	Up
ENSBTAG00000010026	BT.31482	22	47721359	48066942	2.46E-01	5.49E-01	2.228169986	0.03345	0.624875	Up
ENSBTAG00000045750	DDX3Y	X	143364825	143375658	2.16E+00	4.86E+00	2.253692993	0.0335	0.624875	Up
ENSBTAG00000003074	SLC16A6	19	62486091	62496100	6.75E+01	1.55E+02	2.294600704	0.03355	0.624875	Up
ENSBTAG00000008809	BT.63447	3	46860031	46910656	4.16E+00	9.59E+00	2.304591335	0.03365	0.625681	Up
ENSBTAG00000032719	TFRC	1	71260067	71280648	6.90E+01	1.60E+02	2.319175976	0.0337	0.625681	Up
ENSBTAG00000009230	FBLN7	11	197982	230642	5.72E-01	1.35E+00	2.351414192	0.0343	0.634895	Up
ENSBTAG00000000380	C5H12orf39	5	89082246	89092699	8.15E+00	1.92E+01	2.359079038	0.0344	0.635763	Up
ENSBTAG00000014602	CAMTA1	16	46468327	46566127	6.62E-01	1.56E+00	2.359719734	0.03455	0.636512	Up
ENSBTAG00000006714	VTIIA	26	33254109	33335575	3.66E-01	8.74E-01	2.38747134	0.0346	0.636512	Up
ENSBTAG00000038067	MT1A	18	24106721	24108521	3.06E+00	7.31E+00	2.39087075	0.0347	0.637373	Up
ENSBTAG00000019076	PAK6	10	35984429	36013346	3.98E-01	9.54E-01	2.394283664	0.03495	0.640982	Up
ENSBTAG00000035018	ZCCHC12	X	3126451	3129071	7.68E-01	1.84E+00	2.398733658	0.0351	0.641637	Up
ENSBTAG00000018838	-	4	114562410	114579749	4.19E-01	1.01E+00	2.410126292	0.0351	0.641637	Up

ENSBTAG00000039764	IER5	16	63689679	63690654	6.19E+00	1.50E+01	2.42125647	0.03515	0.641637	Up
ENSBTAG00000037527	BT.106205	17	63654697	63678163	1.32E+00	3.20E+00	2.421991905	0.0352	0.641637	Up
ENSBTAG00000018460	ADAMTS16	20	67944641	68074413	3.65E-01	8.86E-01	2.425425938	0.0353	0.642481	Up
ENSBTAG00000022570	-	13	43947620	44116989	7.74E+00	1.89E+01	2.440108851	0.03575	0.649684	Up
ENSBTAG00000039574	NEPN	9	33595873	33619430	2.94E+00	7.20E+00	2.443487563	0.03585	0.650515	Up
ENSBTAG00000006729	ARID5B	28	18003735	18191994	7.56E+00	1.85E+01	2.444546786	0.0362	0.65381	Up
ENSBTAG00000039335	ARRDC2	7	5101427	5105930	5.17E+01	1.28E+02	2.474292263	0.0362	0.65381	Up
ENSBTAG00000023659	MT2	18	24125365	24126333	4.26E+01	1.06E+02	2.487765818	0.03625	0.65381	Up
ENSBTAG00000039657	HIST1H2AA	23	31579046	31589230	8.89E+00	2.22E+01	2.500281058	0.03635	0.654628	Up
ENSBTAG00000000328	TPPP2	10	26128307	26130477	2.13E+00	5.36E+00	2.512931075	0.0365	0.655021	Up
ENSBTAG00000009489	CACNA2D2	22	50538716	50555513	1.42E+00	3.61E+00	2.549201282	0.03655	0.655021	Up
ENSBTAG00000001879	BT.58371	3	118191440	118206600	4.87E+00	1.24E+01	2.551800959	0.03665	0.655021	Up
ENSBTAG00000011381	SLC30A3	11	72364681	72373190	4.34E-01	1.11E+00	2.566786314	0.0367	0.655021	Up
ENSBTAG00000044427	RNaseP_nuc	10	26814255	26814588	9.54E+00	2.45E+01	2.570724417	0.0367	0.655021	Up
ENSBTAG00000014132	SNED1	3	120761889	120806556	1.45E+00	3.74E+00	2.575092256	0.0368	0.655829	Up
ENSBTAG00000048114	-	9	88573767	88648650	3.50E+00	9.09E+00	2.594882084	0.03695	0.657523	Up
ENSBTAG00000031532	DACT2	9	104124501	104134436	5.02E-01	1.31E+00	2.598917731	0.0375	0.66632	Up
ENSBTAG00000007447	NUDT4	5	23348067	23364470	1.85E+01	4.83E+01	2.617490869	0.038	0.67354	Up
ENSBTAG00000001176	LRRN1	22	22576209	22578360	5.67E+00	1.52E+01	2.677187564	0.03815	0.67354	Up
ENSBTAG00000047939	-	X	19076731	19117275	5.79E-01	1.60E+00	2.758799413	0.03815	0.67354	Up
ENSBTAG00000008394	MYL3	22	53161301	53224114	8.06E+01	2.22E+02	2.760885541	0.0382	0.67354	Up
ENSBTAG00000014615	BT.41181	7	63294620	63298306	3.63E-01	1.03E+00	2.847860517	0.03825	0.67354	Up
ENSBTAG00000007273	TF	1	136683310	136722309	3.42E-01	9.77E-01	2.854988196	0.03825	0.67354	Up
ENSBTAG00000014491	ATP6V1G2	23	27561579	27563865	6.32E-01	1.82E+00	2.875825893	0.0385	0.675951	Up
ENSBTAG00000047996	IFITM10	29	50450723	50460449	2.41E+00	6.93E+00	2.8816601	0.03855	0.675951	Up
ENSBTAG00000046512	CMYA1	22	12549675	12558895	3.24E+01	9.52E+01	2.941043252	0.0387	0.677589	Up
ENSBTAG00000045685	PER2	3	118208053	118223089	3.41E+00	1.00E+01	2.943340605	0.03885	0.678872	Up
ENSBTAG00000017528	SNAI3	18	13958994	13964622	1.12E+00	3.34E+00	2.976446388	0.03895	0.678872	Up

ENSBTAG00000018352	ABRA	14	59974385	59985200	3.84E+01	1.16E+02	3.015530484	0.03895	0.678872	Up
ENSBTAG00000036087	ARMC2	9	41703440	41802334	2.11E-01	6.36E-01	3.023425178	0.03915	0.680494	Up
ENSBTAG00000000232	OR51D1	15	51023571	51024546	4.98E-01	1.51E+00	3.0253842	0.03955	0.683479	Up
ENSBTAG00000003033	GADD45G	8	90017452	90018996	1.61E+01	4.89E+01	3.046331589	0.0398	0.686808	Up
ENSBTAG00000020643	BT.27698	29	33240587	33255647	7.43E-01	2.29E+00	3.078070645	0.0399	0.687288	Up
ENSBTAG00000016444	FAM134B	20	56709602	56758641	5.74E+01	1.77E+02	3.085246919	0.04	0.687288	Up
ENSBTAG00000011463	MID1IP1	X	109949359	109951138	9.85E+01	3.05E+02	3.094631831	0.0401	0.688019	Up
ENSBTAG00000039046	MGC127538	2	118596200	118598002	1.07E+00	3.36E+00	3.149470491	0.0403	0.689475	Up
ENSBTAG00000014069	BT.102008	4	12754201	12767677	4.04E+02	1.33E+03	3.281906011	0.0403	0.689475	Up
ENSBTAG00000008916	CYFIP2	7	71003539	71115619	2.20E-01	7.23E-01	3.289066837	0.04075	0.694199	Up
ENSBTAG00000005085	TRIM63	2	127615049	127630608	1.69E+02	5.78E+02	3.427118363	0.04085	0.694914	Up
ENSBTAG00000015374	COL22A1	14	5154762	5353760	2.04E-01	7.09E-01	3.478567643	0.04115	0.699025	Up
ENSBTAG00000018390	GLB1L2	15	84972312	85011313	4.57E-01	1.63E+00	3.567464299	0.0416	0.704371	Up
ENSBTAG00000026437	ULBP3	17	39881229	39884057	1.24E+00	4.46E+00	3.585050697	0.0417	0.704371	Up
ENSBTAG00000031785	H2B	23	31589470	31607791	3.69E+00	1.33E+01	3.614571685	0.0418	0.704906	Up
ENSBTAG00000013929	RRAD	18	34746054	34749250	1.30E+02	4.78E+02	3.67876869	0.04185	0.704906	Up
ENSBTAG00000016688	-	X	66722398	66723397	9.57E-01	3.52E+00	3.680669142	0.04205	0.704906	Up
ENSBTAG00000001021	CYP1A1	21	34342807	34345682	2.07E+00	7.78E+00	3.761805492	0.04205	0.704906	Up
ENSBTAG00000003638	BT.68008	15	46385476	46412894	2.19E-01	8.58E-01	3.925417727	0.0421	0.704906	Up
ENSBTAG00000045751	BT.63792	12	72065147	72204484	3.62E-01	1.44E+00	3.969707925	0.04225	0.704906	Up
ENSBTAG00000047752	OTUD1	13	24655213	24656659	2.60E+01	1.05E+02	4.025872614	0.04245	0.704906	Up
ENSBTAG00000014655	MYO1A	5	56712794	56738762	2.94E-01	1.24E+00	4.21916644	0.04245	0.704906	Up
ENSBTAG00000038748	HBB	15	49022977	49024619	8.45E-01	3.70E+00	4.371289788	0.0426	0.704906	Up
ENSBTAG00000021306	CHRD12	15	54785595	54819153	1.50E-01	6.61E-01	4.400259809	0.0427	0.704906	Up
ENSBTAG00000040082	BT.71665	4	69322974	69326738	1.21E-01	5.51E-01	4.546300424	0.04275	0.704906	Up
ENSBTAG00000004630	BT.3034	7	4354379	4361950	9.87E-01	4.63E+00	4.690628549	0.04275	0.704906	Up
ENSBTAG00000036257	-	X	18992482	18992947	6.45E-01	3.04E+00	4.71401678	0.04275	0.704906	Up
ENSBTAG00000015702	BT.74425	26	22745903	22757812	3.74E+00	1.87E+01	4.994650719	0.0431	0.708046	Up

ENSBTAG00000009012	BT.85209	1	110986516	111211551	1.73E+00	8.83E+00	5.095699136	0.0436	0.713168	Up
ENSBTAG00000005033	BT.67294	25	26498126	26503844	2.58E-01	1.33E+00	5.137751015	0.0436	0.713168	Up
ENSBTAG00000007231	SPATA9	7	97475074	97501919	1.78E-01	1.02E+00	5.725333273	0.04365	0.713168	Up
ENSBTAG000000014818	MYLK3	18	15089440	15131888	4.73E-01	2.93E+00	6.196356254	0.04365	0.713168	Up
ENSBTAG000000022947	-	21	21965065	21965413	2.98E-01	1.88E+00	6.306172889	0.0441	0.717584	Up
ENSBTAG000000001246	BT.54076	3	27002872	27025641	3.07E+01	2.13E+02	6.939199593	0.0443	0.71986	Up
ENSBTAG000000007694	KIF25	9	103936142	103982549	7.56E-02	5.54E-01	7.324496043	0.0445	0.720644	Up
ENSBTAG000000000601	COL11A2	23	7290454	7318840	2.19E-01	1.63E+00	7.444565049	0.04465	0.720644	Up
ENSBTAG000000030920	BT.55275	15	80020431	80064753	0.00E+00	6.07E-01	#VALUE!	0.04485	0.720644	Up
ENSBTAG000000034077	ASIP	13	64234644	64239783	0.00E+00	6.75E+00	#VALUE!	0.0449	0.720644	Up
ENSBTAG000000045010	bta-mir-2350	2	5350653	5407851	0.00E+00	9.28E+01	#VALUE!	0.04495	0.720644	Up
ENSBTAG000000025383	-	12	36491413	36491611	0.00E+00	2.98E+00	#VALUE!	0.04495	0.720644	Up
ENSBTAG000000042688	SNORA64	25	1520492	1522670	0.00E+00	1.23E+01	#VALUE!	0.0452	0.723683	Up
ENSBTAG000000043243	SNORA31	12	15518991	15522535	0.00E+00	1.34E+01	#VALUE!	0.0453	0.724149	Up
ENSBTAG000000046681	SNORA73	2	125500692	125500896	0.00E+00	2.57E+00	#VALUE!	0.04535	0.724149	Up
ENSBTAG000000048165	-	1	12234086	12234183	0.00E+00	5.41E+01	#VALUE!	0.04565	0.725072	Up
ENSBTAG000000042134	SNORD14	15	34216277	34220705	0.00E+00	4.88E+01	#VALUE!	0.04565	0.725072	Up
ENSBTAG000000043086	Y_RNA	4	112975141	112975253	0.00E+00	4.72E+01	#VALUE!	0.04585	0.726154	Up
ENSBTAG000000042280	SNORA40	29	1062857	1062984	0.00E+00	2.25E+01	#VALUE!	0.0459	0.726154	Up
ENSBTAG000000042963	SNORA8	29	1065600	1065737	0.00E+00	1.43E+01	#VALUE!	0.0459	0.726154	Up
ENSBTAG000000042916	SNORD15	15	55370366	55375306	0.00E+00	2.66E+00	#VALUE!	0.04615	0.727227	Up
ENSBTAG000000045721	bta-mir-2892	12	81323147	81323251	0.00E+00	5.47E+01	#VALUE!	0.0463	0.728632	Up
ENSBTAG000000042190	U5	10	12189892	12190008	0.00E+00	3.83E+01	#VALUE!	0.04675	0.732649	Up
ENSBTAG000000029512	U1	10	43211765	43211926	0.00E+00	4.48E+00	#VALUE!	0.0471	0.736383	Up
ENSBTAG000000045039	SCARNA17	24	49943457	49943600	0.00E+00	8.45E+00	#VALUE!	0.04725	0.737765	Up
ENSBTAG000000042645	SNORD46	3	101816843	101818956	0.00E+00	1.80E+01	#VALUE!	0.04785	0.740012	Up

¹GS = Gene Symbol; ²Chr. = Chromosome.

Supplementary Table 3. Gene Ontology (GO) assignment for the biological process, molecular function and cellular component category between H and L groups within the crossbred

Overall (749 genes, 697 DAVID IDs)			
Num.	Term	Count	<i>p</i>
	<u>GOTERM: Biological Process</u>		
1	GO:0009968~negative regulation of signal transduction	14	1.44E-05
2	GO:0010648~negative regulation of cell communication	14	2.43E-05
3	GO:0002541~activation of plasma proteins involved in acute inflammatory response	7	5.41E-05
4	GO:0006956~complement activation	7	5.41E-05
5	GO:0051605~protein maturation by peptide bond cleavage	9	7.70E-05
6	GO:0010033~response to organic substance	20	1.20E-04
7	GO:0002455~humoral immune response mediated by circulating immunoglobulin	6	1.21E-04
8	GO:0006958~complement activation, classical pathway	6	1.21E-04
9	GO:0009611~response to wounding	19	1.27E-04
10	GO:0002684~positive regulation of immune system process	16	1.53E-04
11	GO:0006959~humoral immune response	7	3.66E-04
12	GO:0019216~regulation of lipid metabolic process	8	5.19E-04
13	GO:0006898~receptor-mediated endocytosis	5	5.67E-04
14	GO:0050778~positive regulation of immune response	11	6.72E-04
15	GO:0016485~protein processing	9	7.42E-04
16	GO:0006955~immune response	24	8.64E-04
17	GO:0031328~positive regulation of cellular biosynthetic process	22	8.65E-04
18	GO:0044092~negative regulation of molecular function	12	9.82E-04

19	GO:0009891~positive regulation of biosynthetic process	22	1.00E-03
20	GO:0051604~protein maturation	9	1.09E-03
21	GO:0002526~acute inflammatory response	8	1.12E-03
22	GO:0016064~immunoglobulin mediated immune response	7	1.19E-03
23	GO:0019724~B cell mediated immunity	7	1.40E-03
24	GO:0002253~activation of immune response	8	1.92E-03
25	GO:0040012~regulation of locomotion	10	1.98E-03
26	GO:0006954~inflammatory response	12	2.06E-03
27	GO:0044057~regulation of system process	11	2.08E-03
28	GO:0050865~regulation of cell activation	11	2.08E-03
29	GO:0045087~innate immune response	9	2.15E-03
30	GO:0009719~response to endogenous stimulus	9	2.39E-03
31	GO:0007167~enzyme linked receptor protein signaling pathway	14	2.42E-03
32	GO:0030334~regulation of cell migration	9	2.65E-03
33	GO:0032368~regulation of lipid transport	5	2.68E-03
34	GO:0044093~positive regulation of molecular function	16	2.78E-03
35	GO:0006357~regulation of transcription from RNA polymerase II promoter	20	3.00E-03
36	GO:0010604~positive regulation of macromolecule metabolic process	23	3.24E-03
37	GO:0022610~biological adhesion	23	3.37E-03
38	GO:0007155~cell adhesion	23	3.37E-03
39	GO:0009725~response to hormone stimulus	8	3.87E-03
40	GO:0002449~lymphocyte mediated immunity	7	3.88E-03
41	GO:0002460~adaptive immune response based on somatic recombination of immune receptors built from immunoglobulin superfamily domains	7	3.88E-03

42	GO:0002250~adaptive immune response	7	3.88E-03
43	GO:0051094~positive regulation of developmental process	12	3.97E-03
44	GO:0051173~positive regulation of nitrogen compound metabolic process	19	4.21E-03
45	GO:0006631~fatty acid metabolic process	12	4.24E-03
46	GO:0032944~regulation of mononuclear cell proliferation	7	4.40E-03
47	GO:0070663~regulation of leukocyte proliferation	7	4.40E-03
48	GO:0043085~positive regulation of catalytic activity	14	4.70E-03
49	GO:0051270~regulation of cell motion	9	5.12E-03
50	GO:0002252~immune effector process	9	5.12E-03
51	GO:0010557~positive regulation of macromolecule biosynthetic process	19	6.43E-03
52	GO:0002443~leukocyte mediated immunity	7	7.02E-03
53	GO:0051050~positive regulation of transport	9	7.17E-03
54	GO:0030336~negative regulation of cell migration	5	7.59E-03
55	GO:0043086~negative regulation of catalytic activity	9	8.40E-03
56	GO:0010628~positive regulation of gene expression	17	8.49E-03
57	GO:0040013~negative regulation of locomotion	5	9.00E-03
58	GO:0042127~regulation of cell proliferation	20	9.40E-03
59	GO:0050863~regulation of T cell activation	8	1.00E-02
60	GO:0070665~positive regulation of leukocyte proliferation	6	1.02E-02
61	GO:0032946~positive regulation of mononuclear cell proliferation	6	1.02E-02
62	GO:0051271~negative regulation of cell motion	5	1.06E-02
63	GO:0048002~antigen processing and presentation of peptide antigen	5	1.06E-02
64	GO:0050870~positive regulation of T cell activation	7	1.06E-02

65	GO:0045944~positive regulation of transcription from RNA polymerase II promoter	13	1.08E-02
66	GO:0046394~carboxylic acid biosynthetic process	10	1.12E-02
67	GO:0016053~organic acid biosynthetic process	10	1.12E-02
68	GO:0007160~cell-matrix adhesion	6	1.14E-02
69	GO:0048584~positive regulation of response to stimulus	11	1.20E-02
70	GO:0032374~regulation of cholesterol transport	4	1.20E-02
71	GO:0032371~regulation of sterol transport	4	1.20E-02
72	GO:0045941~positive regulation of transcription	16	1.23E-02
73	GO:0019882~antigen processing and presentation	9	1.30E-02
74	GO:0034380~high-density lipoprotein particle assembly	3	1.36E-02
75	GO:0031032~actomyosin structure organization	4	1.49E-02
76	GO:0045935~positive regulation of nucleobase, nucleoside, nucleotide and nucleic acid metabolic process	17	1.49E-02
77	GO:0006575~cellular amino acid derivative metabolic process	9	1.49E-02
78	GO:0050867~positive regulation of cell activation	8	1.50E-02
79	GO:0002694~regulation of leukocyte activation	9	1.60E-02
80	GO:0050670~regulation of lymphocyte proliferation	6	1.76E-02
81	GO:0031589~cell-substrate adhesion	6	1.76E-02
82	GO:0019218~regulation of steroid metabolic process	4	1.81E-02
83	GO:0006633~fatty acid biosynthetic process	7	1.82E-02
84	GO:0006638~neutral lipid metabolic process	5	1.86E-02
85	GO:0006508~proteolysis	35	1.93E-02
86	GO:0009991~response to extracellular stimulus	7	1.97E-02
87	GO:0034377~plasma lipoprotein particle assembly	3	1.99E-02

88	GO:0051258~protein polymerization	5	2.10E-02
89	GO:0051789~response to protein stimulus	6	2.14E-02
90	GO:0007178~transmembrane receptor protein serine/threonine kinase signaling pathway	6	2.14E-02
91	GO:0046890~regulation of lipid biosynthetic process	4	2.16E-02
92	GO:0008016~regulation of heart contraction	5	2.37E-02
93	GO:0006952~defense response	16	2.43E-02
94	GO:0051251~positive regulation of lymphocyte activation	7	2.49E-02
95	GO:0051241~negative regulation of multicellular organismal process	8	2.61E-02
96	GO:0051249~regulation of lymphocyte activation	8	2.61E-02
97	GO:0051130~positive regulation of cellular component organization	7	2.68E-02
98	GO:0002021~response to dietary excess	3	2.71E-02
99	GO:0006957~complement activation, alternative pathway	3	2.71E-02
100	GO:0065005~protein-lipid complex assembly	3	2.71E-02
101	GO:0042129~regulation of T cell proliferation	5	2.96E-02
102	GO:0006897~endocytosis	8	2.96E-02
103	GO:0010324~membrane invagination	8	2.96E-02
104	GO:0048545~response to steroid hormone stimulus	4	2.98E-02
105	GO:0050873~brown fat cell differentiation	4	2.98E-02
106	GO:0045893~positive regulation of transcription, DNA-dependent	13	3.28E-02
107	GO:0051254~positive regulation of RNA metabolic process	13	3.28E-02
108	GO:0008284~positive regulation of cell proliferation	12	3.31E-02
109	GO:0045834~positive regulation of lipid metabolic process	4	3.44E-02
110	GO:0016337~cell-cell adhesion	11	3.45E-02

111	GO:0040008~regulation of growth	11	3.45E-02
112	GO:0043627~response to estrogen stimulus	3	3.52E-02
113	GO:0050810~regulation of steroid biosynthetic process	3	3.52E-02
114	GO:0007044~cell-substrate junction assembly	3	3.52E-02
115	GO:0001568~blood vessel development	10	3.73E-02
116	GO:0008544~epidermis development	6	3.87E-02
117	GO:0050671~positive regulation of lymphocyte proliferation	5	3.99E-02
118	GO:0002696~positive regulation of leukocyte activation	7	4.03E-02
119	GO:0051146~striated muscle cell differentiation	6	4.17E-02
120	GO:0030036~actin cytoskeleton organization	8	4.18E-02
121	GO:0001944~vasculature development	10	4.27E-02
122	GO:0051338~regulation of transferase activity	10	4.27E-02
123	GO:0001666~response to hypoxia	5	4.37E-02
124	GO:0070482~response to oxygen levels	5	4.37E-02
125	GO:0042493~response to drug	5	4.37E-02
126	GO:0034381~lipoprotein particle clearance	3	4.42E-02
127	GO:0043691~reverse cholesterol transport	3	4.42E-02
128	GO:0010743~regulation of foam cell differentiation	3	4.42E-02
129	GO:0048730~epidermis morphogenesis	3	4.42E-02
130	GO:0007179~transforming growth factor beta receptor signaling pathway	4	4.46E-02
131	GO:0015918~sterol transport	4	4.46E-02
132	GO:0030301~cholesterol transport	4	4.46E-02
133	GO:0007596~blood coagulation	6	4.49E-02

134	GO:0050817~coagulation	6	4.49E-02
135	GO:0032101~regulation of response to external stimulus	7	4.55E-02
136	GO:0030029~actin filament-based process	8	4.66E-02
137	GO:0007517~muscle organ development	8	4.66E-02
138	GO:0051174~regulation of phosphorus metabolic process	13	4.72E-02
139	GO:0019220~regulation of phosphate metabolic process	13	4.72E-02
140	GO:0007398~ectoderm development	6	4.81E-02
141	GO:0007599~hemostasis	6	5.16E-02
142	GO:0032268~regulation of cellular protein metabolic process	12	5.24E-02
143	GO:0045597~positive regulation of cell differentiation	8	5.43E-02
144	GO:0007010~cytoskeleton organization	12	5.63E-02
145	GO:0051046~regulation of secretion	7	5.74E-02
146	GO:0042060~wound healing	7	5.74E-02
147	GO:0008285~negative regulation of cell proliferation	9	6.03E-02
148	GO:0051346~negative regulation of hydrolase activity	4	6.24E-02
149	GO:0007605~sensory perception of sound	4	6.24E-02
150	GO:0007169~transmembrane receptor protein tyrosine kinase signaling pathway	8	6.28E-02
151	GO:0010883~regulation of lipid storage	3	6.42E-02
152	GO:0042168~heme metabolic process	3	6.42E-02
153	GO:0034329~cell junction assembly	3	6.42E-02
154	GO:0030198~extracellular matrix organization	6	6.66E-02
155	GO:0051347~positive regulation of transferase activity	7	6.74E-02
156	GO:0006639~acylglycerol metabolic process	4	6.90E-02

157	GO:0006937~regulation of muscle contraction	4	6.90E-02
158	GO:0042440~pigment metabolic process	4	6.90E-02
159	GO:0006917~induction of apoptosis	7	7.09E-02
160	GO:0012502~induction of programmed cell death	7	7.09E-02
161	GO:0042325~regulation of phosphorylation	12	7.11E-02
162	GO:0006869~lipid transport	7	7.45E-02
163	GO:0002026~regulation of the force of heart contraction	3	7.51E-02
164	GO:0045833~negative regulation of lipid metabolic process	3	7.51E-02
165	GO:0031623~receptor internalization	2	7.53E-02
166	GO:0043589~skin morphogenesis	2	7.53E-02
167	GO:0006788~heme oxidation	2	7.53E-02
168	GO:0050954~sensory perception of mechanical stimulus	4	7.59E-02
169	GO:0043549~regulation of kinase activity	9	8.02E-02
170	GO:0042157~lipoprotein metabolic process	5	8.15E-02
171	GO:0021700~developmental maturation	5	8.15E-02
172	GO:0048771~tissue remodeling	4	8.31E-02
173	GO:0042102~positive regulation of T cell proliferation	4	8.31E-02
174	GO:0006662~glycerol ether metabolic process	4	8.31E-02
175	GO:0042692~muscle cell differentiation	6	8.39E-02
176	GO:0043112~receptor metabolic process	3	8.66E-02
177	GO:0032768~regulation of monooxygenase activity	3	8.66E-02
178	GO:0045807~positive regulation of endocytosis	3	8.66E-02
179	GO:0033344~cholesterol efflux	3	8.66E-02

180	GO:0030855~epithelial cell differentiation	5	8.70E-02
181	GO:0050878~regulation of body fluid levels	6	8.85E-02
182	GO:0006979~response to oxidative stress	6	8.85E-02
183	GO:0048666~neuron development	8	8.91E-02
184	GO:0001501~skeletal system development	9	8.98E-02
185	GO:0043434~response to peptide hormone stimulus	4	9.05E-02
186	GO:0018904~organic ether metabolic process	4	9.05E-02
187	GO:0045444~fat cell differentiation	4	9.05E-02
188	GO:0006916~anti-apoptosis	6	9.33E-02
189	GO:0030155~regulation of cell adhesion	6	9.33E-02
190	GO:0006778~porphyrin metabolic process	3	9.86E-02
191	GO:0008277~regulation of G-protein coupled receptor protein signaling pathway	3	9.86E-02
192	GO:0033013~tetrapyrrole metabolic process	3	9.86E-02
193	GO:0042439~ethanolamine and derivative metabolic process	3	9.86E-02
194	GO:0007266~Rho protein signal transduction	3	9.86E-02
195	GO:0042445~hormone metabolic process	5	9.87E-02
	<u>GOTERM:Molecular Function</u>		
1	GO:0008092~cytoskeletal protein binding	20	4.27E-04
2	GO:0032403~protein complex binding	9	8.10E-04
3	GO:0003779~actin binding	14	1.52E-03
4	GO:0050840~extracellular matrix binding	5	2.89E-03
5	GO:0005178~integrin binding	5	2.89E-03
6	GO:0005198~structural molecule activity	25	6.95E-03

7	GO:0005509~calcium ion binding	31	1.09E-02
8	GO:0001871~pattern binding	8	1.19E-02
9	GO:0030247~polysaccharide binding	8	1.19E-02
10	GO:0043236~laminin binding	3	1.24E-02
11	GO:0046983~protein dimerization activity	16	1.48E-02
12	GO:0003924~GTPase activity	9	1.51E-02
13	GO:0005539~glycosaminoglycan binding	7	1.61E-02
14	GO:0046332~SMAD binding	4	1.92E-02
15	GO:0030246~carbohydrate binding	12	2.00E-02
16	GO:0042802~identical protein binding	17	2.08E-02
17	GO:0001540~beta-amyloid binding	3	2.49E-02
18	GO:0043167~ion binding	106	3.04E-02
19	GO:0043169~cation binding	105	3.10E-02
20	GO:0019203~carbohydrate phosphatase activity	3	3.24E-02
21	GO:0005516~calmodulin binding	6	3.54E-02
22	GO:0005201~extracellular matrix structural constituent	4	3.98E-02
23	GO:0008201~heparin binding	5	4.53E-02
24	GO:0019899~enzyme binding	12	4.79E-02
25	GO:0005247~voltage-gated chloride channel activity	3	4.96E-02
26	GO:0046872~metal ion binding	102	5.15E-02
27	GO:0019901~protein kinase binding	5	6.67E-02
28	GO:0016775~phosphotransferase activity, nitrogenous group as acceptor	3	6.94E-02
29	GO:0004392~heme oxygenase (decyclizing) activity	2	7.20E-02

30	GO:0031406~carboxylic acid binding	6	7.21E-02
31	GO:0046982~protein heterodimerization activity	6	7.21E-02
32	GO:0016769~transferase activity, transferring nitrogenous groups	4	8.85E-02
33	GO:0008289~lipid binding	13	8.96E-02
	<u>GOTERM:Cell Component</u>		
1	GO:0005576~extracellular region	73	1.09E-09
2	GO:0044421~extracellular region part	43	2.93E-08
3	GO:0031012~extracellular matrix	23	1.86E-06
4	GO:0005578~proteinaceous extracellular matrix	20	2.23E-05
5	GO:0044420~extracellular matrix part	11	5.03E-05
6	GO:0009986~cell surface	16	1.08E-04
7	GO:0009897~external side of plasma membrane	11	5.08E-04
8	GO:0005886~plasma membrane	69	7.34E-04
9	GO:0044459~plasma membrane part	46	1.11E-03
10	GO:0005615~extracellular space	22	2.09E-03
11	GO:0016323~basolateral plasma membrane	9	4.80E-03
12	GO:0005581~collagen	5	4.81E-03
13	GO:0030427~site of polarized growth	5	7.16E-03
14	GO:0032994~protein-lipid complex	5	7.16E-03
15	GO:0034358~plasma lipoprotein particle	5	7.16E-03
16	GO:0030426~growth cone	5	7.16E-03
17	GO:0044430~cytoskeletal part	27	9.47E-03
18	GO:0042611~MHC protein complex	8	1.10E-02

19	GO:0005856~cytoskeleton	35	1.18E-02
20	GO:0005583~fibrillar collagen	3	2.13E-02
21	GO:0034366~spherical high-density lipoprotein particle	3	2.13E-02
22	GO:0034364~high-density lipoprotein particle	4	2.37E-02
23	GO:0015629~actin cytoskeleton	10	2.61E-02
24	GO:0042613~MHC class II protein complex	4	2.80E-02
25	GO:0030864~cortical actin cytoskeleton	3	2.90E-02
26	GO:0034362~low-density lipoprotein particle	3	2.90E-02
27	GO:0044449~contractile fiber part	6	2.93E-02
28	GO:0043292~contractile fiber	6	5.08E-02
29	GO:0005604~basement membrane	5	5.31E-02
30	GO:0030863~cortical cytoskeleton	4	5.48E-02
31	GO:0032432~actin filament bundle	3	6.84E-02
32	GO:0034361~very-low-density lipoprotein particle	3	6.84E-02
33	GO:0034385~triglyceride-rich lipoprotein particle	3	6.84E-02
34	GO:0042641~actomyosin	3	6.84E-02
35	GO:0001725~stress fiber	3	6.84E-02
36	GO:0043235~receptor complex	6	7.06E-02
37	GO:0030017~sarcomere	5	7.30E-02
38	GO:0005938~cell cortex	7	7.31E-02
39	GO:0031674~I band	4	7.51E-02
40	GO:0005584~collagen type I	2	7.80E-02
41	GO:0042383~sarcolemma	4	8.25E-02

42	GO:0030139~endocytic vesicle	3	9.21E-02
43	GO:0015630~microtubule cytoskeleton	14	9.88E-02

Supplementary Table 2. Significantly enriched pathways and networks among DEGs between H and L groups of cattle (n = 2) by Ingenuity Pathway Analysis

<u>Ingenuity Canonical Pathways</u>	<u>count</u>	<u>p</u>	<u>Molecules</u>
Complement System	11	3.06E-03	SERPING1,C3,C1S,CFB,CFI,C7,C1QC,C1QA,C1QB,C2,CR2
14-3-3-mediated Signaling	16	1.73E-02	PIK3C2A,RRAS,MAP3K5,MAPK12,TUBB,TUBA1B,TUBB2B,FOS,JUN,PLCE1,TUBA1A,FOXO1,TUBA8,GFAP,PLCL1,SNCA
Aggrin Interactions at Neuromuscular Junction	12	1.90E-02	JUN,PAK6,RRAS,ACTA2,RAPSN,ACTG2,AGRN,MAPK12,ACTC1,ITGAL,EGFR,ITGB3
Caveolar-mediated Endocytosis Signaling	12	2.52E-02	FLNA,HLA-A,ACTA2,ITGA8,CD48,ITGB4,ACTG2,ITGB6,ACTC1,ITGAL,EGFR,ITGB3
NRF2-mediated Oxidative Stress Response	19	2.90E-02	GSTA3,PIK3C2A,DNAJB4,RRAS,ACTA2,DNAJA4,DNAJC3,MAP3K5,MAFF,BACH1,GSR,HMOX1,FOS,JUN,GSTA1,ACTG2,AOX1,DNAJB1,ACTC1
Acute Phase Response Signaling	18	3.28E-02	SERPING1,C3,RRAS,C1S,SOCS2,VWF,MAP3K5,MAPK12,HMOX2,FOS,HMOX1,HP,JUN,APOA1,TF,CRABP2,CFB,C2
ILK Signaling	19	3.42E-02	PIK3C2A,MYL6B,ACTA2,MYH11,MAPK12,ITGB3,MYC,MYL9,FOS,TGFB1I1,JUN,LIMS1,FLNA,KRT18,ACTG2,ITGB4,ITGB6,ACTC1,MYL3
Epithelial Adherens Junction Signaling	16	4.12E-02	RRAS,MYL6B,ACTA2,MYH11,TUBB,TUBA1B,TUBB2B,MYL9,NOTCH4,TUBA1A,TUBA8,SORBS1,ACTG2,ACTC1,MYL3,EGFR
Virus Entry via Endocytic Pathways	12	4.51E-02	PIK3C2A,FLNA,RRAS,HLA-A,ACTA2,TFRC,ITGB4,ACTG2,ITGB6,ACTC1,ITGAL,ITGB3
Germ Cell-Sertoli Cell Junction Signaling	16	5.29E-02	PIK3C2A,PAK6,RRAS,ACTA2,MAP3K5,MAPK12,TUBB,TUBA1B,TUBB2B,LIMK1,TUBA1A,TUBA8,SORBS1,TGFB3,ACTG2,ACTC1
Sertoli Cell-Sertoli Cell Junction Signaling	17	5.79E-02	NOS1,CLDN10,RRAS,ACTA2,MAP3K5,NOS3,MAPK12,TUBB,TUBA1B,TUBB2B,TUBA1A,JUN,TUBA8,SORBS1,TGFB3,ACTG2,ACTC1
CD28 Signaling in T Helper Cells	13	6.52E-02	PTPN6,CD3E,PIK3C2A,HLA-DQA1,HLA-DQB1,MAPK12,PTPRC,CD3G,FOS,NFAT5,JUN,ZAP70,HLA-DRA
Paxillin Signaling	12	6.56E-02	PAK6,PIK3C2A,RRAS,ACTA2,ITGA8,ITGB4,ACTG2,MAPK12,ITGB6,ACTC1,ITGAL,ITGB3
Citrulline-Nitric Oxide Cycle	3	9.02E-02	NOS1,ASS1,NOS3
Role of Osteoblasts, Osteoclasts and Chondrocytes in Rheumatoid Arthritis	18	9.09E-02	SFRP4,SPP1,SFRP2,PIK3C2A,FRZB,WNT2B,MAP3K5,MAPK12,ITGB3,FOS,COL1A1,JUN,NFAT5,FOXO1,CSF1,DKK3,DKK1,FZD2
PKCθ Signaling in T Lymphocytes	12	9.74E-02	CD3G,FOS,NFAT5,JUN,CD3E,PIK3C2A,RRAS,HLA-DRA,ZAP70,HLA-DQA1,HLA-DQB1,MAP3K5

TR/RXR Activation	10	9.94E-02	KLF9,UCP3,HP,AKR1C3,SLC2A1,PIK3C2A,FASN,PCK1,THRSP,PPARGC1A
Top Diseases and Functions (networks)	Focus Molecules	Score	Molecules in Network
Developmental Disorder, Hereditary Disorder, Neurological Disease	35	60	ABHD4,ACOT2,ACOT7,C18orf21,CADM3,CADM4,CAMTA1,CEP78,CRYL1,ETNPPL,FAM214A,FBXO40,GLB1L2,ISOC2,L2HG DH,LOC728026,MOSPD1,MYNN,NHLRC2,OTUD1,P2RX5,PLEKHF1,RCN3,RMND5A,RSBN1,SLC43A2,TMC6,TMEM57,UBC,U BN2,ZCCHC12,ZNF215,ZNF277,ZNF280D,ZYG11B
Cancer, Dermatological Diseases and Conditions, Hereditary Disorder	29	42	60S ribosomal subunit, AFF4, CNN1, EGLN3, EMP2, FAIM2, FOXC2, GAS1, GBP7, GEM, GPA33, HCFC1, Hedgehog, IRF2BPL, KLF4, KMT2A, MED13, mediator, MTORC1, MYO1A, OGT, PPARGC1B, PTMS, RNA polymerase II, RPL3, RPL17, RPL26, RPL37, RPL38, RPL23A,SQLE,SYT4,Vegf,ZNF24,ZNF750
Cancer, Hematological Disease, Dermatological Diseases and Conditions	28	39	7S NGF,AKR1C3,Alpha tubulin,BARX2,Beta Tubulin, CKMT2, CRIP1, ELOVL6, FOS, GSR, GST, GSTA1, GSTA3, Hdac, IGFBP6, KIF22, KLK10, KMT2D, MXD1, NPHP1, NPTX1, PXR ligand-PXR-Retinoic acid-RXR α , RIF1, SELENBP1, Sos, STMN1, STMN2,TIPARP,TPAN6,TUBA8,TUBA1A,TUBA1B,TUBB,TUBB2B,XYLT1
Connective Tissue Disorders, Dermatological Diseases and Conditions, Gastrointestinal Disease	26	37	AChR,ACTA2,ACTG2,AGRN,ANPEP,ARID5B,chymotrypsin,COL11A2,COL1A2,COL4A5,COL4A6,Collagen type I,Collagen type III,Collagen type IV,CTNNA1,EIF4EBP2,GPIIB-IIIa, ITGA8, ITGB3,ITGB6,LGALS3BP, LIMS1,Mapk,MMP19, NES,NOTCH4, NTN1,OSR2, Pkg,PPP1R15A,PROCR,RAPSN,Tenascin,TFPI2,TGFB3
Cell Death and Survival, Cellular Assembly and Organization, Cellular Function and Maintenance	25	34	ARL4A,C14orf169,Cbp/p300,Cdca7,COL14A1,DUB,Eif2,EIF2S3,GRASP,HMG CoA synthase,IMPA2,Importin alpha, MICALL2, MYC, NML,PELO,PFKFB3,PRKCDBP,RARRES1,Ribosomal 40s subunit, RNF144B, Rnr,RPS19,RPS21,RPS15A,Serine Protease, Smad2/3-Smad4, SORBS1, TCF, ST3GAL3, USP2,USP35,USP42,USP54,ZBTB5
Protein Synthesis, Lipid Metabolism, Molecular Transport	22	29	ABHD5,adrenoceptor,APOM,ASGR1,ATF7,BACH1,CD48,Ces1d,CLEC4G,CNN2,creatine kinase,ERK,Ferritin,FHL5,HDL,HDL-cholesterol,HP,MAFA,MAFB,MAFF,MAL,PKD4,PLVAP,PNPLA4,PON1,PON3,PRKAA,SAA,SERCA,TF,TMSB4,triacylglycerol lipase,VLDL,VLDL-cholesterol,YBX2
Neurological Disease, Endocrine System Disorders, Cellular Assembly and Organization	22	28	AKAP6,Ampa Receptor, APBB2, cacn, CACNA1D, CACNA2D2, CACNA2D3, CaMKII, Collagen Alpha1,Collagen type V,EGFR, ERBB,FNIP1,GABARAPL1,GRB10,KLF10,L-type Calcium Channel,LDL-cholesterol,MARCKS,MATN2,Mucin,NEK7,NOS1,Pka catalytic subunit,PLCE1,Pp2b,PTGDS,Rab5,RGCC,RRAD,S100A2,SLC30A3,THBS4,TSH,ULK1
Increased Levels of Hematocrit, Hematological System Development and Function, Small Molecule Biochemistry	22	27	Ap1,APOE,BMP,C/ebp,CD44,CD58,COL1A1,CYP,CYP1A1,EPAS1,FLNA,GATA2,HBB,HDAC4,hemoglobin,HIST1H1C,HISTONE,H istone h3,Histone h4, HMOX1, ID1, ITGBL1, KDM3A, MID1IP1,Mitochondrial complex 1,NOS3,PCP4L1,PITX3,PTP4A3,Ras homolog, Rsk,Smad,SPP1,Tgf beta,TRAM2
Cellular Development, Hematopoiesis, Cellular Movement	21	26	ACHE,APOA1,CASQ2,Cg,Ck2,CLIC2,DUSP1,DUSP23,EGR1,Fibrinogen,FKBP3,FOXO1,FSH,GDF11,GJA5,glutathione peroxidase, Growth hormone,Gsk3,LDL,Lh,NUDT4,Pdgf (complex),phosphatase, PPTC7,PTPN6,PTPRC,SHP, SIRPA,SIRT1,SLC2A1,Sod,XDH , TPM4, STAT5a/b,THBD,
Developmental Disorder, Hereditary Disorder, Immunological Disease	22	26	Alpha catenin,BGN,C2,C3,C7,C1q,C1QA,C1QB,C1QC,C1S,C3-Cfb, Cadherin, CDH3, CDH11, CFB,CFI,Collagen type XVIII,Collagen(s),Complement component 1, Csf, Ctbp, FBLN1, FCN1, HMOX2, Ho, JUN, KERA, LUM, MAC, NOV, Pias, PTX3, SERPING1, SNX7, Top2
Cellular Movement, Hematological System Development and Function, Immune Cell Trafficking	20	25	5430435G22Rik,AEBP1,CCNC,CHI3L1,CISH,COL16A1,Collagen type VI, elastase, NTN4, ERK1/2, ETS,ETV4,FASN,GC-GCR dimer, GLIPR2, JAK, LIFR, LRRN1, MAP3K7CL, NAMPT, Nuclear factor 1,PKC alpha/beta,potassium channel, PPAP2C, PRKAC, PTPase,RAPGEF2,RARRES2,SOCS2,STAT1/3/5 dimer,SWI-SNF,TMEM176B,tyrosine kinase,Vla-4,VWF
Cellular Growth and Proliferation, Cell Death and Survival, Cancer	20	25	14-3-3,Adaptor protein 1, BTG1, Cdc2, CK1, Cytokeratin, DIXDC1, DKK1, FBP1, Frizzled, FRZB,GADD45G,HNF4 α dimer, Jnk, KRT8, KRT18, KRT19, LNX1, MAP2K1/2, MKK3/6, MLXIP, NCK, PAK6, Pak, PDZRN4, Raf, RDH13, REM1, SFRP2, SFRP4, SFRP, TAGLN, TGFB11I, Wnt, WNT2B

Organ Morphology, Skeletal and Muscular System Development and Function, Cardiovascular System Development and Function	19	23	Alpha Actinin,atrial natriuretic peptide, CCL21, CCNG2, CR2, CSRP1, CSRP2, CSRP3, DLL4, Erm,GCNT1,HEY2,Laminin1, LSP1,MYF6,MYH11,MYL3,MYL9,Na+.K+ -ATPase, Nicotinic acetylcholine receptor,Notch,PdGF Ab,PDGF-AA,PI3K (complex), PI3K p85, PIK3C2A, PLEKHO1,Rcan1,Rlc,SMOOTH MUSCLE ACTIN, SPN, SYK/ZAP, UCP3, VAV ,Tropomyosin
Cell-To-Cell Signaling and Interaction, Hematological System Development and Function, Immune Cell Trafficking	17	20	20s proteasome,ANG,CD3,CD8,CD3E,CD3G,CH25H,Fc gamma receptor, Fcgr3, PLP1, FCGR3A, Gm-csf,HIST1H2AC,HLA-A,HLA-DQB1,IFITM1,Ifn,IFN alpha receptor,IL-2R, IL12 (complex),IRAK2,ITGAL,KLK7,Mac1,MHC Class I (complex),MHC CLASS I (family), Mhc class ii,MHC Class II (complex),MSR1,NFkB (family),PLC gamma, PTMA, Ras, TFRC, ZAP70
Molecular Transport, Cellular Assembly and Organization, Cellular Compromise	17	20	ATP5E,ATP5G3,ATP6A1,ATP6V0A2,ATP6V1E2,ATP6V1G2,ATPAF1,CEP97,DPYSL3,DPYSL4,GPNMB,KIF24,KLHL15,MPDZ,O DF2L,PDDC1,PHF23,POLB,PRSS23,RILPL1,RRB1,SCAPER,SEPT6,SLC26A2,SLC39A3,SNX10,TMEM222,TMEM245,TMEM106B,TST,UBC,UBXN8,UBXN2B,VCPIP1,VPS9D1
Neurological Disease, Psychological Disorders, Cell Death and Survival	19	19	ADA,ALT,BCR (complex),CKB,CORO2B,CRISPLD2,CSF1,CTNNA3,DKK3,ERN1,F Actin, Fcer1, FOSB, GFAP, ID3,Ige, ZFP36, IgG1,Igg3, IgG, IgG2a,Igm,Immunoglobulin,KLF9,Ldh,LIMK1,MHC,MT1E,MT1H,Nfat (family), PGM2L1,Rac,Rap1, SH3BP1, SLIT3
Embryonic Development, Organ Development, Organismal Development	18	19	ABLM3,ABRA,ACTC1,Alpha actin,ATPase,BDH1,Calcineurin A,Calcineurin protein(s), Cofilin, DSTN,ESRRG,FBXO32,G-Actin, Hdac9, Id, MEF2, MEF2D,Mic,MYBPH, MYL6B, MYOD1, MYOG, Myosin,NFAT5,NFAT (complex),P38 MAPK,Pmca, Rock, PPARGC1A, RHOBTB3, SLC1A3,succinate dehydrogenase,Tni,TRIM63,Troponin t
Cell Cycle, Tissue Development, Gastrointestinal Disease	16	18	AQP4,arginase,ASS1,calpain,Caspase 3/7,CCNE1,Cdk,CDKN1C,Cyclin A,Cyclin D,Cyclin E,E2f,FANCL,Gcn5I,hexokinase,Histone H1,I kappa b kinase,Integrin alpha V beta 3, ITGB4, MAP3K5,MAPK12,OSGIN1,PER2,PFKFB2,PI3K (family),Pkc(s),PLCL1,PP1 protein complex group, PP2A,Ppp2c,Rb,SERTAD1,SETD7,STC1,TGM1
Cardiac Stenosis, Cardiovascular Disease, Cellular Development	16	18	ALAS1,AMIGO2,Angiotensin II receptor type 1,AQP3,AQUAPORIN,CBR3,Coup-Tf, CPT1,CPT2,CRABP2, G0S2, JUN/JUNB/JUND, MGP,MPZ,MYLK3,N-cor,NCOR-LXR-Oxysterol-RXR-9 cis RA,NFkB (complex), NGFRAP1, Nr1h, NR2F1, PCK1, PEPCK, peptidase, PPARα-RXRα,Rar,Retinoic acid-RAR-RXR,Rxr,SMEK1,STK10,T3-TR-RXR, THRSF,thymidine kinase, thyroid hormone receptor,VitaminD3-VDR-RXR
Protein Degradation, Protein Synthesis, Tissue Morphology	15	16	ACSL4,ACSS2,ADAM11,ADAM23,ADAMTS4,ADAMTS9,AFAP1L1,AKIRIN2,BTAF1,CASD1,CHRAC1,CSRNP1,DNTTIP1,ELAV L1,ELMSAN1,FBXO30,GLCE,KCNAB1,LGI2,MMP9,NFIA,NREP,ORMDL3,PAPPA,PCOLCE,PHACTR2,PXDC1,RPRD1A,SLC27A6,STX2,SYT15,TFAP4, TMEM19,UBP1,ZNF462
Cellular Development, Tissue Development, Gastrointestinal Disease	15	16	Alp,caspase,chemokine,CHRD12,DNAJA4,DNAJB1,DNAJB4,DNAJC3,F3,Hsp27,Hsp70,Hsp90,HSP,Hsp22/Hsp40/Hsp90,HSPA6,IFN Beta,Ifn gamma,Iga,IL1,IL12 (family), Interferon alpha, MORC3,MX1,Nos,PARP,Pro-inflammatory Cytokine, RNASE1, RNASE4, RNase A, SLC16A6,SNCA,Tr, Tnf (family), TSTA3,VNN1
Cellular Assembly and Organization, Connective Tissue Development and Function, Tissue Morphology	14	15	26s Proteasome, ABAT, Actin,AGPAT6,AGPAT9, ARRD2,ATP2B2,CD5L, CPE, CPLX2, Creb, cytochrome C,Dynamin,estrogen receptor,GATM,IDE,Ikb,Insulin,IVNS1ABP,L-leucine, LEP,Mek,Ntp,p70 S6k, PCDH18, PTPN3,SLC31A1,SLC39A4, Snapap, Syntaxin, TCR,trypsin, Tubulin,Ubiquitin,VTIIA
Renal and Urological Disease, Digestive System Development and Function, Embryonic Development	14	15	ACSM3,Akr1c19,beta-estradiol,C9orf3,CDHR2,COMP,CPQ,CPXM1,CSNK2B, Cyp2j5, DACT2, FGL1,GPR64,GPR137B,HNF1A, HPCAL4,HSF2BP,ITGBL1, KCNMB1, KLK11, LCN1, ME3,Mfi2, MMP2, MS4A8,PDGFRL, PZP,SLC13A3,SMPDL3A, SULT1C4, TGFB1, TMEM140, UST,WFIKKN1,ZNF784
Hereditary Disorder, Metabolic Disease, Neurological Disease	14	15	AATK,ADCK4,AOX1,C16orf59,C1QTNF7,CCDC8,CLCN4,Crybg3,CSRNP2,DRP2,ELFN1,ELFN2,FASTKD1,FEZ1,G3BP2,HYDIN, MFS1,NR3C1,NUFIP2,ONECUT1,PPP1CA,PPP1R2,PRKAG3,RAB11A,RAB31L1,RAI14,RCHY1,RMND1,SLC25A36,TMEM132D, TMEM184A,UBC,VWA5A,ZCCHC9,ZNF827
Cell-To-Cell Signaling and Interaction, Renal and Urological Disease, Nervous System Development and Function	14	15	Adaptor protein 2,ADRA1D,ADRB2,ATP1A1,BAI1,Beta Arrestin,Clathrin,Cpla2, FXYD5, Endothelin, Focal adhesion kinase, FZD2,GFRA3,GNRH,Gpqr,HBEGF,IKK (complex), LGR4, MCHR1,Metalloprotease,Mmp.p85 (pik3r),PDGF BB,PdGfr, PLC, RAMP3, Relaxin, RET, Sfk,Shc, SRC (family),STAT,SYNJ2,TNK2,Trk Receptor

Supplementary Table 5. KEGG pathways among DEGs between H and L groups of cattle (n = 2) identified by the DAVID database

Overall (218 genes, 200 DAVID IDs)			
Term	input/ pathway GN	p	Gene symbol
KEGG PATHWAY(74 GENES)			
bta04610:Complement and coagulation cascades	14/71	6.68E-06	C1QA,BT.105154,C2,BT.69954,C1S,BT.99192,BT.64790,C1QB,C1R,C1QC,BT.22969,BT.19562,F3,THBD
bta05322:Systemic lupus erythematosus	16/116	9.86E-05	C1QA,BT.105154,FCGR3A,BT.69954,C1S,BT.99192,H2B,BOLA-DQA5,C1QB,C1R,C1QC,BT.19562,BOLA-DRA, BT.88538, BOLA-DQB,HIST1H2AA
bta04512:ECM-receptor interaction	12/75	2.81E-04	INTB3,COL4A6,ITGB6,SDC4,TNC,SPP1,AGRN,COL1A1,COL1A2,THBS4,CD44,BT.3034
bta04514:Cell adhesion molecules (CAMs)	15/129	1.04E-03	CADM3,MPZ,L1CAM,CLDN10,CD58,PTPRC,BOLA-DQA5,SPN,BOLA-DRA,BT.88538,BT.102070,SDC4,SELP,BOLA- DQB,BT.73422
bta05410:Hypertrophic cardiomyopathy (HCM)	10/72	3.16E-03	INTB3,ITGB6,BT.31482,ACTC1,PRKAG2,MYL3,TGFB3,TPM4,CACNA2D2,CACNA2D3
bta04940:Type I diabetes mellitus	7/39	5.53E-03	BOLA-DRA,BT.88538,CPE,BT.102070,BOLA-DQB,BOLA-DQA5,BT.73422
bta05332:Graft-versus-host disease	6/30	7.91E-03	BOLA-DRA,BT.88538,BT.102070,BOLA-DQB,BOLA-DQA5,BT.73422
bta04510:Focal adhesion	16/182	1.00E-02	EGFR,JUN,PAK6,ITGB6,MYLK3,COL1A2,TNC,COL1A1,THBS4,COL4A6,INTB3,MYL9,FLNA,SPP1,BT.105316,BT.303 4
bta04010:MAPK signaling pathway	20/257	1.23E-02	BT.85182,EGFR,HSPA6,MYC,JUN,BT.31482,RAPGEF2,FOS,CACNA2D2,HSPA1A,CACNA2D3,FGFR4,STMN1,RRAS, GADD45G,MAPK12,TGFB3,FLNA,RPS6KA3,BT.31917
bta05330:Allograft rejection	6/34	1.35E-02	BOLA-DRA,BT.88538,BT.102070,BOLA-DQB,BOLA-DQA5,BT.73422
bta05414:Dilated cardiomyopathy	9/77	1.58E-02	INTB3,ITGB6,BT.31482,ACTC1,MYL3,TGFB3,TPM4,CACNA2D2,CACNA2D3
bta04612:Antigen processing and presentation	8/67	2.27E-02	HSPA6,BOLA-DRA,BT.88538,BT.102070,HSPA1A,BOLA-DQB,BOLA-DQA5,BT.73422
bta03010:Ribosome	9/84	2.54E-02	RPL26,RPS19,RPL17,RPS15A,RPS21,RPL38,RPL15,RPL37,RPL3
bta04660:T cell receptor signaling pathway	10/105	3.36E-02	NFAT5,JUN,PAK6,PTPN6,ZAP70,CD3G,FOS,MAPK12,CD3E,PTPRC
bta05320:Autoimmune thyroid disease	6/43	3.43E-02	BOLA-DRA,BT.88538,BT.102070,BOLA-DQB,BOLA-DQA5,BT.73422
bta00051:Fructose and mannose metabolism	5/30	3.66E-02	TSTA3,FBP1,HK2,PFKFB3,PFKFB2
bta05020:Prion diseases	5/31	4.06E-02	C1QA,C1QB,C1QC,BT.69954,EGR1
bta05416:Viral myocarditis	7/61	4.37E-02	BOLA-DQA5,CD44,BT.100599,BOLA-DRA,BT.88538,BT.102070,BT.73422

bta04640:Hematopoietic cell lineage	8/78	4.67E-02	INTB3,CD3G,BT.27994,CSF1,CD3E,TFRC,MGC127538,BOLA-DQB
bta03320:PPAR signaling pathway	7/67	6.38E-02	SLC27A6,SCD5,APOA1,CPT2,SORBS1,PCK1,SLC27A1
bta00330:Arginine and proline metabolism	6/52	6.84E-02	NOS3,NOS1,CKMT2,GATM,ASS1,BT.5084
bta05310:Asthma	4/24	7.95E-02	BOLA-DRA,BT.88538,BOLA-DQB,BOLA-DQA5
bta04270:Vascular smooth muscle contraction	9/106	8.04E-02	RAMP3,ACTB,BT.31482,ACTA2,MYLK3,MYL9,KCNMB1,ADRA1D,BT.105316,MYL6B

Enriched by DE genes higher expressed in Low (119 genes, 114 DAVID IDs)

Term	Count	p	Gene symbol
KEGG PATHWAY(47 GENES)			
bta04610:Complement and coagulation cascades	14	1.16E-08	C1QA,BT.105154,C2,BT.69954,C1S,BT.99192,BT.64790,C1QB,C1R,C1QC,BT.22969,BT.19562,F3,THBD,
bta05322:Systemic lupus erythematosus	14	4.29E-06	C1QA,BT.105154,FCGR3A,BT.69954,C1S,BT.99192,BOLA-DQA5,C1QB,C1R,C1QC,BT.19562,BOLA-DRA,BT.88538,BOLA-DQB,
bta04514:Cell adhesion molecules (CAMs)	13	6.79E-05	CADM3,MPZ,LICAM,CLDN10,PTPRC,BOLA-DQA5,SPN,BOLA-DRA,BT.88538,BT.102070,SELP,BOLA-DQB,BT.73422,
bta04940:Type I diabetes mellitus	7	3.36E-04	BOLA-DRA,BT.88538,CPE,BT.102070,BOLA-DQB,BOLA-DQA5,BT.73422,
bta05332:Graft-versus-host disease	6	7.35E-04	BOLA-DRA,BT.88538,BT.102070,BOLA-DQB,BOLA-DQA5,BT.73422,
bta03010:Ribosome	9	9.97E-04	RPL26,RPS19,RPL17,RPS15A,RPS21,RPL38,RPL37,RPL3,
bta04612:Antigen processing and presentation	8	1.20E-03	BT.73422,BOLA-DRA,BT.88538,BT.102070,BOLA-DQB,BOLA-DQA5,BT.73422,HSPA6
bta05330:Allograft rejection	6	1.33E-03	BT.100599,BOLA-DRA,BT.88538,BT.102070,BOLA-DQB,BOLA-DQA5
bta05416:Viral myocarditis	7	3.67E-03	RPL3,BOLA-DRA,BT.88538,BT.102070,BOLA-DQB,BOLA-DQA5,BT.73422
bta05320:Autoimmune thyroid disease	6	3.84E-03	RPS19,RPL17,RPS15A,RPS21,RPL38,RPL37
bta04512:ECM-receptor interaction	7	1.01E-02	COL4A6,TNC,SPP1,COL1A2,COL1A1,CD44,RPL26
bta05310:Asthma	4	2.04E-02	BT.88538,BOLA-DQB,BOLA-DQA5,INTB3
bta04672:Intestinal immune network for IgA production	5	2.79E-02	BOLA-DRA,BT.88538,TGFB3,BOLA-DQB,BOLA-DQA5,BOLA-DRA
bta05020:Prion diseases	4	4.00E-02	C1QA,C1QB,C1QC,BT.69954
bta05340:Primary immunodeficiency	4	4.33E-02	ZAP70,ADA,CD3E,PTPRC,

bta04510:Focal adhesion	9	7.97E-02	INTB3,COL4A6,MYL9,FLNA,TNC,SPP1,BT.105316,COL1A2,COL1A1,
Enriched by DE genes higher expressed in High (99 genes, 86 DAVID IDs)			
Term	Count	p	Gene symbol
<u>KEGG PATHWAY(27 GENES)</u>			
bta04010:MAPK signaling pathway	12	5.05E-03	BT.85182,EGFR,MYC,JUN,BT.31482,RAPGEF2,GADD45G,FOS,CACNA2D2,CACNA2D3,RPS6KA3,BT.31917
bta05410:Hypertrophic cardiomyopathy (HCM)	6	8.37E-03	ITGB6,BT.31482,PRKAG2,MYL3,CACNA2D2,CACNA2D3
bta04020:Calcium signaling pathway	8	2.47E-02	EGFR,BT.31482,NOS1,MYLK3,ADRA1D,ADRB2,ATP2B2,P2RX5
bta03320:PPAR signaling pathway	5	2.97E-02	SLC27A6,CPT2,SORBS1,PCK1,SLC27A1
bta04512:ECM-receptor interaction	5	4.24E-02	ITGB6,SDC4,AGRN,THBS4,BT.3034
bta05414:Dilated cardiomyopathy	5	4.60E-02	ITGB6,BT.31482,MYL3,CACNA2D2,CACNA2D3
bta04012:ErbB signaling pathway	5	4.78E-02	EGFR,MYC,JUN,PAK6,HBEGF
bta00860:Porphyrin and chlorophyll metabolism	3	8.10E-02	ALAS1,HMOX1,HMOX2
bta04920:Adipocytokine signaling pathway	4	9.87E-02	OB,PRKAG2,PCK1,PPARGC1A