

Supplementary information to:

Original article:

LONG-TERM WESTERN DIET FEEDING IMPAIRS HEPATIC VITAMIN D METABOLISM AND PROMOTES BONE LOSS IN MICE

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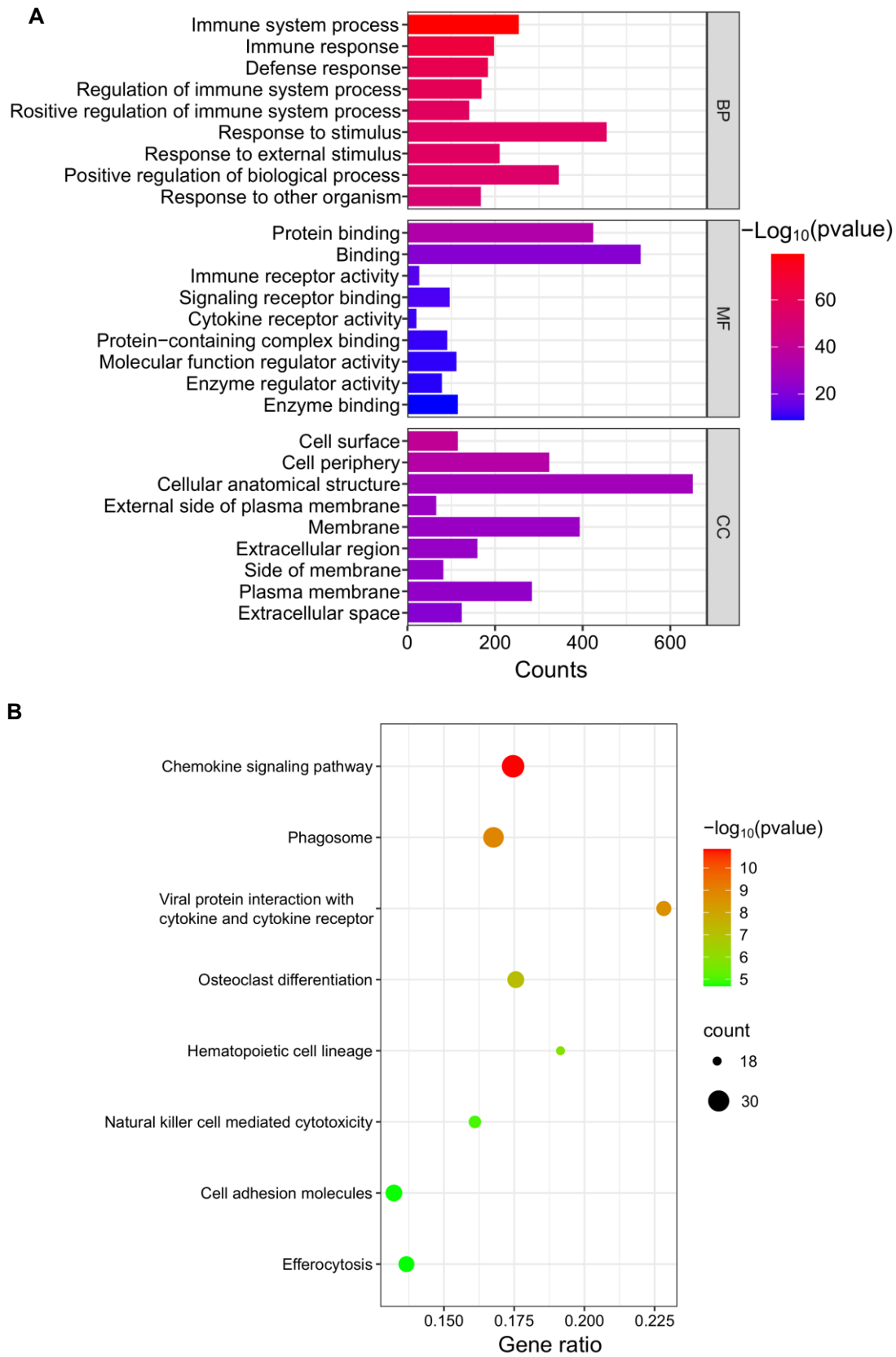
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<https://dx.doi.org/10.17179/excli2025-9085>

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Supplementary Figure 1: Gene ontology (GO) and pathway enrichment analysis of differentially expressed hepatic genes in obese mice. **(A)** GO enrichment analysis was conducted for upregulated genes based on three categories: biological process (BP), molecular function (MF), and cellular component (CC). **(B)** KEGG pathway enrichment analysis of upregulated genes.

Supplementary Table 1: Primer information

Target	Genbank Numer	Sequence Forward Primer	Sequence Reverse Primer	T [°C]	BP
<i>Tnfrsf11a</i>	NM_009399.3	CTTGGACACCTGGAATGAAGAAG	AGGGCCTTGCCTGCATC	63	66
<i>Csf1</i>	NM_001113530.1	GTGTCAGAACACTGTAGCCAC	TCAAAGGCAATCTGGCATGAAG	60	101
<i>Acp5</i>	NM_001111035.1	TTCCAGGAGACCTTTGAGGA	TAGGCAGTGACCCCGTATGT	58	452
<i>Ctsk</i>	NM_007802.4	CACCCTTAGTCTTCCGCTCA	ACTGGGTGTCCAGCATTTCC	60	152
<i>Tnfrsf11b</i>	NM_008764.4	GCCACGCAAAAGTGTGGAAT	TTTGGTCCCAGGCAAACACTGT	62	123
<i>Bglap</i>	NM_001037939.1	GACAAAGCCTTCATGTCCAAGC	AGGGTTAAGCTCACACTGCT	59	126
<i>Vdr</i>	NM_009504.4	TTGTCTCCCCAGACCGACC	TCATCTTGGCGTAGAGCTGG	60	138
<i>Actb</i>	NM_001101.3	CGACAACGGCTCCGGCATGT	GCACAGTGTGGGTGACCCCG	64	461

Supplementary Table 2: Post-hoc power analysis

Target	SD (n1)	WD (n2)	AUC	Cliffs_delta	P_value	Power
Body weight	12	12	1	1	0.00003658	0.986
Liver to body weight	12	12	1	1	0.00003658	0.986
Blood glucose	7	11	0.669	0.338	0.2571	0.218
ALT	12	12	1	1	0.00003518	0.986
AST	12	12	0.962	0.924	0.0001378	0.97
ALP	11	11	1	1	0.00007317	0.979
BMD	11	12	0.068	-0.864	0.0005064	0.939
BV	12	12	0.111	-0.778	0.001351	0.899
TV	12	11	0.235	-0.53	0.03373	0.577
BV/TV	11	12	0.068	-0.864	0.0005064	0.939
TB. N	11	12	0.091	-0.818	0.0009923	0.914
TB. SP	11	12	0.902	0.803	0.001233	0.904
TB.TH	12	12	0.458	-0.083	0.7508	0.064
Stiffness	11	12	0.72	0.439	0.07942	0.431
Yield load	11	12	0.591	0.182	0.4791	0.114
Ultimate load	11	12	0.545	0.091	0.735	0.066
Work to fracture	11	12	0.576	0.152	0.5588	0.094
Csf1	5	6	0.933	0.867	0.02248	0.66
Tnfrsf11a	5	6	0.933	0.867	0.02248	0.66
Acp5	6	6	0.833	0.667	0.06555	0.485
Ctsk	5	5	0.64	0.28	0.5309	0.113
Tnfrsf11b	6	6	0.556	0.111	0.8102	0.062
Bglap	5	5	0.56	0.12	0.8345	0.061
Perilipin	8	8	0.844	0.688	0.02395	0.637
CD163	6	6	1	1	0.005075	0.822
Cyp2r1	5	5	0	-1	0.01219	0.743
Cyp27a1	5	5	0	-1	0.01219	0.743
Gc	5	5	0	-1	0.01219	0.743
Cyp7a1	5	5	0.04	-0.92	0.02157	0.671
25(OH)D	9	11	0.071	-0.859	0.001418	0.898
Vdr	6	6	1	1	0.005075	0.822
VDR	4	5	0.05	-0.9	0.03734	0.597

Supplementary Table 3: List of differentially expressed genes

Gene name	log2FoldChange	FDR
Lcn2	5.238467249	2.2E-95
Ubd	5.899907856	9.5E-95
Sult2a8	-4.001313116	1.2E-94
Tyropb	2.161013347	3E-94
Lgals3	4.198100619	2.8E-93
Mpeg1	2.43510348	1.7E-91
2010003K11Rik	3.427584485	4.7E-90
Col3a1	2.778011635	1.4E-86
Tagln2	2.514029122	4.7E-84
Cd63	3.605902523	1.2E-83
C3ar1	2.612616554	1.3E-83
Myo1f	3.060101914	1.6E-82
Bcl2a1b	4.241004193	1.9E-82
Klf6	2.698107805	1E-80
Tmem86a	2.237485827	6.6E-80
Sirpa	2.965080903	1.8E-79
Cd74	2.921993998	3.4E-79
Ces3b	-2.704646309	3.5E-79
Lyz2	2.42292877	5E-79
Cidec	3.43431822	2E-78
Ly86	2.457026233	8.3E-78
Rad51b	6.023706675	9E-78
H2-Ab1	3.081901482	5.2E-76
Ifi2712b	3.757184743	3.1E-74
Icam1	2.057018753	4.9E-74
Mup11	-5.915247686	1.7E-73
Saa2	3.818120017	4.1E-73
Hsd3b5	-8.977076527	1E-72
Saa1	3.068988078	2.1E-72
Mup2	-4.851408638	2.5E-70
H2-Q1	2.901965573	2.1E-69
Fcgr4	2.097785255	6.1E-69
Cyp2c54	-3.555747018	6.1E-69
Idi1	-3.723548071	4.3E-67
Vcam1	2.737066798	7.4E-67
Serpina3k	-2.467992561	9.2E-67
Cxcl16	2.137996286	1.2E-66
Cyp51	-2.833860678	6.4E-66
Apoa4	2.683142696	1.4E-64
Fdft1	-2.386790734	1.6E-64
Tspyl4	-3.522875666	2.3E-64
Rdh11	-2.631831177	2.9E-64
Abcg1	2.546206764	4.3E-64
Srgap3	-4.765010015	3.2E-63
Iqgap1	2.406553868	5.4E-63
Mup12	-8.048820991	9.8E-63

Ear2	3.181222959	2.4E-62
Lum	2.358844457	4.4E-62
B4galt6	2.794054439	4.7E-61
Nid1	2.69736672	5.5E-61
Elovl3	-2.957600616	1.9E-60
Col1a2	2.923034031	4.6E-60
Abcg5	2.287206954	5.7E-60
Arl4c	2.481387925	1.9E-59
Cd53	2.350795171	2.8E-59
Cd52	2.598437882	3E-59
Mup1	-6.898250267	8.2E-58
Mup7	-8.763075624	1.3E-56
Ucp2	2.053862652	2.9E-56
Cybb	2.464301129	6.3E-56
Tubb6	2.146880581	2.5E-55
Mmp12	5.814719616	2.9E-55
Uap111	3.333091079	3.2E-54
Nudt7	-2.615371344	1.8E-53
Itgb2	2.544810159	2.1E-53
Lss	-2.445821093	2.3E-53
Mki67	3.303009884	7.1E-53
Gpnmb	8.253888455	7.2E-53
Sfn2	2.458053282	9.1E-53
Rtn4	2.123432673	1.3E-52
Hacl1	-2.019049345	3.3E-52
H2-DMb1	3.085210753	1.1E-51
Fcer1g	2.171146132	1.6E-51
Cth	-2.103866241	1.6E-51
Mt1	3.372534274	2.7E-51
Msmo1	-3.247368559	1.3E-50
Clec12a	2.776404388	4.3E-50
Plek	2.936982742	4.7E-50
Fam124a	2.558234652	1.6E-49
Cyba	2.254696142	4E-49
Tlr2	2.659484872	5.1E-49
Slc22a28	-2.745133706	5.3E-49
Tat	-2.367203213	1.9E-48
Mup14	-4.447884639	2.5E-48
Fcgr3	2.324295422	3.2E-48
Plscr1	2.187677542	2.3E-47
Pmvk	-2.43710311	3.3E-47
Avpr1a	-2.051470761	4.2E-47
Slc7a8	2.097438908	1.9E-46
Fcgr1	2.572229523	2E-46
Basp1	2.965470537	3.9E-46
Dpy19l3	-2.436111928	4E-46
C8b	-2.412453032	5.3E-46
Slc15a3	2.285771218	6.2E-46

Hes6	-2.132033843	8.6E-46
Mt2	3.500387018	8.7E-46
Esm1	4.65456097	5.1E-44
Axl	2.026913955	5.4E-44
Gbp2	2.417291528	5.7E-44
Hsd17b7	-2.441043869	1.5E-43
Tmsb10	2.154322195	1.6E-43
Mup17	-6.025025463	1.8E-43
Mup16	-3.107628161	4.2E-43
Mup22	-2.527911564	1.8E-42
Cpxm1	3.677686268	5.1E-42
Nat8	-2.251262549	2.3E-41
Adh6-ps1	-2.162283643	2.9E-41
Chic1	-3.413589355	1.1E-40
Emp1	3.0788774	1.8E-40
Clca3a1	2.153809843	6.6E-40
Rragd	2.887106673	8.2E-40
Aacs	-2.071362887	1.3E-39
Nsdhl	-2.761840303	1.7E-39
Slc39a4	2.085569319	2E-39
Orm2	2.316563125	2.3E-39
Sh3bgrl3	2.067179309	2.6E-39
Tceal8	2.991629553	3E-39
Cd300c2	2.341641843	5.5E-39
Mup15	-7.646818524	6.1E-39
Plau	2.857064962	8.9E-39
Sh3pxd2b	2.914396343	3.2E-38
Adamtsl2	2.32410829	4.2E-38
Scnn1a	-2.069541141	4.4E-38
Mfge8	2.150985695	5.2E-38
Ms4a6c	3.209139252	1.2E-37
Cadm4	-3.094168509	1.4E-37
Mvd	-3.169557675	2.1E-37
Fdps	-2.71092958	2.9E-37
Adgrf1	-6.120746313	5.2E-37
Clip2	2.096699657	5.9E-37
Col6a3	2.485729148	8.2E-37
Cyp7b1	-2.641316722	1.1E-36
Tmem71	2.39591647	1.3E-36
Gapdhr	-3.488010855	1.9E-36
Cd300a	2.278395633	2E-36
Themis2	2.149871824	2.5E-36
Pla2g7	2.814639383	5.6E-36
Slc25a24	2.467524886	5.6E-36
Hmgcr	-2.316231059	1.6E-35
Adgrv1	3.827974358	1.7E-35
Dhcr7	-2.232580605	3.1E-35
Cd14	3.34660554	3.5E-35

Nckap11	2.463436608	1.2E-34
Unc5b	2.427810863	1.6E-34
Nat8f5	-3.030443932	2E-34
Igsf6	2.023243482	2E-34
Oas1a	2.085297663	2.2E-34
Cd163	-5.659496523	4.5E-34
Tlr13	3.228002359	7.3E-34
Acss2	-2.83709195	7.5E-34
Osbp13	2.497461012	9.3E-34
Sdcbp2	6.175365995	1.5E-33
Thrsp	-2.419489752	2.7E-33
Ccdc80	2.052317612	2.9E-33
Evi2b	2.416708548	5.3E-33
Ntrk2	3.238791534	7.1E-33
Mup13	-4.109467132	1.1E-32
Fam83a	4.987311003	1.1E-32
Ephb2	5.307529324	1.2E-32
Sox4	2.517582366	1.3E-32
Gm44578	-2.189545322	1.9E-32
Itgax	4.762131376	4E-32
Atf3	3.210560606	2.7E-31
Acot9	2.498378767	3.3E-31
Hmgcs1	-2.082405116	4.9E-31
Cln6	2.525345761	5.2E-31
Ifi207	2.274522543	6.6E-31
Tgtp1	2.956541507	8.6E-31
Ly6d	6.186279551	1.2E-30
Slc5a1	2.785183941	1.8E-30
Il1rn	4.067623471	2.1E-30
Plin4	3.769036408	3.3E-30
Slamf9	3.375764781	3.5E-30
Mmp13	4.486976047	3.9E-30
Ptgfrn	2.059523111	4.8E-30
Cd84	2.043282796	1.6E-29
Gpr65	2.24608645	4E-29
Mapt	3.253425921	4.7E-29
Dsg1c	2.124109847	5.3E-29
Lpl	2.851659636	6.3E-29
Ms4a7	3.919979481	9.6E-29
Cxcl9	2.10367914	1.4E-28
AB124611	2.732612569	1.7E-28
Slc13a2	-4.779051463	2E-28
Adamts2	2.095481078	3.6E-28
Cd83	2.67421476	4.9E-28
Tnfrsf12a	2.32183257	2.1E-27
Gramd1b	3.207338786	2.2E-27
Mpv17l	-2.135381685	2.3E-27
Serpina7	2.146906023	2.7E-27

Fgf21	2.627677528	3.4E-27
Serpina3g	2.489019119	3.6E-27
Trem2	5.449147075	6.3E-27
Rgs2	2.362655317	9.2E-27
Haus8	2.857396541	1E-26
Ccl5	4.363194014	1.1E-26
Cx3cr1	4.929013381	1.2E-26
Ces4a	-4.601220652	1.6E-26
Chst11	3.430872495	2.1E-26
Fgl2	2.010248747	2.9E-26
Fras1	-2.132486291	3.8E-26
Ifi211	2.585163863	1.1E-25
Tifab	2.364447679	2.6E-25
Abcb1a	2.477199971	2.8E-25
Capg	3.172368347	2.8E-25
Il10ra	2.136019955	3.2E-25
Defb1	3.125345655	9E-25
Ctsk	3.248574527	9.9E-25
Dpt	2.348158614	1E-24
Ccdc3	2.383899004	1.3E-24
Slc22a7	-2.716680529	1.6E-24
Ccr2	3.629554838	2.2E-24
Csf2rb2	2.866071142	2.3E-24
Olfml3	2.46062771	2.7E-24
Cyth4	2.850688396	2.8E-24
Wfdc2	2.470444552	2.9E-24
Ccna2	3.199753304	3E-24
Col5a2	2.110697103	3E-24
Spi1	2.345135043	4.1E-24
Thbs2	2.310914688	6.3E-24
Myof	2.813860829	6.8E-24
Cyp2c40	-4.981420923	9.7E-24
Bicc1	2.255986687	1.5E-23
Fgr	2.625773983	3.6E-23
Shc2	5.863283058	3.9E-23
Serpina1e	-4.606684195	4.3E-23
Tnfai β	2.128374004	6.9E-23
Cd300lb	3.369150559	7.2E-23
H2-DMa	2.622205692	7.5E-23
Plcg2	2.243763769	8.9E-23
Mkl	2.289844611	1E-22
Sash3	2.314362484	2.4E-22
Elovl7	6.02538582	4.2E-22
Casp12	3.646789794	5E-22
Stk10	2.525870522	5E-22
Evl	2.997271395	5.1E-22
Ccnb2	3.382840253	8.7E-22
Vav1	2.25697343	1E-21

Bcl2a1d	4.804276899	1.1E-21
Dusp8	2.131541168	1.1E-21
Lpcat2	2.343859163	1.8E-21
Ms4a6d	2.963965537	1.8E-21
Lama3	-2.440989284	1.9E-21
Thbs1	2.439819633	2.4E-21
Dct	-3.462406723	3.1E-21
Tlr1	3.391103684	4.7E-21
Dock2	2.42769396	5.3E-21
Clec7a	4.12078123	5.7E-21
Serpina4-ps1	-4.447988973	5.7E-21
Slc35f2	3.010820335	6.8E-21
Keg1	-2.017324401	8.4E-21
Cd44	2.330058046	1E-20
Arhgap25	2.987905502	1.1E-20
Tnfaip3	2.562553759	1.2E-20
Mup-ps16	-2.155264619	1.3E-20
Tmem119	2.185742024	1.5E-20
Trem6l	2.164653486	1.6E-20
Vmn2r120	-2.206244665	1.6E-20
Cd180	2.829175443	1.6E-20
Loxl1	2.338143866	1.7E-20
Gsta1	4.932807777	2.1E-20
Capn8	-5.292520381	2.3E-20
Ptafr	2.468105212	2.4E-20
Cd48	2.067826838	2.4E-20
Flvcr2	2.236917038	2.4E-20
Rac2	2.039969381	2.8E-20
Cx3cl1	2.891782386	3.5E-20
Golm1	2.340629356	4.6E-20
Soat1	2.304417523	5.4E-20
Cdkn2c	2.202622596	8.1E-20
Slamf8	2.965629087	8.9E-20
Ly9	2.773561541	1.1E-19
Mup5	-2.441226963	1.3E-19
Mtmr11	3.748065998	1.7E-19
Mup10	-2.020366519	1.8E-19
Evi2a	2.698334086	2E-19
Lrrc14b	2.336279288	2.1E-19
Sprr1a	8.002218433	2.1E-19
Smpd3	2.827365006	2.7E-19
Morc4	2.924312762	5.2E-19
Ccr5	2.19624066	6.1E-19
Gstm3	3.306278762	6.2E-19
Slc37a2	2.329455271	6.3E-19
Irf8	2.309726905	7E-19
Pls1	4.074249566	8.6E-19
Syk	2.354707344	1E-18

Scara3	2.192180979	1.2E-18
Mup-ps13	-2.14658359	2E-18
Cgref1	2.848470779	2.3E-18
Gstt3	-2.151936698	2.4E-18
Gm5150	2.608902166	2.5E-18
Col6a2	2.063302202	2.6E-18
Amy2a1	-27.2594501	4.7E-18
Top2a	3.089260006	4.8E-18
Fermt3	2.114700959	4.9E-18
Apbb1ip	2.205191549	6.3E-18
Sla	2.661246747	7E-18
Plk1	3.52893665	7.8E-18
Hpgds	3.317236681	7.9E-18
Arhgap30	2.080582109	8.7E-18
Ccl2	3.289471083	9.7E-18
Fndc10	2.584641839	9.7E-18
Elf4	2.115002364	1.2E-17
Tlr9	3.408404309	1.4E-17
Themis	3.389013839	1.6E-17
Saa3	2.121880576	2.3E-17
Cyp4a12a	-2.01925568	2.6E-17
Galnt6	2.217542845	2.9E-17
Cyp2c69	-5.657116187	3.2E-17
Bcl2a1a	3.524017782	3.2E-17
Itgam	2.445260171	3.6E-17
Svep1	2.858611009	4.5E-17
Dmpk	2.194296851	5.4E-17
Gm4956	-3.87544021	5.9E-17
Pik3cd	2.471708437	6.2E-17
C5ar1	2.833363194	6.9E-17
Ncf2	2.36633955	7.6E-17
Gsta13	4.729986449	7.7E-17
Selplg	2.39660571	9.1E-17
Syt12	2.861570967	9.3E-17
Atp6v0d2	2.276349514	1E-16
Tes	2.844178738	1.2E-16
Frzb	2.168555003	1.4E-16
Lepr	2.360571944	2.3E-16
Renbp	2.099995765	2.7E-16
S100a4	3.441355843	2.8E-16
Pbk	3.314643734	4E-16
Cyp1b1	2.78006904	6.4E-16
Mrc2	2.36159235	8.5E-16
Parvg	3.241169855	8.6E-16
Tspan8	2.589649401	1.1E-15
Adamts12	3.066786696	1.2E-15
Eif4ebp3	-2.51241188	1.8E-15
P2ry6	2.82503761	1.9E-15

Slc11a1	2.033992849	2.1E-15
Mup-ps8	-6.284640666	2.1E-15
Cidea	2.06840749	2.1E-15
Upp2	-2.011093181	2.5E-15
Ksr2	2.106856677	3E-15
Serpinb6b	2.539061689	3.1E-15
Cyp2b10	-3.937288001	3.7E-15
Ppm1h	2.303002953	4.3E-15
Lrrc39	2.807557901	5.1E-15
Cntnap1	2.092439781	5.6E-15
Cbr3	5.750516223	6.2E-15
Hk3	2.120260466	6.7E-15
Chrna4	-3.708618278	6.9E-15
Hhip	-3.458651767	9.2E-15
Tnc	2.873709523	1E-14
Timp1	5.117585945	1.1E-14
Elf3	2.729985015	1.1E-14
Gm3787	-3.279904679	1.2E-14
H2-M2	5.069240433	1.3E-14
Lrtm1	-2.940543141	2.1E-14
Raet1e	-2.406750365	2.4E-14
Serpine1	4.334942635	3E-14
Arl11	3.914277081	3.3E-14
Pdgfb	2.58772739	3.3E-14
Wdfy4	2.115037493	4E-14
Rgs16	4.91417844	4.1E-14
Mab21i3	2.750865954	4.2E-14
Adcy7	2.154121565	5.5E-14
Ifi209	2.353695182	5.8E-14
Rab7b	3.053475619	6E-14
Gpat3	2.127543228	6E-14
Kcnk13	2.459466858	6.5E-14
Lpxn	2.120828009	7.9E-14
Elmo1	2.472332699	8.7E-14
Anxa2r1	5.442834654	9.7E-14
Asns	-3.51273279	1E-13
Egr1	3.519181702	1.1E-13
Clec4a3	2.150019919	1.2E-13
Coro1a	2.484953495	1.4E-13
Cd300ld3	2.500712123	1.5E-13
Ccl4	4.211931767	1.5E-13
Prok1	-3.146635224	1.8E-13
Abr	2.378920313	1.9E-13
Preli2	2.662494794	2.2E-13
Grid1	-2.871894849	2.4E-13
Btk	2.128139235	2.4E-13
Cftr	3.835587404	2.4E-13
Fam180a	2.065581135	2.4E-13

Slc43a1	-3.012531248	2.9E-13
Fyb1	2.283542637	3E-13
Hmmr	3.110421671	3E-13
Was	2.246006428	3.3E-13
Ifit2	2.251187627	3.3E-13
Gm45062	-23.13082141	3.4E-13
Mup8	-2.498677686	3.5E-13
Slc8a1	2.355646923	4.7E-13
Ptprc	2.267826626	5.1E-13
Lrtm2	5.373678697	5.3E-13
Rgs10	2.003964835	5.7E-13
Gpr137b	2.257016777	5.9E-13
Blnk	2.154679932	6.2E-13
Gm49339	2.174383708	6.6E-13
Acp3	-2.844912968	8E-13
Pak1	2.550451753	1.1E-12
Cxcr4	3.002933562	1.5E-12
Aldh18a1	2.077190556	1.7E-12
Cd207	2.174556453	2E-12
Marchf1	2.55492788	2.1E-12
Tbc1d9	2.028472075	2.1E-12
Pik3r5	3.007608078	2.2E-12
Clec4n	2.231222768	2.4E-12
Otulinl	2.612415982	2.6E-12
Havcr2	3.428827689	2.7E-12
Etnppl	-2.112925131	2.7E-12
Hcar2	2.821929869	3E-12
Tmem45b	2.101840074	3.2E-12
Trhde	-2.14081409	3.3E-12
Gvin-ps7	2.013632515	3.5E-12
Hamp	-3.937551938	3.7E-12
Pou2af2	-4.697767724	3.9E-12
Mthfd1l	3.713555108	4.1E-12
Cpne8	2.067766853	4.3E-12
Raet1d	-2.114247713	4.4E-12
Cdc20	3.140867961	4.6E-12
Dusp5	2.329038689	4.7E-12
Cxcl10	2.574593109	4.8E-12
Tnfrsf11a	3.201397486	4.8E-12
Inpp5d	2.095870428	5E-12
Tox2	3.448011749	5.3E-12
Fam222a	-2.305887393	5.4E-12
Cd86	2.039984706	7.7E-12
Ifi44	2.218315157	7.9E-12
Mup-ps7	-3.887127866	7.9E-12
Gm11843	2.995225422	9.2E-12
Cyp4f18	2.723290701	1E-11
Arhgap9	2.433939726	1E-11

Ms4a6b	3.222244531	1.1E-11
Selenbp2	-4.330622527	1.1E-11
Snhg11	-2.141863086	1.2E-11
Crybg2	2.379671951	1.3E-11
Ccl7	4.184685557	1.3E-11
Nat8f6	-3.774335247	1.5E-11
Slc6a8	2.018901857	1.6E-11
Mup-ps18	-3.770747037	2.2E-11
Slc34a2	-2.297902167	2.2E-11
Plat	2.758992886	2.5E-11
Cyp4a12b	-2.258222119	3.3E-11
Gdf15	2.024982963	3.4E-11
Cenpe	4.007713828	3.4E-11
Tbxas1	2.084199532	4.3E-11
Ciita	3.237675637	4.8E-11
Ube2c	3.098948278	5.5E-11
Tlr7	2.65710812	6E-11
Neur1b	2.163916789	7.6E-11
Igf2bp2	3.740524882	8.5E-11
Ttc39a	5.926026584	8.8E-11
Ckap2l	2.961580239	9E-11
Ier3	2.123876935	9.2E-11
Il2rg	2.197336849	9.3E-11
Kbtbd11	2.776872908	9.6E-11
Birc5	2.714570287	1E-10
Ppfia4	2.628391406	1.3E-10
Obp2a	-3.096790519	1.5E-10
Ccl22	4.181225402	1.5E-10
Cyp2a4	7.820513144	1.7E-10
Card11	2.945320029	1.9E-10
A4gnt	3.217244424	1.9E-10
Car13	2.256283397	1.9E-10
Cela1	-3.710310868	2E-10
Tagap	2.670095688	2.1E-10
Sema4d	3.210899345	2.7E-10
Elapor1	2.73511804	2.9E-10
Nusap1	2.731354784	2.9E-10
Sult1e1	3.541243692	3E-10
Fblim1	2.90617941	3.1E-10
Colgalt2	-3.384949091	3.5E-10
Ugt1a5	-2.420171136	3.7E-10
Prdm1	2.996019658	4.2E-10
Mmp27	3.32093868	4.7E-10
Adap1	2.577007812	4.9E-10
Gira3	-6.432849297	5E-10
H2-T11-ps	4.595011404	5.1E-10
Ccr1	3.702775307	5.4E-10
Casp4	3.102748899	5.7E-10

Ssc5d	2.401702122	5.9E-10
Gzmb	3.220241256	6.3E-10
Racgap1	3.145598557	6.8E-10
Epcam	2.228619289	6.8E-10
Tnfaip8	2.053138644	7.3E-10
Gpr35	3.779280745	7.9E-10
Oas3	2.41389597	8E-10
Ncapg2	2.462430624	8.4E-10
Dmrta1	-2.005403291	9.8E-10
Maff	2.601066117	1E-09
Kntc1	2.790971221	1E-09
Osmr	2.041755506	1.1E-09
Cd72	2.360242946	1.2E-09
Aspm	3.028723959	1.3E-09
Mup-ps14	-3.086185252	1.4E-09
Grm8	-3.825517624	1.5E-09
Slamf7	3.627113441	1.6E-09
Pla2g4a	2.186651518	1.7E-09
Hk2	2.264191998	2.1E-09
E030018B13Rik	-6.275475603	2.3E-09
Ms4a4a	6.131562906	2.4E-09
Foxj1	5.765338943	3.8E-09
Cldn4	4.61847335	4.4E-09
Lox	2.431973932	5.1E-09
Ptger4	2.83150433	6.4E-09
Ckap2	2.579912666	6.4E-09
Bmp8b	4.772705518	6.6E-09
Egr2	5.973033588	7.2E-09
Tpx2	3.142546433	7.4E-09
Ddr1	2.432871995	7.4E-09
Gm5431	2.010283255	7.4E-09
Glipr1	3.407714764	7.6E-09
Kif20a	2.844129437	7.9E-09
Acod1	3.470028995	8E-09
Myo1g	2.1566516	8.7E-09
Ccl8	4.036181807	8.9E-09
Lgi2	2.300872664	8.9E-09
Bub1	3.232146534	9.2E-09
Pmaip1	2.465418969	1.2E-08
Mmp2	2.011485609	1.2E-08
Fhl2	2.638315296	1.4E-08
Stap1	2.227768073	1.5E-08
Arg2	3.089161566	1.5E-08
Csf3r	2.221177095	1.5E-08
Arhgap44	2.696130421	1.5E-08
S100a9	2.477134607	1.6E-08
Mup-ps12	-3.481887881	1.7E-08
Trbc2	2.828690951	1.7E-08

Synj2	2.436043616	1.8E-08
Inhbb	2.099530232	1.8E-08
Cenpf	3.760740727	1.9E-08
Rps23rg1	-2.114678822	2.1E-08
Utd2	2.36722187	2.1E-08
St6galnac4	2.065468923	2.1E-08
Gpr132	2.971518848	2.4E-08
Chac1	2.384324147	2.4E-08
Mup-ps6	-4.780631135	2.4E-08
Sult5a1	-2.253675143	2.5E-08
Rgs1	3.098908618	2.6E-08
Sult2a7	-2.642545949	2.7E-08
Nkg7	2.938713803	2.7E-08
Kdelr3	2.42993931	2.7E-08
Il21r	3.160172685	2.8E-08
Csf2ra	2.356090946	3.1E-08
Gipc2	6.053239319	3.3E-08
Kif18b	2.898393738	3.6E-08
Ccl3	4.812902778	3.7E-08
Tlr8	2.55977248	4.3E-08
Limk1	2.071356417	4.7E-08
Amz1	3.269007651	4.9E-08
Grk3	2.129255391	4.9E-08
Pf4	2.277644939	5.5E-08
Cd200r1	2.090608809	5.7E-08
Ikzf1	2.11800441	6.1E-08
Ccdc120	4.484624126	7.4E-08
Tm6sf1	2.360529245	7.4E-08
Fgd1	2.224941929	7.7E-08
Ifi206	2.218467581	8.2E-08
Gm6377	2.551189637	9.1E-08
Ptk6	-2.038452958	9.2E-08
Nlrp1a	5.861407497	9.9E-08
Myo5a	2.84047007	1.1E-07
Kcnj2	2.007825019	1.1E-07
Gpx6	-2.433243712	1.1E-07
F2rl1	2.684902378	1.3E-07
Tmem171	2.778509382	1.4E-07
Specc1	2.047785843	1.4E-07
Arhgap22	4.405510626	1.6E-07
Ncf4	2.038653755	1.9E-07
Pdcd1	5.031113322	1.9E-07
St14	2.332129313	2.1E-07
Melk	5.683494725	2.2E-07
Pik3cg	2.216005192	2.3E-07
Ptk7	2.118523695	2.3E-07
Cdh19	-2.449949198	2.4E-07
Srxn1	2.122230353	2.4E-07

Cyp4f16	2.483986258	3E-07
Bub1b	2.577207512	3.1E-07
Iqgap3	3.13886029	3.1E-07
Lrp2	-2.377701525	3.2E-07
Ehf	2.07768207	3.3E-07
Serpina9	-4.256508728	3.3E-07
Prrg4	4.903931819	3.6E-07
Hey1	2.247948397	3.8E-07
Adam8	4.849071885	4.2E-07
Scube1	3.829718874	4.3E-07
Tekt5	8.348555507	4.7E-07
Fxyd5	2.070704301	4.7E-07
Clec4a2	2.30276548	4.9E-07
Fosl1	5.677066082	5.6E-07
Tinag	3.391174106	5.6E-07
Smpdl3b	2.162517821	5.6E-07
Gpr137b-ps	2.705923529	6.1E-07
Il7r	2.962737222	6.3E-07
Cdca3	2.014215679	6.3E-07
Nrg1	3.851740077	6.4E-07
Ltb	2.526712469	6.5E-07
Slc22a27	2.314786042	6.6E-07
Vsig8	5.670955031	6.6E-07
Dapp1	2.252594683	6.6E-07
Parp8	2.108474581	7E-07
Cdk1	2.128350272	7.2E-07
Med12l	-2.643570722	7.4E-07
Slfn1	2.553929105	8.8E-07
Kif2c	2.53783021	9.5E-07
Arhgef2	2.148438503	1E-06
Gcnt1	2.438500123	1.1E-06
Napsa	2.440223347	1.1E-06
Coro2a	2.601521233	1.2E-06
Gtpbp4-ps1	-4.152519417	1.2E-06
Lamc2	2.298496551	1.3E-06
Folh1	5.206494916	1.3E-06
Chil3	5.329897627	1.4E-06
Gdf3	5.307287417	1.4E-06
Sh2d1b1	5.241250447	1.4E-06
Il36g	3.222392398	1.5E-06
Serpini2	-7.146453399	1.5E-06
Ces2b	-2.33169272	1.5E-06
Tafa2	-5.416543269	1.7E-06
Kif4	2.751139421	1.7E-06
Fut4	2.541411303	1.8E-06
Slc22a29	2.188063551	1.9E-06
Sgsm1	-2.363258816	2E-06
Snx20	2.005552135	2.1E-06

Irak3	2.229483347	2.4E-06
Cdca7l	3.074351771	2.4E-06
Mybl1	2.830164949	2.5E-06
Cytip	2.325175097	2.6E-06
Trac	2.628976424	2.7E-06
Prr11	2.633725604	2.7E-06
Myh15	5.756184725	2.8E-06
Abcc4	3.504993827	2.9E-06
Cxcr3	2.330510644	3E-06
H2-Q2	3.433677017	3E-06
Ccdc88a	2.051944615	3.3E-06
Sh3kbp1	2.137950247	3.3E-06
Gm6445	-2.562312961	3.3E-06
Itgbl1	2.76394714	3.4E-06
Spn	2.236192025	3.4E-06
Gm20708	-6.072856919	3.4E-06
Ccnb1	4.019565523	3.4E-06
Art2b	2.224348877	3.6E-06
Col4a5	2.192271209	3.7E-06
Ngf	2.167258458	3.9E-06
Plaur	2.90634748	3.9E-06
Sgo2a	2.441337204	3.9E-06
Uhrf1	2.79338999	4.2E-06
S100a8	2.457720444	4.4E-06
Ms4a4c	3.28925288	4.6E-06
Shisa3	2.469690471	4.6E-06
Runx3	3.219838329	4.8E-06
Mefv	2.88191572	4.9E-06
Ptpn7	3.474663965	5E-06
Gpr183	2.974782382	5.3E-06
Cd7	2.154038307	5.4E-06
Fmnl1	2.148687193	5.5E-06
H2ac18	-2.009193185	5.5E-06
Tigit	4.157035886	5.8E-06
Sirpb1b	3.636066596	6.2E-06
Cyp2a22	6.184239382	6.6E-06
Spire2	4.719854864	6.7E-06
Fbn2	4.794826132	6.9E-06
Gpr176	3.961105366	7.1E-06
Gm48499	6.940332753	7.2E-06
Kcnn4	3.70486994	7.7E-06
Fam83b	5.471770948	8.3E-06
C2cd4c	4.453937605	8.8E-06
Ccr7	2.318855873	9.5E-06
Kif22	2.584882409	9.5E-06
Fit3	2.338814998	1E-05
Ccne1	2.108299642	1E-05
Pdia2	-5.566912518	1.1E-05

Serpib9e	6.39250304	1.1E-05
Gzmk	5.144666231	1.1E-05
Slc13a5	3.072339089	1.1E-05
Vmn2r-ps110	-4.279451857	1.1E-05
Siglecf	5.042937839	1.2E-05
Tff2	-3.411664906	1.2E-05
Cnmd	-2.116609903	1.2E-05
Eomes	5.111587337	1.3E-05
Cd3d	3.092792318	1.3E-05
Tnfrsf10b	2.282374086	1.3E-05
Hkdc1	2.864261058	1.3E-05
Pnlipp1	-5.083207471	1.3E-05
Amy2b	-6.656643539	1.3E-05
Procr	2.680198873	1.3E-05
Knstm	2.973445091	1.4E-05
Anln	2.318477702	1.4E-05
Rab19	2.477932988	1.5E-05
Aqp7	2.87948791	1.6E-05
Cd8a	2.79506758	1.8E-05
Pclaf	2.600108383	1.9E-05
Cd3g	2.253787995	1.9E-05
Lair1	2.376016767	2E-05
Insyn1	3.682164251	2.1E-05
Obox4-ps3	-4.961119958	2.2E-05
Aurkb	2.623405212	2.3E-05
Stil	2.020602681	2.4E-05
Il27ra	2.027151621	2.4E-05
Mex3a	2.590752839	2.4E-05
Bnip5	2.790769137	2.4E-05
Cfap20dc	3.010537303	2.4E-05
Igkv14-111	3.694955319	2.5E-05
Mrgprb11-ps	2.292979063	2.6E-05
Rasa1	5.0073728	2.7E-05
Cicf1	2.966734372	2.8E-05
Areg	5.261941177	2.8E-05
Galnt3	2.988124234	2.9E-05
Ppp1r3g	2.452168268	2.9E-05
Sirpb1a	4.620355876	2.9E-05
Guca2b	5.828338906	3E-05
Trim59	2.409000704	3E-05
Cib3	2.035504371	3E-05
Usp43	4.216187309	3.2E-05
Nuf2	2.552589731	3.3E-05
Coch	5.117663418	3.4E-05
Spdl1	2.388867642	3.5E-05
Prkg2	4.203209958	3.6E-05
Itga2	2.979672828	3.7E-05
Pin4-ps	-8.387988016	3.8E-05

Nbdy	2.437327453	3.8E-05
Medag	2.12731796	4E-05
Al467606	2.255472465	4E-05
Prkd1	2.031245507	4E-05
Cst7	4.349729605	4.1E-05
Rasa4	2.264584188	4.1E-05
Sirpb1c	3.347752966	4.1E-05
A2m	4.383666677	4.3E-05
Slc16a3	3.101531197	4.4E-05
Spint1	2.156169611	4.4E-05
Batf	3.134791329	4.5E-05
Gm12247	-2.00026279	4.6E-05
Wfdc3	4.850803864	4.6E-05
Ncaph	2.220590428	4.6E-05
Nat8f7	-3.180126639	4.6E-05
Rufy4	2.190107972	5E-05
Diaph3	4.926451847	5.3E-05
Psme2b	2.748923201	5.3E-05
Dusp2	2.899990323	5.3E-05
Adamts4	2.403391666	5.6E-05
Clec4b1	2.792053664	5.8E-05
Cdh17	5.175873595	6E-05
Zg16	-5.607796471	6.5E-05
Sftpd	2.337186348	6.6E-05
Ptpro	2.234034927	6.7E-05
Depdc1a	4.703886484	7E-05
Sfn	2.302960445	7.2E-05
Cyp26a1	-2.843951415	7.3E-05
Slc66a3	3.1584336	7.7E-05
Runx1	2.554112651	7.7E-05
Pla2g1b	-5.798185426	7.7E-05
Kcnab2	2.23330648	7.8E-05
Tnip3	4.546296954	8E-05
Gpr141	3.760618366	8.1E-05
Sybu	4.456151297	8.2E-05
Sele	2.818803704	8.2E-05
Ch25h	3.765936908	8.4E-05
Dnaaf3	2.179136229	8.8E-05
Trem12	2.784894096	8.9E-05
Lyz1	2.286214541	9.3E-05
Panx1	2.616113153	9.3E-05
Moxd1	-7.91260825	9.4E-05
Tubb2b	2.734412102	9.7E-05
Esco2	2.774456136	9.8E-05
Prc1	3.548368274	0.0001
Xylt1	2.349754686	0.0001
Duox1	4.605257314	0.0001
Try10	-6.516659614	0.0001

Snai1	2.015754352	0.0001
Veph1	2.432198362	0.00011
Ntrk1	-2.321677897	0.00011
Cyp2g1	-2.209556327	0.00012
Ncapg	3.993625996	0.00012
Kifc1	2.879637097	0.00013
Rhoh	2.073372705	0.00013
Lax1	2.463694988	0.00013
Ccn5	3.101714646	0.00014
Igkv1-117	2.485169611	0.00014
Dnah1	3.313086255	0.00014
Foxm1	2.796117864	0.00014
Ngp	4.686456134	0.00015
Gm29427	-2.196334547	0.00015
Pi15	2.001536747	0.00016
Clec9a	2.023556484	0.00016
Dzip1l	2.666146368	0.00016
Ptpn22	2.217310373	0.00017
Cuzd1	-6.161148096	0.00017
Olr1	4.28217238	0.00017
Gp2	-6.971580757	0.00017
Abcc12	4.07517473	0.00018
Ii12b	4.372355456	0.00018
Matk	4.571376332	0.0002
Ndufs6b	-2.904026046	0.00021
Trbc1	2.296757516	0.00021
Cd22	2.463922286	0.00022
Sema3b	2.545842566	0.00023
I830077J02Rik	2.126887019	0.00024
Lat2	4.154953156	0.00024
Slc7a11	3.358345328	0.00024
Mmp8	4.264800115	0.00024
Gjb3	4.626910016	0.00025
Pacrg	4.718268536	0.00026
Fcrl2	2.762528785	0.00026
Pdgfrl	2.062155346	0.00026
Tacstd2	4.568269753	0.00026
Igkv5-39	2.4936413	0.00027
Rnf180	2.17043724	0.00028
Tmem273	2.093657334	0.00028
Slc1a1	4.810612686	0.00028
Ccn6	-4.715343188	0.00029
Igkv4-59	4.677401122	0.00029
S100g	3.548575614	0.00029
Cdca8	2.21261122	0.0003
Clec4d	4.316545977	0.0003
Trim29	4.574407144	0.00031
Apela	5.032848799	0.00031

Cela2a	-6.132410757	0.00032
Ms4a4b	2.465284101	0.00032
Spmip3	4.760244505	0.00033
Gimap7	2.519355596	0.00034
Gm20695	-2.25988045	0.00037
Cd200r4	2.882705655	0.00038
Aldh3b3	4.394864233	0.00038
Cd8b1	2.182187387	0.00038
Egflam	2.061323988	0.00039
Fam83d	2.46818298	0.0004
Try4	-6.406830759	0.0004
Cspg5	-2.907218531	0.00041
Ighv4-1	3.21871865	0.00042
Nfatc2	2.299475449	0.00046
Kif20b	2.160147946	0.00046
Iglv1	2.869894592	0.00047
Tlcd5	2.058271256	0.0005
Zfp469	3.328502992	0.0005
Aqp12	-5.496843248	0.00052
Asb4	2.29971875	0.00053
Dsn1	2.44682687	0.00053
Card14	4.61058019	0.00054
Tmem45a	2.314756909	0.00054
Iglc1	2.717638424	0.00055
Cyp3a57	4.676292467	0.00056
Pnliprp2	-6.158554271	0.00056
Gm15931	3.445110043	0.00057
Scube3	4.056327498	0.00058
Klk1b5	-4.403503379	0.00061
Cd244a	3.993163584	0.00064
Spats2l	2.140756007	0.00064
Mup6	-2.59027764	0.00066
Gsta5	5.167269732	0.00067
Clec5a	3.17899559	0.00068
Gm20784	4.534444533	0.00069
Ighv14-4	4.876501913	0.00071
Pwwp4c	3.683190489	0.00077
Ndc80	3.893373323	0.00079
Sdk1	4.127899546	0.0008
Mis18bp1	3.206398397	0.0008
P2ry10	2.194087902	0.0008
Igkv3-2	3.864591132	0.0008
Cdca5	2.711085201	0.00082
Cpa2	-5.899464327	0.00084
Htra4	-2.685930846	0.00085
Rnase1	-5.527541389	0.00089
Adamts16	4.410023281	0.00089
Melff	4.031208616	0.0009

Mup-ps4	-3.50387713	0.00093
Sell	2.021404054	0.00098