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Original Article

Profiles of metabolic gene expression in white adipose tissue, liver and hypothalamus in *Lep*$^{\Delta I14/\Delta I14}$ leptin-knockout rats

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Supplementary Table 1 **Control Probe Name**

Control Probe Name
GE_BrightCorner,DarkCorner,ERCC-00085_231,ERCC-00034_158,ERCC-00076_93,ERCC-00060_190,ERCC-00099_60,ERCC-00108_60,ERCC-00083_214,ERCC-00131_64,ERCC-00014_76,ERCC-00096_179,ERCC-00147_344,ERCC-00130_136,ERCC-00116_142,ERCC-00123_60,(+)E1A_r60_a22,ERCC-00023_60,ERCC-00163_81,ERCC-00142_99,ERCC-00081_60,ERCC-00040_174,ERCC-00053_71,ERCC-00062_278,ETG10_13482,ERCC-00098_150,ERCC-00042_60,ERCC-00012_90,ERCC-00054_84,ERCC-00077_121,ERCC-00004_125,ERCC-00157_60,ERCC-00071_128,ERCC-00134_68,ERCC-00075_180,ERCC-00007_60,ERCC-00086_228,ERCC-00051_60,(+)E1A_r60_a107,ETG08_142674,ERCC-00148_99,(+)E1A_r60_a135,ERCC-00078_438,ERCC-00031_101,ERCC-00104_60,ERCC-00143_89,ERCC-00162_107,ERCC-00058_185,ERCC-00084_121,ERCC-00044_175,ERCC-00171_229,ETG05_66023,ERCC-00111_144,ERCC-00079_170,ERCC-00039_95,ERCC-00074_113,ERCC-00158_78,ERCC-00154_60,ERCC-00057_123,ERCC-00097_63,ERCC-00028_121,(+)E1A_r60_3,ETG09_35454,ERCC-00035_90,ERCC-00095_63,(+)E1A_r60_1,ERCC-00024_60,ETG04_27747,ERCC-00043_129,ERCC-00019_219,ERCC-00164_60,ERCC-00069_99,ERCC-00117_139,ERCC-00025_93,ERCC-00048_92,(+)E1A_r60_a97,ETG09_205211,ERCC-00061_161,ERCC-00113_271,ERCC-00160_243,ERCC-00046_63,ERCC-00041_75,ERCC-00033_60,ETG10_195139,ERCC-00013_180,ERCC-00165_60,ERCC-00067_104,ERCC-00073_60,ERCC-00120_69,ERCC-00092_138,ETG05_36762,ERCC-00145_60,ERCC-00168_248,ERCC-00003_63,ERCC-00150_127,ETG09_48764,(+)E1A_r60_n9,ERCC-00017_150,ERCC-00018_67,ERCC-00136_67,ERCC-00156_158,(+)E1A_r60_a104,(+)E1A_r60_n11,ERCC-00059_120,ERCC-00137_95,ETG07_105829,ERCC-00109_120,ERCC-00126_533,ERCC-00144_60,ERCC-00170_100,ERCC-00009_60,ERCC-00016_169,ERCC-00128_189,ERCC-00022_66,ERCC-00002_129,ETG02_36680,ERCC-00138_246,(+)E1A_r60_a20,ERCC-00112_152,ETG10_236652,ETG10_234183,DCP_20_9,DCP_22_0,DCP_22_9,DCP_22_6,DCP_1_0,DCP_20_1,DCP_22_4,DCP_20_7,DCP_20_0,DCP_20_3,DCP_1_4,DCP_1_11,DCP_22_7,DCP_1_2,DCP_22_2,DCP_20_5,DCP_1_1,DCP_1_7

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Supplementary Table 2 **White adipose tissue Gene Regulation**

Gene	Symbol	Fold Change	Regulation	Gene	Symbol	Fold Change	Regulation
386	Spp1	25.40623	up	1236	Ccdc113	−26.200727	down
41	Klk6	20.309614	up	1022	LOC100359977	−26.782644	down
882	Cd5l	18.737204	up	1313	Atp2c2	−27.332623	down
56	Hk3	18.116323	up	1245	Casq1	−27.805887	down
36	Cd5l	15.58691	up	1593	Pygm	−28.051401	down
187	Wisp2	14.72866	up	1091	Gabra2	−29.111721	down
96	Rgs7bp	13.332722	up	1644	Fam25a	−29.114166	down
156	Cela1	11.820159	up	1038	Scnn1g	−29.170244	down
280	Stmn2	11.660885	up	1621	Ggt1	−29.173628	down
954	Il1rl1	10.332317	up	1144	Aldoc	−29.200186	down
357	Fgf21	10.313136	up	1103	Mb	−29.257977	down
945	Shox2	10.265675	up	1147	Casq1	−29.716452	down
1542	Duox1	−10.066941	down	1559	Gng13	−30.168476	down
1311	Qsox1	−10.219349	down	1502	Mylk2	−30.379896	down
1221	Prom2	−10.383732	down	1635	Mn1	−30.557316	down
1305	Map7	−10.466317	down	1370	Tuba8	−30.743717	down
1264	Ccno	−10.716721	down	1540	Tp63	−30.893984	down
1587	Slc45a3	−10.756006	down	997	Aqp5	−31.042759	down
1633	Trim46	−10.862556	down	1509	Apobec2	−31.117018	down
1231	Mup5	−10.912464	down	1439	Grhl2	−31.454374	down
1208	Krt8	−10.937051	down	1580	Vom1r58	−32.339157	down
994	Neb	−10.980497	down	1521	Thbs1	−32.50123	down
1142	Arhgap8	−11.195729	down	1575	LOC689963	−32.79094	down
1191	Klc3	−11.289727	down	1028	Kcnk1	−33.171432	down
1140	Crabp1	−11.317965	down	1522	Pigg	−33.277126	down
1075	Fbxl22	−11.368278	down	1153	Cox8b	−33.66967	down
1275	Incenp	−11.649709	down	1233	Dhrs7c	−33.849514	down
1639	Hrc	−11.746555	down	1336	Lgals7	−34.092083	down
1471	Myl1	−11.755403	down	1537	Gcfc2	−34.185352	down
1270	Pik3r1	−11.779478	down	1592	LOC688173	−34.221233	down
1444	Ckmt2	−12.038792	down	1443	Il17b	−35.09913	down
1643	Stk33	−12.081036	down	1532	LOC688459	−35.713573	down
1611	Fam25a	−12.113266	down	1134	Lbp	−35.740364	down
1173	Fam84a	−12.303968	down	1581	Tpd52l1	−35.74815	down
1525	Pim1	−12.398809	down	1217	Bex1	−35.93069	down
1584	LOC683891	−12.4180765	down	1268	Ocm	−36.53982	down
1359	Cnn1	−12.817392	down	1076	RGD1305347	−36.603703	down
1394	LOC363060	−12.8664665	down	1317	LOC304000	−37.04801	down
1037	Pthlh	−12.970555	down	1160	RGD1561490	−37.90828	down
1418	Atp13a4	−13.003968	down	1420	Scnn1b	−39.01795	down
1290	Foxq1	−13.073813	down	1328	Tpd52l1	−39.296658	down
1541	Ddit4l	−13.271021	down	1353	Krt15	−39.38267	down
1342	Fam20a	−13.302508	down	1118	Hapln2	−39.55229	down
1049	Dnajc6	−13.309822	down	1104	Rab25	−40.31372	down

Supplementary Table 2 **White adipose tissue Gene Regulation** (continued)

Gene	Symbol	Fold Change	Regulation	Gene	Symbol	Fold Change	Regulation
1110	Tgm1	−13.350854	down	1226	Sectm1b	−40.384335	down
1120	LOC685203	−13.518245	down	1478	Chrdl2	−40.879505	down
1179	Sftpd	−13.549136	down	1341	Slc34a2	−41.198463	down
1641	RGD1562977	−13.57863	down	989	Ddah1	−41.562916	down
1410	Ppm1h	−13.608846	down	1518	Hoxc5	−41.593822	down
1101	Duoxa1	−13.69703	down	1377	Ildr1	−42.1319	down
1650	Foxi1	−13.758473	down	1227	Alpl	−42.819542	down
1298	Vwa2−ps1	−13.809412	down	1463	Bhlha15	−42.97521	down
1367	Gng13	−13.812164	down	1626	Zfp418	−43.38746	down
1339	Gp2	−13.928176	down	1597	LOC687472	−43.434605	down
1096	Tspan1	−14.11505	down	1396	Gata3	−43.990376	down
1310	Myom2	−14.151	down	1314	Tmem79	−44.86255	down
1073	Myh1	−14.176776	down	1515	Cdcp1	−44.908405	down
1321	Pnoc	−14.185334	down	1292	Nrap	−45.531826	down
1345	Irx2	−14.281143	down	1265	Spry2	−45.681313	down
1300	Ppap2c	−14.38528	down	1331	Tmprss4	−46.4424	down
1358	Fam83e	−14.458018	down	1337	Fxyd3	−46.70276	down
1403	LOC687808	−14.501531	down	1620	Ccdc64b	−46.97537	down
1307	Gyltl1b	−14.618741	down	1143	Ccl28	−47.190025	down
1347	Cacna1s	−14.806266	down	1258	Krtcap3	−47.72709	down
1401	Art1	−14.909303	down	1495	RGD1303271	−48.187664	down
1149	Obp3	−14.969593	down	1551	Tmc4	−48.373825	down
1242	Osap	−14.99016	down	1599	LOC499023	−48.843384	down
1375	Ttc39a	−15.052747	down	1434	Rap1gap	−50.587513	down
999	Anxa8	−15.163552	down	1089	Gjb2	−50.649097	down
1465	Cacng1	−15.504864	down	1445	Myh8	−50.655174	down
1622	LOC685106	−15.547596	down	1503	Tfap2c	−51.357895	down
1019	Fam134b	−15.625875	down	1470	Slc44a4	−51.405193	down
1014	Itgb6	−15.706819	down	1651	Trim29	−54.105625	down
1211	Pkp3	−15.986906	down	1322	Scgb2a1	−56.870945	down
1284	LOC683469	−16.00548	down	1234	Cdh1	−57.32828	down
1240	Reln	−16.028704	down	1374	Tns4	−57.33239	down
1481	RGD1304580	−16.136402	down	1619	LOC685385	−57.615414	down
1209	Pgam2	−16.258871	down	1548	LOC685385	−58.856422	down
1272	Eno3	−16.28391	down	1625	Esrp1	−60.550575	down
1282	Cldn4	−16.914602	down	1451	Fxyd3	−60.613087	down
1423	Krt23	−17.00513	down	1630	RGD1561230	−63.854588	down
1473	Cmtm5	−17.358208	down	1447	Gldc	−64.35668	down
1302	Lpo	−17.486134	down	1572	Cldn7	−65.37125	down
1614	Ndufaf4	−17.850283	down	1489	Tmod4	−65.495384	down
1273	Upk1b	−18.13692	down	1368	Sox10	−67.31192	down
1388	RGD1560492	−18.15693	down	1569	LOC171161	−67.64564	down
1238	Elf3	−18.185013	down	1124	Prss8	−69.296875	down
1385	Lcn2	−18.422218	down	1177	Ocm	−70.58036	down
1055	Myot	−18.479261	down	1383	Ttn	−71.068756	down

Supplementary Table 2 **White adipose tissue Gene Regulation** (continued)

Gene	Symbol	Fold Change	Regulation	Gene	Symbol	Fold Change	Regulation
1214	RGD1563547	−18.734169	down	1193	Krt17	−72.286385	down
1241	Adcy10	−18.869074	down	1390	Cel	−73.11929	down
1027	Tmprss2	−19.007942	down	1287	Mia	−74.25459	down
1123	Abcg2	−19.026924	down	1223	Igfbp2	−75.58784	down
1255	Eef1a2	−19.143938	down	1219	Mybpc2	−79.04429	down
1222	Irx1	−19.15571	down	1256	Cldn3	−79.196144	down
1190	Aldoc	−19.302103	down	1549	Wwc1	−87.80276	down
1479	RGD1562844	−19.391542	down	1000	Scgb2a1	−87.93801	down
1413	Jsrp1	−19.750303	down	1183	Ampd1	−90.829	down
1373	Lsr	−19.843382	down	1598	LOC498480	−91.77938	down
1520	Capn6	−20.158985	down	1387	Odam	−93.154465	down
1414	Pkp2	−20.3854	down	1128	Cd24	−93.79024	down
1395	Smtnl2	−20.71554	down	1618	Fam134b	−96.34412	down
1006	Ckmt1	−20.761341	down	1253	RGD1310384	−96.59323	down
1239	Irf6	−21.068499	down	1378	Actn3	−100.70558	down
1480	Tpd52l1	−21.433496	down	1293	Tnnc2	−101.827965	down
1195	Hfe2	−21.494558	down	1350	Tnni2	−103.67456	down
1501	Cxcl17	−21.65201	down	1343	Blk	−107.851685	down
1333	Aldh1a7	−21.701746	down	1152	RGD1562344	−108.93426	down
1010	Cacng1	−21.766312	down	1133	Pdzk1ip1	−110.06921	down
1155	Rbfox1	−21.87635	down	1137	Muc1	−112.28291	down
1081	Tfap2b	−21.990034	down	1386	Elf5	−112.33566	down
1516	Tjp3	−22.683315	down	1088	Krt14	−112.4648	down
1053	Bspry	−22.719547	down	1512	Wfdc3	−124.76689	down
1277	Mro	−22.936726	down	1338	LOC287004	−127.46607	down
1039	Chdh	−23.177816	down	1332	Mylpf	−128.36096	down
1566	Krt19	−23.329348	down	1603	Igfbp2	−136.18182	down
1122	Galnt3	−23.368404	down	1596	Tpm2	−152.05177	down
1432	LOC690206	−23.441034	down	1560	Epcam	−155.69075	down
1595	Tcte1	−23.524082	down	1539	Atp2a1	−174.5321	down
1291	LOC683212	−24.10652	down	1636	RGD1311447	−193.53981	down
1606	Krt18	−24.21743	down	1251	Myh4	−195.71207	down
1531	Bnipl	−24.225107	down	1567	Csn1s2a	−198.18834	down
1092	Msln	−24.360004	down	1243	Lao1	−201.48221	down
1138	LOC303341	−24.367308	down	1335	Pvalb	−208.29593	down
1411	Ctxn3	−24.372051	down	1534	LOC100362601	−235.43947	down
1095	Cyp1a1	−24.635817	down	1045	Clca1	−238.96803	down
1530	Myoz1	−24.760437	down	1496	Csn1s1	−356.46564	down
1500	Sypl2	−24.849808	down	1202	Olah	−425.83478	down
1550	Col2a1	−25.205544	down	1400	Wap	−448.54257	down
1555	Tnnt3	−25.286367	down	1415	Csn3	−484.79028	down
1203	LOC689074	−25.366175	down	1011	Lalba	−488.28693	down
1605	Rnf208	−25.5074	down	1493	Ckm	−500.68326	down
1083	Pcp4	−25.840033	down	1068	Glycam1	−944.29565	down
1254	Fitm1	−25.868505	down	1186	Csn2	−1503.4497	down

Supplementary Table 3 **Liver Gene Regulation**

Gene	Symbol	Fold Change	Regulation	Gene	Symbol	Fold Change	Regulation
123	Sult2a2	323.3366	up	744	Six4	−13.271679	down
46	ste2	25.490696	up	556	LOC100363193	−13.283251	down
254	LOC690226	17.723019	up	659	Vom2r3	−13.38829	down
18	Kb23	16.70976	up	516	LOC682968	−13.404962	down
207	RGD1562844	16.668308	up	654	Slc38a1	−13.4594755	down
56	Foxi2	15.61301	up	569	Spin4	−13.5819025	down
84	Mrgprx2l	14.616475	up	725	Tmem45a	−13.603642	down
59	Plekhd1	12.836903	up	603	Dner	−13.606008	down
29	Apbb1ip	12.803153	up	697	RGD1565222	−13.636532	down
191	Scgb1c1	11.716195	up	842	LOC498152	−13.640205	down
195	Tor3a	11.516329	up	764	Mefv	−13.7584915	down
193	Hrasls	11.413313	up	642	RGD1564046	−13.844327	down
64	Grin1	10.904111	up	782	Usp53	−13.892984	down
31	Cntln	10.6436	up	840	Whsc1l1	−13.905007	down
40	Nlrp1b	10.553723	up	630	RGD1561117	−13.927481	down
65	LOC500726	10.43634	up	776	LOC498662	−14.021496	down
43	Abca4	10.352431	up	864	Stx16	−14.109043	down
648	LOC688991	−10.062035	down	581	RGD1305928	−14.192617	down
792	Sun5	−10.072493	down	806	Oas3	−14.208487	down
888	Olr1541	−10.083241	down	602	Smek3	−14.223776	down
682	LOC688390	−10.101518	down	907	Fsip2	−14.224279	down
869	LOC499643	−10.122467	down	587	LOC100233213	−14.38304	down
637	Ret	−10.176718	down	493	Olr1341	−14.386345	down
620	LOC246267	−10.194843	down	796	Zdhhc25	−14.428364	down
738	Klk13	−10.199839	down	499	Krtap31−1	−14.499331	down
494	LOC691153	−10.230684	down	355	Rnf186	−14.511456	down
568	Olr560	−10.267548	down	758	Sh2d4b	−14.518009	down
652	Cmtm4	−10.296372	down	528	Nrcam	−14.570494	down
825	LOC683626	−10.3134365	down	544	LOC100361840	−14.739587	down
605	Ntsr1	−10.316177	down	784	RGD1562618	−14.756927	down
530	RGD1311224	−10.353526	down	841	Stx19	−14.771219	down
724	RGD1559859	−10.362276	down	689	Atp13a3	−14.837065	down
538	RGD1563056	−10.42374	down	803	Lrrc71	−14.878457	down
755	Skint4	−10.480832	down	775	LOC680613	−14.985642	down
880	Foxb1	−10.512	down	726	Tmem8b	−15.015846	down
636	Eya1	−10.540267	down	508	Tdrd6	−15.059982	down
653	RGD1559496	−10.601486	down	600	Zfp280b	−15.0607195	down
853	Tex15	−10.680246	down	564	Xiap	−15.129291	down
896	RGD1565071	−10.681658	down	498	Fam194a	−15.200676	down
849	LOC100364602	−10.75403	down	609	Dclk2	−15.208736	down
723	Gpr171	−10.803922	down	713	Spinlw1	−15.243808	down
461	Zbed4	−10.810454	down	734	Nsun4	−15.270328	down
598	Nhlrc3	−10.823622	down	683	Slc2a10	−15.318498	down
468	RGD1562865	−10.829723	down	766	LOC689744	−15.657908	down

Supplementary Table 3 **Liver Gene Regulation** (continued)

Gene	Symbol	Fold Change	Regulation	Gene	Symbol	Fold Change	Regulation
495	RGD1305184	–10.915282	down	707	RGD1560700	–15.853192	down
497	Xlr4a	–10.9276705	down	714	LOC687994	–15.859618	down
687	RGD1307554	–10.959099	down	536	Tubal3	–15.884667	down
762	RGD1307315	–10.962195	down	903	Olr299	–15.996388	down
721	Olr179	–11.000636	down	737	Ssc5d	–16.368446	down
807	Tmem171	–11.013522	down	722	LOC689086	–16.415077	down
570	RGD1561226	–11.059861	down	909	Pcdhb9	–16.52234	down
373	Tmem79	–11.074986	down	900	RGD1563046	–16.540564	down
506	Gys1	–11.126654	down	660	Atxn1l	–16.707651	down
905	LOC688807	–11.158713	down	596	Olr94	–16.763037	down
656	Map2k4	–11.262185	down	704	Kcnv2	–16.784414	down
741	RGD1562989	–11.286239	down	745	Ube2ql1	–16.84435	down
482	Shisa7	–11.38868	down	675	Strc	–16.91856	down
893	Zfp9	–11.394775	down	906	LOC494527	–17.05322	down
712	Rnf208	–11.432677	down	359	Igfbp2	–17.149593	down
480	Vom2r72	–11.4443445	down	633	LOC312273	–17.312948	down
706	RGD1562638	–11.491386	down	777	Pira2	–17.337973	down
612	LOC679580	–11.493787	down	640	Esr2	–17.339388	down
914	RGD1560314	–11.5188875	down	701	Atp8b2	–17.440987	down
585	Fer1l4	–11.5508585	down	507	LOC100361931	–17.445545	down
705	Vom2r13	–11.604846	down	703	Sgpp2	–17.501549	down
485	Zfp498	–11.627586	down	727	Vom2r31	–17.764969	down
823	Lrrc24	–11.636009	down	735	Vom2r48	–17.806194	down
730	Olr1531	–11.669205	down	757	Grasp	–17.8989	down
874	Fam64a	–11.670801	down	681	LOC685463	–17.971296	down
503	Prss41	–11.684106	down	522	LOC685819	–18.279285	down
374	Casr	–11.702085	down	523	Olr192	–18.310196	down
492	Stx11	–11.70323	down	624	Wdr88	–18.488218	down
778	LOC691044	–11.726799	down	534	RGD1563108	–18.644169	down
639	LOC688570	–11.757221	down	555	Tssk6	–18.682062	down
795	Map3k10	–11.76654	down	765	Fam209a	–18.75785	down
590	Usp43_predicted	–11.774974	down	655	LOC687758	–18.79657	down
608	Ccdc36	–11.829035	down	736	RGD1563667	–18.837961	down
540	LOC301816	–11.972778	down	592	LOC690319	–19.033484	down
535	RGD1559908	–12.0480385	down	674	Krt78	–19.182764	down
641	LOC500990	–12.054436	down	515	Zfp7	–19.76162	down
505	Mllt4	–12.115096	down	562	Guca1a	–19.778662	down
799	LOC685990	–12.1621685	down	622	RGD1304952	–19.838942	down
878	Mettl20	–12.192806	down	661	Slc43a2	–19.887459	down
491	Gmeb2	–12.202285	down	615	Tecpr2	–20.053364	down
616	Vps37d	–12.280177	down	632	RGD1307288	–20.113682	down
688	Tbck	–12.368889	down	288	Serpina7	–20.114725	down
595	Lypd6b	–12.474484	down	786	LOC680885	–20.679674	down
871	Skint1	–12.551426	down	571	Sgol2	–21.687527	down

Supplementary Table 3 **Liver Gene Regulation** (continued)

Gene	Symbol	Fold Change	Regulation	Gene	Symbol	Fold Change	Regulation
601	Il13ra2	−12.620675	down	579	LOC498316	−22.069662	down
733	RGD1560108	−12.636817	down	604	Zc3h6	−23.376879	down
908	LOC100364346	−12.6372175	down	673	RGD1311575	−23.44711	down
594	S100a7a	−12.642159	down	546	Tomm20l	−23.547863	down
844	Prmt8	−12.693206	down	577	Olr1443	−23.860556	down
575	RGD1304884	−12.741123	down	561	Zbtb33	−24.314484	down
558	Gapdhs	−12.789327	down	537	Trpv1	−24.673717	down
913	Gnl3l	−12.811475	down	578	LOC294497	−24.99362	down
664	Sult1d1	−12.905514	down	563	Ccdc87	−25.909817	down
751	Ids	−12.929684	down	545	LOC691895	−27.878595	down
729	Zfp352l	−13.049366	down	597	Trpc3	−32.035748	down
517	RGD1306186	−13.131	down	691	Igfbp2	−34.851273	down
657	Ccl26	−13.243504	down				

Supplementary Table 4 **Hypothalamus Gene Regulation**

Gene	Symbol	Fold Change	Regulation
278	Epb41l4b	−15.090117	down
299	LOC685106	−16.877695	down
274	RGD1310212	−30.225676	down
261	Prl	−32.63395	down
276	LOC691952	−34.36841	down
242	Ttf2	−39.875256	down
289	RGD1563073	−55.060455	down

Supplementary Table 5.1 **White adipose tissue Go-cellular component**

GO Term	Count	p-Value	Input Symbol
GO:0016021 integral to membrane	336	1.760736 E-103	Efnb1;Abhd6;Emb;Abcb9;Slc19a1;Cadm1;Cadm1;Abcc5;Nrp1;Slc16a7;Slc16a7;Csf2rb;Mpz;Tmem86a; LOC689757;LOC689757;Gal3st4;Slc13a3;Gcgr;Gpr34;Cd3g;Prp2;Prp2;Vom2r29;Vom2r29;Vom2r29;Sgcb; Igsf6;P2rx5;Serinc4;P2ry2;Abhd1;P2rx3;Tmem38b;Faah;Tm4sf20;Cdh2;Tspan18;Aqp11;Vangl1;Vangl1; Slc30a1;Lfng;Slc10a1;Atp1b1;Sgcd;Sgcd;Sgcd;Cd3d;Slc7a10;Slc7a10;Adra1d;Adra1d;Abcb1b;Abcb1b;Abcb1b; Fcgr3a;Fcgr3a;Trpv1;Trpv1;Trpv1;Hsd17b2;Clecsf6;Slc44a2;Clec4a3;Asah2;Adora1;Fam26f;Gcap14;Fut7;Gca; Ghr;Tmx2;Pex3;Ramp3;Oxtr;C3ar1;LOC688972;Vkorc1l1;Cpt1b;Aplp1;Aplp1;Aplp1;Aplp1;Aplp1;Rhd; Ms4a4c;Ms4a4c;RGD1563319;Paqr3;Sele;Prf1;Ntrk2;Tshr;Tshr;Itgam;Fads3;Olr1;Olr1;Olr308;Spp1;Slc4a1; Tmem80;Enpp1;Flvcr2;Rom1;Maob;Aldh3a2;Fpr1;Rtn4;Lphn3;Lrp3;Slc25a10;Spn;Pkd1;Mme;Slc38a6;Ffar2; Ucp3;Gprc5b;Prrt1;Emp1;LOC690930;LOC690930;Gpr18;Slc12a8;RGD1304952;Ninj2;Ninj2;Fam151a; Kcnk13;Kcnk13;Tmeff1;Trpv2;Gpr98;Gpr98;Rhbdd3;Insig1;Adipor2;Dcst1;Car1;RGD1562011;Il1r2;Slc31a2; Rhbdl3;Kcnn3;Grina;Maoa;Cd2;Cd2;Tusc5;Ptger3;Ptger3;Rhbg;Sfxn5;Ntsr2;Ntsr2;Slc2a2;Slc2a2;Mgll;Mgll; Fzd4;Ms4a7;Ms4a7;Kcnab1;Hcst;Itga7;Mrgprf;Slc11a1;Cd79b;Sgpl1;Slc2a13;Abcc4;Mmp23;St3gal5;Fdft1; Nkg7;Npr3;Slc24a3;Slc24a3;Tmem178;Mmp24;Abcb8;Slc27a1;Tnfrsf1b;Pemt;LOC688090;RT1-Bb;RT1-Bb; RT1-Bb;RT1-Bb;RT1-Bb;Lrfn1;Kcne3;Abcb4;Tnfsf15;Kcnj12;Kcnj12;Klrk1;Slc25a16;Spast;Ppap2a;Sucnr1; Adra2c;Clec2dl1;Cd300a;Pde3b;Nrcam;Clmp;Ramp1;Ramp1;Ramp1;Ramp1;Ramp1;Ramp1;Chpt1;Il1rl1; Fcer1a;LOC681086;Pxmp2;Pxmp2;Trpc2;Trpc2;Trpc2;Rhbdf1;Aqp5;Dnajc22;Tect2;B3galnt1;Cacng1;Itgb6; Tlr3;Fam134b;Lrrc8e;Tmprss2;Kcnk1;Cyb561;Slc29a1;Scnn1g;Nradd;Cnnm2;Gprc5c;Gprc5c;Gprc5c;Gprc5c; Gprc5c;Kcnk6;Sigirr;Tacr1;Gpr64;Chst1;Erbb2;Itga8;Cav3;Gjb2;Gabra2;Tfrc;Tspan1;Duoxa1;Steap2;Slc2a1; Galnt3;Abcg2;Prss8;Pdzk1ip1;Scd;Ptgis;Cox8b;Slc5a3;Plscr1;Slc22a23;Lgr4;Nup210;Prom2;Prom2;Prom2; Sectm1a;Sectm1b;Cdh1;Cldn3;Sdc4;Tmem184a;Qsox1;Upk1b;Cldn4;Ephb3;Ephb3;Tlr2;Slc30a4;Ppap2c; Gyltl1b;Atp2c2;Tmem79;LOC304000;Madcam1;Fxyd3;Cd200;Slc34a2;Slc39a8;Cacna1s;Cacna1s;Aqp9;Lsr; Mpzl1;LOC363060;Ermp1;Atp13a4;Scnn1b;Pvrl2;Kcnn4;Kcnn4;Kcnn4;Vipr1;Fam18b2;Slc44a3;Steap1; Slc44a4;RGD1304580;RGD1304580;Kcnk5;LOC652955;Tmem165;Fads1;Ifitm7;Ifitm7;Atp2a1;Duox1;Duox1; Tmc4;St6galnac2;Clcn3;Cldn7;RT1-Cl;Cacna2d1;Cx3cl1;RT1-CE5;RT1-CE5

Supplementary Table 5.1 **White adipose tissue Go-cellular component** (continued)

GO Term	Count	p-Value	Input Symbol
GO:0005576 extracellular region	162	1.841796 E-85	Tfpi;Tfpi;Tfpi;Bcan;Lep;Fgf9;C1qtnf7;Myoc;LOC298613;Kazald1;Tpsab1;Gdf15;Serpina6;Apoh;Gdf10;Serpine1;Wisp2;Apof;Esm1;Serpina11;Serpina11;Bmp3;Bmp3;Tpsb2;Ccl2;Gpx3;C1qtnf6;Gal;Tgfb1;Resp18;Ghr;Fcrla;Mcpt4;Sfrp4;Sfrp4;Adamts1;Adamts1;Lox;Il7;Il7;Fgl1;C1qtnf1;Bgn;Serpina12;Olr1;Ccl3;Adamts5;Spp1;Mug2;Tac2;Fstl3;Timp1;Pzp;Pzp;Epdr1;Mme;Calu;Adm;Mmp7;Thbs2;Thbs2;Ccl7;Apoa4;Il1rn;Spp2;Spp2;Cxcl13;Ostn;Cpa2;Wfdc1;Ccl9;Ccl5;Ccl5;F12;Apoa5;Serpina3n;Gzmm;Apol9a;Stc2;Ccl11;Tsku;Wnt5a;Fcnb;Cxcl10;Itgbl1;Apcs;Gdf11;Mmp24;Cxcl11;Retnlg;Pomc;Pomc;Bmp2;LOC680367;Apom;Pdgfrl;Apoc4;F10;RGD1309676;C1qtnf5;Rup2;Masp2;Ccl4;Cpz;Il1rl1;Fcer1a;Scgb2a1;Cxcl1;Lalba;Cfi;Pthlh;Frzb;Gpld1;Msln;Tfrc;Bmp7;Chi3l1;Hapln2;Prss8;Lbp;Ccl28;St14;Mcpt8;Wfdc2;Sftpd;Tnfsf13;Csn2;Egfl8;Ltbp2;Igfbp2;Igfbp2;Reln;Qsox1;Angpt1;Mia;Pnoc;Lgals7;Gp2;Pla2g12a;Ccl19;Tgfb3;Lcn2;Odam;Wap;Wap;Csn3;Il17b;Mdk;Csn1s1;Csn1s1;Csn1s1;Rnase1;Rnase1;Nov;Gpc3;Wfdc3;Thbs1;Col2a1;Otos;Csn1s2a;Csn1s2a;Cx3cl1;Gpc2
GO:0016020 membrane	358	3.674690 E-73	Efnb1;Efnb1;Abhd6;Emb;Abcb9;Cyp2e1;Slc19a1;Slc19a1;Slc19a1;Slc19a1;Bcan;Cadm1;Cadm1;Cd5l;Cd5l;Loxl2;Loxl2;Loxl2;Loxl2;Abcc5;Nrp1;Csf2rb;Csf2rb;Mpz;Mpz;LOC292449;Gatm;LOC689757;Slc13a3;Slc13a3;Myoc;Cd3g;Prp2;Igsf6;Cyp2b2;P2rx5;P2rx5;Serinc4;Abhd1;P2rx3;P2rx3;Tmem38b;Faah;Pcyt1a;Sema3c;Cyp4b1;Aqp11;Stmn2;Lfng;Slc10a1;Cd3d;Slc7a10;Slc7a10;Fap;Fap;Gpnmb;Hsd17b6;Abcb1b;Pex19;Trpv1;Trpv1;Hsd17b2;Clecsf6;Cyp1b1;Ap3m2;Slc44a2;Clec4a3;Rnd2;Fam26f;Fut7;Fut7;Gca;Ghr;Tmx2;Pex3;Man1c1;Ramp3;Plxna2;Cd6;Cd6;Cd6;Cd6;Cd6;Vkorc1l1;Srcrb4d;Srcrb4d;Palmd;Cpt1b;Rhd;Cachd1;Sele;Sele;Baalc;Prf1;Ntrk2;Itgam;Fads3;Spp1;Spp1;Enpp1;Rom1;Cubn;Maob;Aldh3a2;Rtn4;Lphn3;Lphn3;Lphn3;Lphn3;Lphn3;Asap1;Lrp3;Slc25a10;Spn;Slc38a6;Cyp2d4;Cyp2d4;Picalm;Ucp3;Prrt1;Scd4;Sh3kbp1;Spa17;Slc12a8;Slc12a8;Pkd2;RGD1304952;Ninj2;RT1-N1;Fam151a;Stom;Stom;Stom;Grb14;Kcnk13;Uso1;Uso1;Slc7a15;Slc7a15;Atp5s;Gpr98;Gpr98;Cd40;Cd40;Cd40;Arhgap15;Arhgap15;Ebi3;Prkcb;Rhbdd3;Nupl1;Insig1;Kctd9;Rhoh;LOC691125;LOC691125;LOC691125;Slc1a7;Slc1a7;Slc1a7;Slc1a7;Slc1a7;Mycbpap;Il1r2;Kcnn3;Grina;Maoa;Cd2;Apol9a;Agpat2;Tusc5;Sfxn5;Sema3b;Mgll;Mgll;Mgll;Fzd4;Hcst;Itga7;Icam5;Slc11a1;Cd79b;Sgpl1;Slc2a13;Abcc4;Mmp23;Ms4a2;St3gal5;Fdft1;Nkg7;Nkg7;Npr3;Npr3;Slc24a3;B3gnt9;B3gnt9;Tmem178;Abcb8;Tnfrsf1b;Tnfrsf1b;Pemt;Syt17;LOC688090;Lst1;RT1-Bb;RT1-Bb;RT1-Bb;RT1-Bb;RT1-Bb;RT1-Bb;Lrfn1;Kcne3;Abcb4;Rnd1;Kcnj12;Kcnj12;Klrk1;Slc25a16;Slc25a16;Hpd;Spast;Rsad2;Cyp4f5;Pde3b;Cyp2d5;Cyp2d5;Cnksr3;Ramp1;LOC681458;Chpt1;Chpt1;Chpt1;LOC497899;Itsn1;Pxmp2;Retsat;Trpc2;Trpc2;Trpc2;Rhbdf1;Rph3al;Aqp5;Aqp5;Dnajc22;Tect2;Ckmt1;B3galnt1;Cacng1;Sema4g;Itgb6;Tlr3;Fam134b;Cfi;Lrrc8e;Tmprss2;Kcnk1;Kctd14;Slc29a1;Bspry;Kcnk6;Sigirr;Gpr64;Gpr64;Chst1;Erbb2;Erbb2;Itga8;Tspan1;Plekhb1;Tgm1;Ica1;Galnt3;Fzd6;Jak3;Pdzk1ip1;Scd;Dab2;St14;Ptgis;Cox8b;Slc5a3;Plscr1;Slc22a23;Tnfsf13;Tnfsf13;Gk;Nup210;Cox6a2;Plod2;Spry2;Tmem184a;Qsox1;Upk1b;Ephb3;Ephb3;Ephb3;Ogfrl1;Slc30a4;Slc30a4;Slc5a9;Mfge8;Abcd4;Ppap2c;Gyltl1b;Atp2c2;Tmem79;Madcam1;Madcam1;Tmprss4;Fxyd3;Slc34a2;Slc39a8;Slc39a8;Cacna1s;Cacna1s;Aqp9;Ngef;Slc9a3r1;Mpzl1;RGD1560492;LOC363060;Ermp1;Atp13a4;Atp13a4;Cacnb3;Pvrl2;Kcnn4;Ckmt2;Slc44a3;Slc44a4;Tmem63a;RGD1304580;Kcnk5;LOC652955;Sypl2;Tmem165;Fads1;Atp2a1;Tmc4;St6galnac2;Slc25a23;Slc39a14;Slc39a14;Slc39a14;Clcn3;RT1-Cl;Cacna2d1;Cacna2d1;Cacna2d1;Cacna2d1;Cacna2d1;RT1-CE5;RT1-CE5;RT1-CE5;RT1-CE5;RT1-CE5;RT1-CE5;Ggt1;LOC685106
GO:0005634 nucleus	214	4.824168 E-60	Id4;Bcan;Hmox1;Srp54a;S100b;Dnase1l3;Eid3;Ccng1;RGD1563917;Myo1c;Apoh;Apoh;Hist1h2bh;Trib3;Ldb2;Ldb2;S100a4;Hist3h2a;Stau2;Bag4;Kpna1;Kpna1;Tgfb1;Ccnjl;Spib;Irf1;Dmrtc2;Usf2;Nfkb2;Shox2;Shox2;Lox;Cdkl2;Hist3h2ba;Tcf3;Tcf3;Tcf3;Fgf1;Hmgn3;Itgam;Sesn1;Sesn1;Cebpa;Adamts5;Dlx3;Tm6sf2;Apobec1;Neurog2;Aldh3a2;Dmtf1;Plcd1;Hist1h4b;Pkd1;Rhob;Cbs;Atf5;Bmp2k;Nr1d1;Nr1d1;Nr1d1;Apbb1;Hpgd;Pcbd1;Meis3;Cpa3;Matk;Tbx15;Hist1h1d;Obfc2a;Nupl1;Parp3;Nostrin;Hist1h3f;Taf11;Prpf38b;Mx1;En1;En1;Prrx1;Prrx1;Twist1;Gtf2h3;Snx20;Tmco6;Mis12;Tbx18;Dbp;Dbp;Dbp;Dbp;Tnfrsf1b;Ang1;LOC685179;LOC685179;LOC685179;LOC685179;LOC685179;Gsc;Aspa;Crem;Crem;Crem;Crem;Crem;Crem;Crem;Phf7;Spast;MGC105649;Hist1h2ail;Syap1;Mbnl1;Clmp;Zfp423;Sptbn1;Trpc2;Trpc2;Zfp384;Mpg;Ca2;Myc;Pthlh;Nradd;Nradd;Sec14l2;Ctbp2;Stat5a;Pcp4;Tgif1;Krt14;Zfp278;Ccnb1;Ccnb1;Runx1;Runx1;Runx1;Nr4a1;Lbp;Lbp;Trps1;Trps1;Trps1;Ccna2;Ccna2;Top2a;Top2a;Top2a;Csn2;Sox4;Gk;Dusp26;Nup210;Plk1;Krt8;Pgam2;Pttg1;Bex1;Ngfrap1;Pawr;Elf3;Irf6;Cdca7l;Irx5;Irx5;Irx5;Eef1a2;Eef1a2;Ccno;Xab2;Ilf3;Foxq1;Myom2;Gnmt;RGD1311188;Fkbp4;Lgals7;Irx2;Irx2;Tnni2;Ar;Sh2d4a;Tgfb3;Sox10;Fos;Rab3ip;Elf5;Speg;Gata3;Ndrg1;Rfc1;Rap1gap;Plekhf1;LOC298795;Crabp2;RGD1304580;Arid4b;Arid4b;Arid4b;Tfap2c;Tfap2c;Hoxc5;Pim1;Fads1;Parp11;Parp11;Parp11;Tp63;Tnks2;Mlf1ip;Mapkapk3;Cebpd;RGD620382;Smad7;Krt18;Polb;Foxi1
GO:0005886 plasma membrane	139	6.477641 E-50	Rasd1;Hmox1;Slc16a7;Lrrk2;LOC689757;Gcgr;Gpr34;Phlda3;Itgb2;Dok3;P2rx5;Cdc42se2;P2ry2;Cdh2;Myo1c;Aqp11;Slc30a1;Atp1b1;Wisp2;Adra1d;Fcgr3a;Trpv1;Asah2;Adora1;Homer2;Ghr;Oxtr;C3ar1;Thy1;Cntn1;Mbp;Blnk;Ntrk2;Ntrk2;Tshr;Olr1;Adamts5;Slc4a1;Flvcr2;Lphn3;Kcnip1;Cpeb1;Pkd1;Rhob;Mme;Ffar2;Gprc5b;Tnk2;Emp1;Rock2;Gpr18;Veph1;Rasgrp2;Bst1;Tmeff1;Trpv2;Cdc42ep1;Nostrin;Car1;Mras;Rab31;Ptger3;Lck;Rhbg;Ntsr2;Pcyox1;Slc2a2;Slc2a2;Snx20;Nisch;Mrgprf;Mmp24;Slc27a1;Tnfsf15;Dlg2;Eno2;Slc3a1;Ppap2a;Sucnr1;Adra2c;Cdc42ep2;Clec2dl1;Cd300a;Nrcam;Clmp;Cd52;Il1rl1;Fcer1a;Ptprcap;Sptbn1;Scnn1g;Cnnm2;Gprc5c;Tacr1;Gpr64;Glycam1;Msn;Gjb2;Gabra2;Msln;Tfrc;Cd7;Shroom2;Slc2a1;Efna1;Abcg2;Prss8;Cd24;Ezr;Vtcn1;Hfe2;Lgr4;Prom2;Alpl;Cdc42se1;Cdh1;Adcy10;Serinc2;Cldn3;Lypd3;Sdc4;Cldn4;Tlr2;Spint2;LOC304000;Gp2;Cd200;Lsr;Scnn1b;Vipr1;Orai1;Cd14;Gpc3;Gpc3;Duox1;Clcn3;Cldn7;Nelf;Cx3cl1;Gpc2

Supplementary Table 5.1 **White adipose tissue Go-cellular component** (continued)

GO Term	Count	p-Value	Input Symbol
GO:0005737 cytoplasm	237	1.617594 E-47	Tarbp2;Map6;Asrgl1;Rasd1;Bcan;Lrrk2;Fgf9;Gatm;Mvk;Srp54a;Srp54a;Phlda3;Capn8;S100b;Itgb2;Farp2; Cdc37l1;Dok3;Eid3;Nqo1;Cdc42se2;Pcyt1a;Myo9b;Myo1c;Stmn2;Card9;Apoh;Apoh;Optn;Clip2;Wisp2;Myo5a; Pex19;Prdm1;Tekt3;S100a4;Mvp;Stau2;Bag4;Ccl2;Kpna1;Kpna1;Gys2;Tgfb1;Akr1b1;Homer2;Fcrla;Palmd; Nfkb2;Cdkl2;Blnk;Baalc;Fgf1;Ubac1;Itgam;Hal;Adamts5;Acox1;Scrn1;Fars2;Sult2a1;Sult2a1;Lrrc48;Asap1; Cpeb1;Cbs;Atf5;Cyp2d4;Cyp2d4;Dpysl4;Gstt1;Adm;Hpgd;Pcbd1;Rock2;Sh3kbp1;Rasgrp2;Alox15;Grb14; Cpa3;Matk;Uso1;Uso1;Uso1;Trpv2;Naaa;Cdc42ep1;Arhgap15;Arhgap15;Prkcb;Rhoh;Nostrin;Car1;Ccl5;Ccl5; Mycbpap;Uchl1;Lck;Sla;Ptgr1;Blvra;Shc1;Kcnab1;Snx20;Nisch;Tmco6;Exoc5;Wars;Wars;Dbp;Slc27a1; Tnfrsf1b;Pomc;Pomc;Qprt;Arhgef9;Aspa;Bmp2;Eno2;Gnat3;Gipc2;Hpd;Spast;Bin2;Bcat1;Cdc42ep2;Syap1; Mbnl1;Clmp;Cnksr3;RGD1311267;Il1rl1;Nqo2;Sptbn1;Ddah1;Rph3al;Aacs;Ca2;Pthlh;Arid2;Actg2;Bspry; Sec14l2;Tacr1;Msn;Msn;Myh1;Stat5a;Cav3;Krt14;Shroom2;Mb;Ccnb1;Slc2a1;Ica1;Acta1;Jak3;Cdca3;Crabp1; Ezr;Ezr;Pafah1b3;Ccna2;Tpm2;Csn2;Gk;Klc3;Dusp26;Krt17;Krt8;Phactr1;Pttg1;Bex1;Tpm1;Ngfrap1;Cdc42se1; Cdh1;Pawr;Elf3;Reln;Adcy10;Cdca7l;Myh4;Eef1a2;Eef1a2;Bcl2l14;Casp6;Casp6;Eno3;Mfge8;Naprt1;Gne; Spint2;Myom2;Gnmt;Des;Acta2;Hook1;Hook2;Hook2;Hook2;Aldh1a7;Fkbp4;Pvalb;Lgals7;Ar;Ngef;Sh2d4a; Stmn1;Tgfb3;Sox10;Tns4;Rab3ip;Cel;Isyna1;Ndrg1;Rap1gap;Plekhf1;Myh8;LOC298795;Crabp2;Aldh1a1;Ckm; Mylk2;Gpc3;Pfkm;Pfkl;Pim1;Ddit4l;Gpx2;Mlf1ip;Mapkapk3;Arfgap1;Car8;Smad7;Krt18;Polb
GO:0005615 extracellular space	59	1.357071 E-42	Lep;Fgf9;Myoc;Gdf15;Serpina6;Tspan18;Apoh;Apoh;Gdf10;Lcat;Lcat;Bmp3;Ccl2;Gpx3;Akr1b1;Il7;Il7;Fgf1; C1qtnf1;Ccl3;Spp1;Mug2;Enpp1;Pzp;Pzp;Adm;Ccl7;Ostn;Wfdc1;Ccl9;Ccl5;Ccl5;F12;Ccl11;Cxcl10;Gdf11; Ang1;Tnfsf15;Bmp2;Ccl4;Cxcl1;Cp;Ca2;Bmp7;Prdx4;Prss8;Ccl28;Ptgis;Hfe2;Hfe2;Igfbp2;Reln;Qsox1;Mfge8; Tgfb3;Mdk;Csn1s1;LOC171161;Cx3cl1
GO:0005783 endoplasmic reticulum	52	8.796911 E-22	Abcb9;Cyp2e1;Calr4;Hmox1;Cyp2b2;Tmem38b;Faah;Cyp4b1;Fkbp14;Hsd17b6;Cyp1b1;Stau2;Resp18;Arsg; Thy1;Hsd11b2;Fads3;Spp1;Aldh3a2;Rtn4;Rtn4;Rdh7;Rdh7;Cyp2d4;Cyp2d4;Scd4;Insig1;Sgpl1;Calr3;Fdft1; Pemt;Hpd;Spast;Rsad2;Cyp4f5;Cyp2d5;Cyp2d5;LOC681458;Retsat;Rhbdf1;Myot;Cd7;Scd;Ptgis;Rtn2;Nup210; Plod2;Rab3ip;Rab3ip;Ermp1;Pfkm;Fads1;Gpc2
GO:0016459 myosin	25	1.798340 E-20	Myo9b;Myo9b;Myo9b;Myo9b;Myo1c;Myo1c;Myo1c;Myo5a;Myo1g;Myo1g;Myo1g;Myh1;Myh1;Myh1;Myh1; Myh1;Myh1;Myh1;Myh4;Mylpf;Myh8;Myh8;Myh8;Myl1;Myl1
GO:0005794 Golgi apparatus	40	1.097575 E-16	Map6;Gal3st4;Capn8;Gdf15;Faah;Stmn2;Lfng;Optn;Optn;Ap3m2;Fut7;Resp18;Itgam;Pkd1;Picalm;Grb14;Uso1; Lck;St3gal5;Hpd;Syap1;Nfkbie;Chpt1;Rhbdf1;B3galnt1;Zdhhc3;Chst1;Cav3;Msln;Ica1;Galnt3;Dusp26;Cdh1; Sdc4;Qsox1;Gyltl1b;Gpc3;St6galnac2;Clcn3;Arfgap1
GO:0005789 endoplasmic reticulum membrane	33	1.505563 E-15	Abcb9;Cyp2e1;Cyp2b2;Tmem38b;Faah;Pcyt1a;Cyp4b1;Hsd17b6;Cyp1b1;Fads3;Spp1;Rtn4;Cyp2d4;Cyp2d4; Insig1;Sgpl1;Fdft1;Pemt;Hpd;Rsad2;Cyp4f5;Cyp2d5;Cyp2d5;LOC681086;Retsat;Rhbdf1;Duoxa1;Scd;Ptgis; Nup210;Serinc2;Ermp1;Fads1
GO:0031225 anchored to membrane	15	5.362237 E-14	Bcan;Cntn1;Bst1;Cd52;Msln;Efna1;Vtcn1;Hfe2;Alpl;Lypd3;Gp2;Cd14;Gpc3;Gpc3;Gpc2
GO:0034364 high-density lipoprotein particle	9	3.895806 E-13	Apoh;Apoh;Lcat;Lcat;Apof;Apoa4;Apoa5;Apom;Gpld1
GO:0005829 cytosol	30	7.061153 E-13	Pfkfb1;Hmox1;Aqp11;Gys2;Thy1;Nfkb2;Ntrk2;Aldh3a2;Srxn1;Plcd1;Rasgrp2;Alox15;Nisch;Exoc5;LOC64038; Aacs;Fabp3;Pcp4;Cd7;Ica1;Ica1;Pgam2;Ngfrap1;Adcy10;Naprt1;Gne;Gnmt;Aldh1a7;Rab3ip;Pfkm;Pfkl
GO:0005625 soluble fraction	18	8.249432 E-12	Rasd1;Mvk;Serpine1;Gpx3;Gys2;Hal;Ccl3;Fars2;Rhob;Hexb;Irak1;Eno2;Ccl4;Cav3;Gk;Pgam2;Mapk11; Aldh1a1
GO:0005739 mitochondrion	41	1.393511 E-11	Bcan;Star;Uqcrb;Gatm;Hspa1l;Asah2;Cpt1b;Cpt1b;Pmpca;Acox1;Fars2;Maob;Slc25a10;Ucp3;Atp5s;Car5b; Akap10;Maoa;Sfxn5;Alas2;Acsm5;Abcb8;Pemt;Pcca;Mecr;Fam136a;Mrpl40;Ckmt1;Ckmt1;Gprc5c;Fabp3;Tfrc; Aldoc;Cox8b;Gk;Adcy10;Cox6a2;Myom2;Ckmt2;Aldh5a1;LOC652955
GO:0005578 extracellular matrix (sensu-Metazoa)	23	3.490311 E-11	Bcan;Tgfb1;Fgf1;Mmp19;Bgn;Adamts5;Mme;Mme;Mmp7;Wnt5a;Mmp23;Mmp24;Cpz;Adamts2;Gpld1; Hapln2;Sftpd;Reln;Lamb3;Lamb3;Gpc3;Gpc3;Gpc2
GO:0016324 apical plasma membrane	13	1.948182 E-10	P2ry2;Gnat3;Scnn1g;Msn;Shroom2;Muc1;Ezr;Prom2;Shroom3;Slc34a2;Slc9a3r1;Scnn1b;Duox1
GO:0005792 microsome	18	1.987272 E-10	Cyp2e1;Hmox1;Cyp2b2;Cyp4b1;Hsd17b6;Cyp1b1;Hsd11b2;Aldh3a2;Rdh7;Rdh7;Cyp2d4;Cyp2d4;Cyp4f5; Cyp2d5;Cyp2d5;Cyp1a1;Aqp9;Fads1

Supplementary Table 5.1 **White adipose tissue Go-cellular component** (continued)

GO Term	Count	p-Value	Input Symbol
GO:0045121 lipid raft	12	4.973382 E-10	Efnb1;Efnb1;Lrrk2;Itgb2;Thy1;Plcd1;Lck;Ms4a2;Myh1;Cd7;Cd24;Sdc4;Cd14
GO:0008305 integrin complex	11	5.443268 E-10	Itgb2;Itgb2;Itgam;Itga7;Itga7;Itga7;Itga7;Itga7;Itga7;Itgbl1;Itgb6

Supplementary Table 5.2 **White adipose tissue Go-molecular function**

GO Term	Count	p-Value	Input Symbol
GO:0005515 protein binding	282	1.348958 E-65	Efnb1;Efnb1;Id4;Rasd1;Bcl2a1d;Lep;Lrrk2;Lrrk2;Srp54a;Phlda3;Myoc;Cd3g;Itgb2;Cdc37l1;Cdc42se2;Plk3; Cdh2;Snx7;Stmn2;Ahnak;Ahnak;Atp1b1;Lcat;Lcat;Hist1h2bh;Serpine1;Clip2;Wisp2;Cd3d;Myo5a;Lrrc51; Slc7a10;Slc7a10;Trpv1;Cyp1b1;Zbtb7b;Mvp;Bag4;Ccl2;Ap3m2;Slitrk6;Kpna1;Kpna1;Pex3;Cntn1;Sfrp4;Sfrp4; Adamts1;Adamts1;Nfkb2;Mbp;Zbtb22;Lox;Blnk;Sele;Lrrc39;Fgf1;Ntrk2;Ubac1;Itgam;Psph;Bgn;Olr1;Ccl3; Spp1;Mug2;Slc4a1;Apobec1;Rom1;Cubn;Fstl3;Fstl3;Klhl30;Timp1;Kcnip1;Lrrc48;Lrrc48;Utrn;Utrn;Utrn;Pzp; Pzp;Plcd1;Cpeb1;Pkd1;Rhob;Rock2;Sh3kbp1;Rab3b;Ninj2;Sgk3;Stom;Grb14;Matk;Cdc42ep1;Arhgap15;Arh-gap15;Prkcb;Nupl1;Kctd9;Parp3;Rhoh;Nostrin;Dcst1;Car1;Akap10;Cpa2;Slc1a7;Mycbpap;Nipa1;Mx1;Mx1; Maoa;Cd2;Gzmm;Ptger3;Sla;Sla;Twist1;Tsku;Wnt5a;Shc1;Shc1;Alas2;Snx20;Nisch;Nisch;Itga7;Klhl5;Cd79b; Fdft1;Fdft1;Mis12;Bcar3;Gdf11;Mynn;Phf11l;Irak1;Irak1;Tnfrsf1b;Lrfn1;Lrfn1;Abcb4;Gsc;Iqgap3;Iqgap3;Vasn; Dlg2;Dlg2;Dlg2;Dlg2;Gipc2;Crem;Phf7;Phf7;Adra2c;Pcgf3;Bin2;Hist1h2ail;Cdc42ep2;Btbd3;Ccl4;Nrcam; Nfkbie;Dusp3;Dusp3;Cnksr3;Il1rl1;Klhdc5;Sptbn1;Pxmp2;Rph3al;Rph3al;Tect2;Elmo3;Tnfrsf21;Itgb6;Tlr3; Tlr3;Mfhas1;Gfra3;Lrrc8e;Kcnk1;Kctd14;Ca2;Myc;Slc29a1;Scnn1g;Frzb;Actg2;Actg2;Aurka;Aurka;Nradd; Nradd;Gprc5c;Sigirr;Glycam1;Itga8;Stat5a;Tgif1;Krt14;Gjb2;Zfp278;Zfp278;Zfp278;Msln;Plekhb1;Bmp7; Slc2a1;Acta1;Cd24;Runx1;Nr4a1;Jak3;Pafah1b3;RGD1561490;Ccna2;Gzma;Traf4;Ampd1;Brpf1;Klc3;Lgr4; Plk1;Krt8;Cdc20;Elf3;Reln;Serinc2;Eef1a2;Rtkn;Spry2;Casp6;Casp6;Xab2;Ilf3;Mfge8;Des;Acta2;Madcam1; Cd200;Blk;Blk;Prph;Tnni2;Plscr2;Krt15;Sh2d4a;Slc9a3r1;Tns4;Actn3;Rab3ip;Trim2;Gata3;Scnn1b;Cacnb3; Snx13;Snx13;Sytl1;LOC652955;Tjp3;Pim1;Atp2a1;Nepn;Nepn;Wwc1;Wwc1;Bzw2;Krt19;Mybpc1;Pygm;Car8; Rnf208;Cx3cl1;Polb;Lrfn3;Zbtb17;Stap2;Trim46;Trim46;Trim46
GO:0005524 ATP binding	164	1.639460 E-57	Pfkfb1;Abcb9;Abcc5;Hk3;Lrrk2;LOC292449;Mvk;Hspa1l;P2rx5;P2rx5;P2rx5;P2ry2;P2rx3;P2rx3;Myo9b; Myo9b;Myo9b;Myo9b;Plk3;Myo1c;Myo1c;Myo1c;Dclk3;Oasl2;Myo5a;Myo5a;Abcb1b;Abcb1b;Abcb1b;Trib3; Trib3;Trib3;Trpv1;Prdm1;Ak7;Gca;Pip4k2a;Cdkl2;Cdkl2;Cdkl2;Camk2b;Camk2b;Camk2b;Camk2b;Camk2b; Myo1g;Myo1g;Myo1g;Ntrk2;Ntrk2;Fars2;Slfn5;Bmp2k;Tnk2;Tnk2;Tnk2;Tnk2;Rock2;Sgk3;Matk;Camk2g; Prkcb;LOC691125;LOC691125;LOC691125;RGD1566047;RGD1566047;Oxsr1;Lck;RGD1312026;Abcc4; Acsm5;LOC687861;Wars;Wars;Abcb8;Abcb8;Papss2;Papss2;Irak1;Irak1;Abcb4;Uck1;Pcca;Pcca;Dclk1;Dclk1; Mknk1;LOC500392;Spast;Uba6;Ckmt1;Arid2;Actg2;Actg2;Aurka;Aurka;Myh1;Myh1;Myh1;Myh1;Myh1; Myh1;Erbb2;Erbb2;Rab25;Acta1;Abcg2;Runx1;Runx1;Runx1;Jak3;Jak3;Hspa1b;Uck2;Uck2;Top2a;Top2a; Top2a;Pkmyt1;Gk;Plk1;Kif20a;Adcy10;Myh4;Ephb3;Ephb3;Ephb3;Gne;Gne;Atp2c2;Acta2;Fkbp4;Blk;Ttn; Speg;Atp13a4;Atp13a4;Papss1;Rfc1;Rfc1;Rfc1;Ckmt2;Myh8;Myh8;Myh8;Gldc;Gldc;Mapk11;Mapk11;Ttk; Ckm;Mylk2;Osr1;Clk4;Clk4;Pfkm;Pfkl;Pim1;Abcf2;Atp2a1;Mapkapk3;Ube2c;Ube2c;Stk33
GO:0005509 calcium ion binding	101	9.301344 E-48	Calr4;Capn8;S100b;Dnase1l3;Cdh2;Fkbp14;Trpv1;S100a4;Gca;Cgref1;Man1c1;Arsg;Prf1;Mmp19;Cubn; Kcnip1;Kcnip1;Kcnip1;Utrn;Utrn;Utrn;Plcd1;Epdr1;Mme;Calu;Calu;Calu;Mmp7;Thbs2;Thbs2;Rasgrp2; Rasgrp2;Pkd2;Cabp2;Cabp2;Trpv2;Prkcb;Tll1;Rhbdl3;S100a5;Mgll;Itga7;Calr3;Apcs;Slc24a3;Mmp24;Sned1; Sned1;Sned1;F10;Masp2;Masp2;Itsn1;Itsn1;Itsn1;Trpc2;Anxa8;Cacng1;Lalba;Pthlh;Ppp2r3a;Ppp2r3a;Bspry; Stat5a;Pcp4;Tgm1;Galnt3;Casq1;Plscr1;Ocm;Sftpd;Egfl8;Egfl8;Bex1;Ltbp2;Ltbp2;Cdh1;Reln;Efcab4a;Tnnc2; Atp2c2;Tnnc1;Mylpf;Pvalb;Cacna1s;Pla2g12a;Actn3;Cacnb3;Orai1;Myl1;Myl1;Myl1;Thbs1;Atp2a1;Duox1; Duox1;LOC685385;LOC685385;Slc25a23;Cacna2d1;Hrc
GO:0008270 zinc ion binding	140	2.434799 E-32	Zfp84;Deadc1;Sord;S100b;Zadh2;Cpxm2;P2rx5;Spire2;Myo9b;Slc30a1;Zfp521;Zfp521;Prdm1;Zbtb7b; Adamts1;Adamts1;Zbtb22;Mmp19;Pmpca;Pmpca;Wdfy3;Wdfy3;Adamts5;Cpxm1;Apobec1;Adarb1;Utrn;Utrn; Amz1;Asap1;Asap1;Mme;Mme;Mme;Zfand3;Glis2;Nr1d1;Nr1d1;Nr1d1;Rock2;Mmp7;Plagl1;Plagl1;Rasgrp2; Cpa3;Prkcb;Car5b;Dcst1;Car1;Cpa2;Tll1;Zfp775;Zfp748;Adam23;Adam23;Adam23;Adam23;S100a5;Lpxn; Ptgr1;Blvra;Gtf2h3;Mmp23;Mynn;Mynn;Mmp24;Phf11l;Aspa;Jazf1;LOC687813;Phf7;Phf7;Mecr;Pcgf3; Zcwpw1;Zcwpw1;Adap1;Adap1;Mbnl1;Cpz;Adamts2;Nqo2;Zfp423;Zfyve16;Ddah1;Rph3al;Rph3al;Zfp384; Zfp384;Ca2;Zdhhc3;Arid2;Bspry;Zfp278;Zfp278;Zfp278;Nr4a1;Trps1;Trps1;Trps1;Trps1;Traf4;Brpf1;Zmynd17; Alpl;Reln;Nrap;Nrap;Nrap;Slc30a4;RGD1311188;Slc39a8;Ar;RGD1560492;Trim2;Gata3;Ermp1;Plekhf1; LOC652955;Osr1;Apobec2;Mt1a;Tp63;Sobp;Arfgap1;Arfgap1;Arfgap1;Arfgap1;Car8;Rnf208;Zfp64;Zfp64; Zfp64;Zfp64;Zbtb17;Zfp418;Trim46;Trim46;Trim46;Trim29
GO:0003779 actin binding	40	2.098691 E-23	Sptbn5;Sptbn5;Sptbn5;Sptbn5;Sptbn5;Sptbn5;Sptbn5;Sptbn5;Sptbn5;Sptbn5;Sptbn5;Myo9b;Myo1c;Myo1c; Cald1;Utrn;Ang1;LOC684352;Sptbn1;Sptbn1;Sptbn1;Msn;Myh1;Myh1;Myh1;Tpm2;Phactr1;Tpm1;Myh4; Shroom3;Baiap2l1;Tnni2;Cnn1;Cnn1;Tns4;Actn3;Myh8;RGD1304580;RGD1304580;Mybpc1

Supplementary Table 5.2 **White adipose tissue Go-molecular function** (continued)

GO Term	Count	p-Value	Input Symbol
GO:0016491 oxidoreductase activity	77	3.549890 E-22	Hmox1;Sord;Zadh2;Nqo1;Hsd17b6;Hsd17b2;Gpx3;Akr1b1;Lox;Hsd11b2;Fads3;L2hgdh;Maob;Aldh3a2; Aldh3a2;Aldh3a2;Rdh7;Rdh7;Aifm2;Aifm2;Scd4;Hpgd;Alox15;RGD1561016;RGD1561016;Akr1c19;Akr1b7; Maoa;Rdh12;Pcyox1;Ptgr1;Blvra;Kcnab1;Kcnab1;Fdft1;Gmpr;Hpd;Mecr;Prodh2;LOC681458;RGD1565785; Retsat;Cp;Cp;Ctbp2;Pcyox1l;Steap2;Prdx4;Scd;Nxn;Nxn;Ltbp2;Ltbp2;Dhrs7c;Lao1;Qsox1;Pipox;Aldh1a7; Aldh1a7;Aldh1a7;Aldh1a7;Aldh1a7;Aldh1a7;Aldh1a7;Steap1;Aldh1a1;Aldh1a1;Aldh1a1;Aldh1a1;Aldh5a1; Aldh5a1;Aldh5a1;Fads1;Fads1;Duox1;Duox1;Gpx2
GO:0003700 transcription factor activity	64	4.611958 E-20	Spib;Irf1;Irf1;Dmrtc2;Nfkb2;Shox2;Shox2;Cebpa;Dlx3;Atf5;Nr1d1;Nr1d1;Nr1d1;Meis3;Tbx15;Tsc22d2; RGD1562127;En1;En1;Prrx1;Prrx1;Tbx18;Dbp;Dbp;Dbp;Gsc;Crem;Crem;Crem;Crem;Crem;Crem;Crem; Spic;Zfp423;Myc;Stat5a;Tgif1;Runx1;Runx1;Runx1;Nr4a1;Trps1;Trps1;Trps1;Elf3;Irf6;Irx5;Irx5;Irx5;Foxq1; Irx2;Irx2;Ar;Fos;Elf5;Gata3;Tfap2c;Tfap2c;Hoxc5;Tp63;Cebpd;Smad7;Zbtb17;Foxi1
GO:0005516 calmodulin binding	23	2.880806 E-19	Map6;Myo9b;Myo1c;Myo1c;Myo5a;Cald1;Trpv1;Camk2b;Camk2b;Camk2b;Camk2b;Camk2b;Camk2g; Camk2g;Kcnn3;Rrad;Myh1;Myh4;Cnn1;Kcnn4;Kcnn4;Kcnn4;Mylk2
GO:0008009 chemokine activity	15	1.156825 E-17	Ccl2;Ccl3;Ccl7;Cxcl13;Ccl9;Ccl5;Ccl5;Ccl11;Cxcl10;Cxcl11;Ccl4;Cxcl1;Ccl28;Ccl19;Cx3cl1
GO:0004252 serine-type endopeptidase activity	32	2.718913 E-17	Klk6;Klk6;Klk6;Klk6;LOC691670;Tpsab1;Gzmk;Serpine1;Fap;Fap;Tpsb2;Mcpt4;Mcpt2;F12;Rhbdl3;Gzmm; Tysnd1;F10;Masp2;Masp2;Zfyve16;RGD1565970;Cfi;Tmprss2;Gzmc;Prss8;St14;Mcpt9;Mcpt8;Gzma;Tmprss4; Mcpt10
GO:0005525 GTP binding	39	2.655343 E-16	Rasd1;Lrrk2;Lrrk2;Srp54a;Srp54a;Arl5c;Arl9;Arl9;P2rx5;Rnd2;LOC688311;Rhob;Rab3b;Gnao1;Gnao1;Rhoh; Gtpbp8;Mx1;Mx1;Mras;Mras;Rab31;Rrad;Acsm5;Rnd1;Rnd1;Gnat3;Rab25;Rhod;Eef1a2;Eef1a2;Rtkn;Gna15; LOC688319;Fkbp4;Tuba8;Tuba8;LOC678766;Tuba4a
GO:0005044 scavenger receptor activity	16	1.509443 E-15	Cd5l;Cd5l;Loxl2;Loxl2;Loxl2;Loxl2;Cd6;Cd6;Cd6;Cd6;Cd6;Srcrb4d;Srcrb4d;Cfi;Tmprss2;Tmprss4
GO:0043565 sequence-specific DNA binding	45	2.530728 E-15	Spib;Irf1;Irf1;Shox2;Shox2;Cebpa;Dlx3;Atf5;Nr1d1;Nr1d1;Nr1d1;Meis3;En1;En1;Prrx1;Prrx1;Dbp;Dbp;Dbp; Gsc;Crem;Crem;Crem;Crem;Crem;Crem;Crem;Spic;Tgif1;Nr4a1;Trps1;Trps1;Trps1;Elf3;Irx5;Irx5;Irx5;Foxq1; Irx2;Irx2;Ar;Fos;Elf5;Gata3;Hoxc5;Cebpd;Foxi1
GO:0005529 sugar binding	25	8.786466 E-14	Bcan;Bcan;LOC689757;LOC689757;Clecsf6;Clec4a3;Sele;Olr1;Lphn3;Lphn3;Hexb;Mgll;Mgll;Mgll;Fcnb;Apcs; Clec1a;Klrk1;Klrk1;Clec2dl1;Masp2;Chi3l1;Galnt3;Sftpd;Lgals7
GO:0008201 heparin binding	13	6.815581 E-13	Fgf9;Apoh;Gpnmb;Ccl2;Mcpt4;Adamts1;Adamts1;Fgf1;Ccl3;Ccl7;Apoa5;Ang1;Mdk
GO:0004867 serine-type endopeptidase inhibitor activity	22	1.711116 E-12	Tfpi;Tfpi;Tfpi;Serpina6;Itih1;Serpine1;Serpina11;Serpina11;Serpina11;Serpina11;Serpina11;Serpina12;Mug2; Pzp;Wfdc1;Serpina3n;Serpinb8;LOC498793;LOC498793;Wfdc2;Spint2;Spint2;Col7a1
GO:0003774 motor activity	25	4.461520 E-12	Myo9b;Myo9b;Myo9b;Myo9b;Myo1c;Myo1c;Myo1c;Myo5a;Myo1g;Myo1g;Myo1g;Myh1;Myh1;Myh1;Myh1; Myh1;Myh1;Myh1;Myh4;Mylpf;Myh8;Myh8;Myh8;Myl1;Myl1
GO:0020037 heme binding	25	4.808698 E-12	Cyp2e1;Hmox1;Cyp2b2;Cyp2b2;Cyp4b1;Cyp4b1;Cyp4b1;Cyp1b1;Fads3;Cyp2d4;Cyp2d4;Cyp4f5;Cyp2d5; Cyp2d5;Cyp2d5;Cyp1a1;Mb;Ptgis;Ptgis;Lpo;Fads1;Fads1;Duox1;Duox1;Duox1
GO:0008083 growth factor activity	19	2.441652 E-11	Lep;Fgf9;Gdf15;Gdf10;Bmp3;Bmp3;Tgfb1;Fgf1;Fgf21;Gdf11;Bmp2;Cxcl1;Bmp7;Bmp7;Prom2;Mia;Tgfb3; Mdk;Nov
GO:0009055 electron carrier activity	30	2.450940 E-11	Cyp2e1;Acad11;Nqo1;Cyp2b2;Cyp2b2;Spire2;Cyp4b1;Cyp4b1;Cyp4b1;Cyp1b1;LOC305806;Acox1;Maob; Cyp2d4;Cyp2d4;Maoa;Cyp4f5;Cyp2d5;Cyp2d5;Cyp2d5;Nqo2;Retsat;Cyp1a1;Steap2;Ptgis;Ptgis;Lao1;Steap1; Duox1;Duox1

Supplementary Table 5.2 **White adipose tissue Go-molecular function** (continued)

GO Term	Count	p-Value	Input Symbol
GO:0000166 nucleotide binding	107	6.158644 E-11	Pfkfb1;Abcb9;Rasd1;Abcc5;Hk3;Mvk;Srp54a;Hspa1l;Arl9;Myo9b;Plk3;Myo1c;Myo1c;Myo5a;Abcb1b;Abcb1b; Abcb1b;Trpv1;Prdm1;Rnd2;Pip4k2a;Cdkl2;Cdkl2;Camk2b;Camk2b;Ntrk2;Fars2;Cpeb1;Rhob;Tnk2;Rock2; Rab3b;Sgk3;Matk;Camk2g;Prkcb;Gnao1;Gnao1;Rhoh;Gtpbp8;Mx1;Mx1;Mras;Mras;Rab31;Lck;Rrad;Abcc4; Acsm5;Wars;Wars;Abcb8;Slc27a1;Abcb4;Rnd1;Pcca;Dclk1;Mknk1;Gnat3;Spast;Ckmt1;Arid2;Actg2;Aurka; Aurka;Myh1;Myh1;Myh1;Erbb2;Erbb2;Rab25;Acta1;Abcg2;Jak3;Hspa1b;Uck2;Top2a;Gk;Plk1;Kif20a;Adcy10; Myh4;Eef1a2;Eef1a2;Rtkn;Gna15;Gne;Atp2c2;Acta2;Blk;Tuba8;Speg;Rfc1;Rfc1;Ckmt2;Myh8;Mapk11;Ckm; Mylk2;Pfkm;Pfkl;Pim1;Abcf2;Atp2a1;Mapkapk3;Tuba4a;Pygm
GO:0004222 metalloendo peptidase activity	19	7.134235 E-11	Adamts1;Adamts1;Mmp19;Pmpca;Pmpca;Adamts5;Mme;Mme;Mme;Mmp7;Tll1;Adam23;Adam23;Adam23; Adam23;Mmp23;Mmp24;Adamts2;RGD1560492
GO:0008233 peptidase activity	44	1.325484 E-10	Klk6;Klk6;Klk6;Capn8;Tpsab1;Gzmk;Usp18;Tpsb2;Mcpt4;Adamts1;Adamts1;Pmpca;Adamts5;Mcpt2;Mcpt2; Amz1;Mme;Mme;Mmp7;Cpa3;Cpa2;F12;Uchl1;Gzmm;Mmp23;Mmp24;F10;Masp2;Cpz;Adamts2;Cfi;Tmprss2; Gzmc;Prss8;St14;Mcpt9;Mcpt8;Gzma;Reln;Casp6;Casp6;Spint2;Ermp1;Mcpt10
GO:0005550 pheromone binding	9	2.861947 E-10	Obp3;Obp3;Obp3;Obp3;Obp3;Obp3;Obp3;Obp3;Mup5;LOC259244

Supplementary Table 5.3 **White adipose tissue Go-biological process**

GO Term	Count	p-Value	Input Symbol
GO:0055114 oxidation reduction	72	9.618401 E-37	Cyp2e1;Hmox1;Loxl2;Loxl2;Loxl2;Loxl2;Sord;Zadh2;Nqo1;Cyp2b2;Cyp2b2;Cyp4b1;Hsd17b6;Hsd17b2; Cyp1b1;Gpx3;Akr1b1;H6pd;Lox;Hsd11b2;Acox1;Maob;Aldh3a2;Aldh3a2;Aldh3a2;Rdh7;Rdh7;Cyp2d4; Cyp2d4;Scd4;Hpgd;Alox15;Akr1c19;Akr1b7;Maoa;Pcyox1;Ptgr1;Blvra;Kcnab1;Kcnab1;Fdft1;Gmpr;Hpd;Mecr; Prodh2;Cyp4f5;Cyp2d5;Cyp2d5;Cyp2d5;LOC681458;Nqo2;Retsat;Cp;Qsox2;Qsox2;Qsox2;Ctbp2;Cyp1a1; Pcyox1l;Scd;Plod2;Qsox1;Pipox;Aldh1a7;Gldc;Gldc;Aldh1a1;Aldh5a1;Aldh5a1;Aldh5a1;Duox1;Gpx2
GO:0006955 immune response	50	1.184805 E-23	Oasl2;Fcgr3a;Clecsf6;Ccl2;Il7;Il7;Olr1;Ccl3;Ccl7;RT1-N1;Il1rn;Cd40;Cd40;Cd40;Cxcl13;Ccl9;Ccl5;Ccl5;Ccl11; Cxcl10;Cxcl11;LOC688090;Lst1;RT1-Bb;RT1-Bb;RT1-Bb;RT1-Bb;RT1-Bb;RT1-Bb;Tnfsf15;Cd300a;Ccl4; Cxcl1;Cd24;Ccl28;Vtcn1;Tnfsf13;Tnfsf13;Sectm1b;Mylpf;Ccl19;Orai1;Cd14;RT1-Cl;Cx3cl1;RT1-CE5;RT1-CE5;RT1-CE5;RT1-CE5;RT1-CE5;RT1-CE5
GO:0007155 cell adhesion	52	1.600746 E-21	Emb;Bcan;Bcan;Nrp1;Itgb2;Itgb2;Cpxm2;Cdh2;Wisp2;Gpnmb;Cntn1;Sele;Sele;Itgam;Olr1;Spp1;Cpxm1;Rom1; Rhob;Thbs2;Thbs2;Ninj2;Ninj2;Car1;Cd2;Cd2;Itga7;Itga7;Itga7;Itga7;Itga7;Itga7;Itgbl1;Nrcam;Itgb6;Glycam1; Itga8;Msln;Hapln2;Reln;Sdc4;Mfge8;Mfge8;Lyve1;RGD1560492;Thbs1;Mybpc1;Arfgap1;Arfgap1;Arfgap1;Arf-gap1;Cx3cl1
GO:0006508 proteolysis	67	3.047800 E-19	Klk6;Klk6;Klk6;Klk6;LOC691670;Capn8;Cpxm2;Tpsab1;Gzmk;Fap;Fap;Tpsb2;Mcpt4;Adamts1;Adamts1; Mmp19;Pmpca;Pmpca;Adamts5;Mcpt2;Cpxm1;Amz1;Mme;Mme;Mme;Mmp7;Cpa3;Cpa2;Tll1;F12;Gzmm; Adam23;Adam23;Adam23;Adam23;Mmp23;Nrip3;Tysnd1;Mmp24;F10;Zcwpw1;Zcwpw1;Masp2;Masp2;Cpz; Adamts2;Zfyve16;RGD1565970;Cfi;Tmprss2;Gzmc;Prss8;Jak3;St14;Mcpt9;Mcpt8;Gzma;Casp6;Casp6; Tmprss4;RGD1560492;Ermp1;Mcpt10;Tpd52;Tpd52;Capn6;RGD1564338
GO:0006468 protein amino acid phosphor-ylation	59	3.956678 E-16	Lrrk2;Acad11;Plk3;Dclk3;Trib3;Trib3;Trib3;Tgfb1;Gca;Cdkl2;Cdkl2;Cdkl2;Camk2b;Camk2b;Camk2b;Camk2b; Camk2b;Ntrk2;Ntrk2;Bmp2k;Tnk2;Tnk2;Tnk2;Tnk2;Rock2;Sgk3;Matk;Camk2g;Camk2g;Prkcb;RGD1566047; RGD1566047;Oxsr1;RGD1312026;Irak1;Irak1;Dclk1;Dclk1;Mknk1;Aurka;Aurka;Erbb2;Erbb2;Jak3;Pkmyt1; Plk1;Ephb3;Ephb3;Blk;Ttn;Speg;Mapk11;Mapk11;Ttk;Osr1;Clk4;Clk4;Pim1;Mapkapk3;Stk33
GO:0006355 regulation of transcription, DNA-dependent	80	1.473431 E-15	Zfp84;Eid3;Trib3;Spib;Irf1;Irf1;Dmrtc2;Usf2;Nfkb2;Shox2;Shox2;Cebpa;Dlx3;Dmtf1;Nr1d1;Nr1d1;Nr1d1; Meis3;Tbx15;Tsc22d2;Taf11;Zfp748;En1;En1;Prrx1;Prrx1;Gtf2h3;Tbx18;Dbp;Dbp;Dbp;Dbp;Gsc;Crem;Crem; Crem;Crem;Crem;Crem;Crem;Spic;Zfp423;Zfp384;Myc;Sec14l2;Tgif1;Zfp278;Zfp278;Rab25;Runx1; Runx1;Runx1;Nr4a1;Trps1;Trps1;Trps1;Pawr;Elf3;Irf6;Cdca7l;Irx5;Irx5;Irx5;Ilf3;Foxq1;RGD1311188;Irx2;Irx2; Sox10;Fos;Elf5;Arid4b;Tfap2c;Tfap2c;Hoxc5;Tp63;Mlf1ip;Cebpd;Smad7;Zfp418;Foxi1
GO:0007218 neuropeptide signaling pathway	17	1.315537 E-13	Gal;Tac2;Lphn3;Lphn3;Lphn3;Lphn3;Lphn3;Lphn3;Pkd1;Gpr98;Gpr98;Pomc;Tacr1;Gpr64;Gpr64;Gpr64;Pnoc
GO:0042493 response to drug	18	2.712671 E-12	Sord;Card9;Lox;Apobec1;Mme;Wfdc1;Lck;Pemt;Eno2;Cyp2d5;Aacs;Prss8;Cox8b;Gk;Cdh1;Eno3;Fos;Aldh1a1

Supplementary Table 5.3 **White adipose tissue Go-biological process (**continued)

GO Term	Count	p-Value	Input Symbol
GO:0006811 ion transport	49	7.387593 E-12	Slc13a3;P2rx5;P2rx5;P2rx3;P2rx3;Tmem38b;Aqp11;Slc10a1;Atp1b1;Trpv1;Trpv1;Atp6v0d2;Kcnip1;Slc38a6; Slc12a8;Kcnk13;Atp5s;Trpv2;Kcnn3;Kcnab1;Slc11a1;Abcc4;Kcne3;Kcnj12;Kcnj12;Trpc2;Trpc2;Trpc2;Cacng1; Kcnk1;Scnn1g;Bspry;Cnnm2;Kcnk6;Gabra2;Slc5a3;Slc22a23;Fxyd3;Slc34a2;Slc39a8;Cacna1s;Cacna1s;Scnn1b; Cacnb3;Kcnn4;Orai1;Kcnk5;Clcn3;Cacna2d1
GO:0006954 inflammatory response	19	5.366993 E-11	Ccl2;Tgfb1;Sele;Olr1;Ccl3;Ccl7;Ccl5;Serpina3n;Ccl11;Cxcl10;Ms4a2;Bmp2;Ccl4;Cxcl1;Itgb6;Chst1;Elf3;Il17b; Cd14
GO:0006813 potassium ion transport	20	1.255528 E-10	Tmem38b;Atp1b1;Kcnip1;Slc12a8;Kcnk13;Kcnk13;Kctd9;Kcnn3;Kcnab1;Kcnab1;Slc24a3;Kcnj12;Kcnj12; Kcnk1;Kctd14;Kcnk6;Kcnn4;Kcnn4;Kcnn4;Kcnk5
GO:0007229 integrin-mediated signaling pathway	10	5.312298 E-10	Itgb2;Itgb2;Adamts1;Itgam;Itgam;Itgb1bp1;Itga7;Itgbl1;Itgb6;Itga8
GO:0008360 regulation of cell shape	8	6.655006 E-10	Cdc42se2;Palmd;Cdc42ep1;Itga7;Cdc42ep2;Ezr;Cdc42se1;Shroom3

Supplementary Table 6.1 **Liver Go-cellular component**

GO Term	Count	p-Value	Gene Symbol
GO:0016021 integral to membrane	162	5.579038 E-47	Emb;LOC689757;LOC689757;Atp6v0e2;Pex11a;Tspan18;Elovl6;Grin1;Ptgis;Adora1;Fam26f;Gcap14; Mrgprx2l;Nrcam;St6gal1;Atp2b2;Nrxn2;Nrxn2;Enpp1;Rtn4;Teddm1;Slc34a2;Rtn4rl1;Ifitm2;Zdhhc2;Slc2a10; Car1;Slco3a1;Fads2;Pvrl2;Laptm4b;Olr59;Aig1;Aig1;Gosr2;Hsd3b7;Ebp1;Mmp24;Mmd;Mmd;Mmd; RGD1359349;Gpam;RGD1311946;Atp5g2;Slc2a12;Tmem86a;Gpr77;Gpr77;Paqr4;Creb3l2;Slc1a2;Srd5a2; Ifitm6;Slc2a1;Fmo1;LOC498664;Gpr17;Slc16a13;P2ry6;Tmem9;RT1-Bb;RT1-Bb;RT1-Bb;RT1-Bb;RT1-Bb; Tmem79;Casr;Tlr3;Nat8b;Gjc3;Fmo2;Cml2;Cml2;Tmed3;RT1-CE11;Prlhr;Nat8;Nat8;Kcnk2;Kcnk2;Slc24a3; Slc24a3;Pcdh18;Mmd2;Mmd2;Mmd2;Mmd2;Tpst1;Pigl;Olr1375;Nphs1;Olr1260;LOC687797;Vom2r72; Vom2r72;Vom2r72;Vom2r72;Olr1341;Olr121;Olr192;Trpv1;Trpv1;Trpv1;Cd300a;Olr560;Olr1443;RT1-CE15; Fer1l4;Gramd1a;Pde3b;Olr94;Trpc3;Gpr153;Ntsr1;RGD1304952;Cacng4;Slc38a1;Vom2r3;Vom2r3;Fgfr3; Taar7a;Atp13a3;Vom2r13;Vom2r13;Vom2r13;Vom2r13;Vom2r13;Olr179;Gpr171;Vom2r31;Olr1531;Gpr101; Vom2r48;Vom2r35;Olr1678;Dd25;Tmem87a;Tmem87a;Olr44;Entpd2;Tmem171;Tm4sf20;Klrk1;Lifr;Aoc3; Fam134b;Gabrg3;Atp2b4;Hsd3b5;Olr1481;Grin3a;Olr1541;Slc12a2;Slc12a2;Slc12a2;Slc12a2;Slc12a2; LOC292543;Olr950;Olr299;Itpr1
GO:0005576 extracellular region	56	8.958317 E-22	Inhbb;Tesp1;Grtp1;Grtp1;Pf4;Inhbe;Alb;St6gal1;Spink1;Spink1;Serpina3m;Spink3;Spink3;Lcn2;Comp;Dnase2b; Scgb1c1;Zpbp2;Zpbp2;Mmp24;Plat;Reg4;Np4;LOC501251;Egfl7;Cxcl1;Serpina7;Ctgf;Slpil2;A2m;A2m;Pla1a; RGD1565709;RGD1565709;Vwa1;Fcrla;Igfbp2;Igfbp2;Fmod;Pla2g12a;Cxcl13;Gsn;Prss36;Igfbp1;Igfbp1; Igfbp1;Igfbp1;LOC299282;Otos;Nmu;Spin4;C1qtnf5;Masp1;LOC312273;Cyr61;Ccl26;Spinlw1;Fn1
GO:0005634 nucleus	92	2.742818 E-21	Tspyl4;Tipin;RGD1309534;Foxi2;Me1;Pttg1;Rps27a;LOC680097;LOC681740;LOC681740;Irx2;Irx2;Nhej1; G6pd;Tsc22d1;Hspa4l;Myc;Creb3l2;Cbx3;Cbx3;Zfp36;Sox7;Hnf4a;Jun;Ddx25;Pknox1;Ccdc117;Ppara;Egr1; Id1;Utp15;Nr1i3;Nr1i3;Nr1i3;Ascl1;Ptp4a1;Onecut1;Vax2;Zfp354a;Sertad2;Atf3;Cdc25a;Clock;Clock; RGD1562865;Hdac2;Gmeb2;Zfp192;Zfp192;Tnks2;LOC682968;Zfp36l1;Zbp1;Lrrfip1;Zfp606;Sgol2;Batf3; LOC294497;Mbnl1;Esr2;Esr2;Esr2;Esr2;Esr2;Rela;Rela;Rela;Map2k4;Nup98;Vgll3;Vgll3;Ppard;Epm2a;Six4; Six4;Six4;Mefv;Zfp483;Rbm15b;Rbm15b;LOC311026;RGD1563155;Usp31;Whsc1l1;Whsc1l1;Rfx3;Rfx3; Rfx3;Foxb1;LOC680549;Zfp9;Hoxa1
GO:0016020 membrane	141	1.278678 E-18	Emb;LOC689757;Atp6v0e2;RT1-CE10;RT1-CE10;RT1-CE10;Pex11a;Cyp2c13;Elovl6;Ptgis;Fam26f;St6gal1; Atp2b2;Atp2b2;Atp2b2;Nrxn2;Nrxn2;Enpp1;Rtn4;Pex19;Teddm1;Slc34a2;RT1-N1;Zdhhc2;Slc2a10;Marco; Slco3a1;Slco3a1;Slco3a1;Fads2;Pvrl2;Cyp17a1;Laptm4b;RT1-N2;RT1-N2;Gosr2;Slc25a36;Slc25a36;Hsd3b7; Mmd;RGD1359349;B3galt1;Gpam;RGD1311946;Atp5g2;Pip5k1a;Slc2a12;Popdc2;Loxl2;Loxl2;Loxl2;Loxl2; Nid2;Nid2;Creb3l2;B3gnt2;Slc1a2;Slc1a2;Slc1a2;Srd5a2;Fmo1;LOC498664;Rab11fip1;Slc25a45;Slc25a45; Spry1;RT1-Bb;RT1-Bb;RT1-Bb;RT1-Bb;RT1-Bb;RT1-Bb;Tmem79;Tlr3;Nat8b;Fmo2;Cml2;Cml2;Tmed3; Slc39a5;RT1-CE11;Nat8;Nat8;Kcnk2;Kcnk2;Kcnk2;Slc24a3;Tpst1;Pigl;RT1-M10-1;RT1-M10-1;Stx11; RGD1305184;B3galt2;Trpv1;Trpv1;RT1-CE15;RT1-CE15;Gramd1a;Pde3b;Trpc3;Zfp280b;Il13ra2;Spred1; RGD1304952;Cacng4;Pcdhb2;Ret;Ret;Slc19a3;Cmtm4;Cmtm4;Fgfr3;Atp13a3;Sgpp2;Kcnv2;Cnksr3; LOC678825;Dd25;Pcdhb20;Entpd2;Ap4m1;Tmem171;Syngr3;Klrk1;Fam134b;Stx19;LOC685106;Stx16; Hsd3b5;Slc12a2;Slc12a2;Slc12a2;Slc12a2;Slc12a2;Slc12a2;Slc12a2;Slc12a2;LOC292543;LOC292543;Pcdhb9; Itpr1

Supplementary Table 6.1 **Liver Go-cellular component** (continued)

GO Term	Count	p-Value	Gene Symbol
GO:0005615 extracellular space	20	7.719939 E-12	Tspan18;Pf4;Alb;Ptgis;Spink1;Enpp1;Spink3;Mup4;Plat;Np4;Egfl7;Cxcl1;Serpina7;A2m;A2m;RGD1565709; RGD1565709;Igfbp2;Gsn;Igfbp1;Masp1
GO:0005886 plasma membrane	48	9.292134 E-12	LOC689757;Phlda3;Grin1;Adora1;Nrcam;Alpl;Atp2b2;Myh10;Rtn4rl1;Plce1;Car1;Olr59;Mmp24;Gpr77;Rasd2; Slc2a1;Gpr17;Slc16a13;P2ry6;Casr;Tnk2;Gjc3;Prlhr;Ehd2;Ehd2;Ehd2;Pip5k1c;Ptp4a1;Basp1;Pcdh18;Nphs1; Nat3;Trpv1;Cd300a;Dner;Ntsr1;Dmd;Slc38a1;Taar7a;Vom2r31;Grasp;Lifr;Aoc3;Gabrg3;Atp2b4;Grin3a;Shank1; Dlgap1

Supplementary Table 6.2 **Liver Go-molecular function**

GO Term	Count	p-Value	Gene Symbol
GO:0005509 calcium ion binding	60	2.749913 E-32	Pla2g4a;Efcab6;Efcab6;Efcab6;Grin1;Cgref1;Spink1;Atp2b2;Nrxn2;Tnnc2;LOC681994;LOC681994; LOC681994;Spink3;Plce1;Comp;Ltbp4;Ltbp4;Ltbp4;Ltbp4;Plcd3;Plcd3;Mmp24;Anxa5;Egfl7;Nid2;Nid2; LOC685647;Pla2g12a;Ehd2;Ehd2;Gsn;Slc24a3;Pcdh18;Trpv1;Guca1a;Masp1;S100a7a;Trpc3;Dner;Dmd;Dmd; Dmd;Dmd;Cacng4;LOC312273;Pcdhb2;Ret;Ret;Vwde;Vwde;Nkd2;Pcdhb20;Entpd2;Efha2;Efha2;Aoc3;Atp2b4; Grin3a;Pcdhb9;Itpr1
GO:0005524 ATP binding	83	2.038339 E-29	Acsm2;Abca4;Mat1a;Mat1a;Mat1a;Atp2b2;Atp2b2;Atp2b2;Atp2b2;Stk32b;Myh10;Myh10;Dqx1;Stk24;Papss1; Tor3a;Mapk11;Mapk11;Acsm5;Dlat;Myo7b;Hspa4l;Hspa4l;Actg2;Actg2;Hspa1b;Oas1i;Oas1i;Oas1i;Oas1i; Uck2;Uck2;Ddx25;Oas1a;Oas1a;Tnk2;Tnk2;Tnk2;Tnk2;Oas1k;Zap70;Zap70;Ehd2;Ehd2;Bckdk;Bckdk;Ak1; Myh11;Myh11;Myh11;Myh11;Myh11;Myh11;Pank3;Pank3;Tssk3;RGD1559908;Trpv1;Tssk6;Dclk2;Dclk2;Dyn-c1li1;Ddx17;Nrbp2;Nrbp2;Nrbp2;Ret;Ret;Map2k4;Fgfr3;Atp13a3;RGD1562638;RGD1562638;Tubgcp6; Tubgcp6;RGD1562989;Pak4;Dync1li2;Mapk4;Mapk4;Oas3;Ankk1;LOC500625;Atp2b4;RGD1565071
GO:0008270 zinc ion binding	86	1.015901 E-25	RGD1309534;Alb;Zfp777;Alpl;Micall2;Zfp346;Zdhhc2;LOC683844;Car1;Trim47;Trim47;Zfp703;Zfp703; Mmp24;Zfp641;LOC687813;Zfp36;Hnf4a;Spire1;Spire1;Rnf186;Ppara;Zfp3;Egr1;Nr1i3;Nr1i3;Nr1i3;Zfp354a; Bcl6b;Rtn4ip1;Zmynd15;Zmynd15;Gmeb2;Zic2;Zfp192;Zfp192;Zfp36l1;Zfp324;Mul1;Zbtb33;Xiap;Xiap; Zfp606;Zfp169;Zfat;Mbnl1;Zfp280b;Zc3h6;Dmd;Dmd;Dmd;Zc3h3;Zc3h3;Snai3;Esr2;Esr2;Esr2;Esr2;Esr2; RGD1559496;LOC100233177;Ppard;Zcchc8;Rnf208;Rasa3;Zfp352l;RGD1560108;RGD1560108;Zfand1;Mefv; Mefv;Mefv;Zfp483;Zdhhc25;Usp5;Whsc1l1;Whsc1l1;Zbtb41;Zbtb45;Zfp407;Zfp407;Zfp9;RGD1566130; Zfp275;RGD1560314;RGD1560314
GO:0005550 pheromone binding	15	1.092700 E-24	LOC298109;Obp3;Obp3;Obp3;Obp3;Obp3;Obp3;Obp3;Obp3;Mup5;Mup4;LOC259244;LOC259245; LOC298111;LOC298111;LOC298111
GO:0005515 protein binding	123	3.611653 E-23	Tipin;Dgcr8;Phlda3;Alb;Grin1;RGD1566215;RGD1566215;Nrcam;Cdkn2b;Nrxn2;Nrxn2;Lrtm2;Rps27a; Myh10;Fabp4;Mad2l2;LOC497934;Rtn4rl1;RGD1565411;LOC683844;Mpp4;Mpp4;Car1;Trim47;Trim47; Lrrc30;Rhpn1;Anxa5;Dlat;Dlat;Schip1;Snx8;Ctgf;RGD1309049;Casp12;Casp12;Casp12;Myc;Actg2;Actg2; Slc2a1;Zfp36;Gopc;Cish;Cish;A2m;A2m;RGD1565709;RGD1565709;Pknox1;Rnf186;Arhgef12;Arhgef12;Arh-gef12;Card6;Socs7;Socs7;Gadd45g;Tlr3;Tlr3;Id1;Fmod;Zap70;Gsn;Ascl1;Irs2;Bcl6b;Dusp1;Pcdh18;Sertad2; Nphs1;Gfap;Casp9;Casp9;Casp9;Mllt4;Gys1;Zfp36l1;Zbp1;Trpv1;Gapdhs;Mul1;Zbtb33;Xiap;Xiap;Dmd;Dmd; Dync1li1;Snca;Ret;Slc19a3;Map2k4;Snx19;Kcnv2;Epm2a;Rnf208;RGD1563667;Cnksr3;Ids;Fn1;Fn1;Smurf2; Grasp;Mefv;Mefv;Mefv;Map3k10;Entpd2;Ap4m1;Lrrc24;Aoc3;Whsc1l1;Whsc1l1;Zbtb41;Cpn2;Akap12; Akap12;Akap12;Zbtb45;Grin3a;Slc12a2;Shank1;Dlgap1
GO:0003700 transcription factor activity	41	1.277653 E-16	Foxi2;Irx2;Irx2;Tsc22d2;Tsc22d1;Tsc22d1;Tsc22d1;Myc;Creb3l2;Jun;Ppara;Egr1;Nr1i3;Nr1i3;Nr1i3;Ascl1;One-cut1;Vax2;Atf3;Clock;Clock;RGD1562865;Zfp192;Zfp192;LOC682968;Batf3;LOC294497;Esr2;Esr2;Esr2;Esr2; Esr2;Rela;Rela;Ppard;Six4;Six4;Six4;Zfp483;LOC680549;Hoxa1
GO:0004221 ubiquitin thiolesterase activity	16	1.321176 E-15	Cyld;Cyld;Cyld;Cyld;Cyld;Usp26;Usp43_predicted;Usp25;Usp53;Usp5;Usp31;Usp31;Usp31;Usp31;Usp31; Usp31
GO:0043565 sequence-specific DNA binding	31	2.641004 E-14	Foxi2;Irx2;Irx2;Creb3l2;Hnf4a;Jun;Pknox1;Ppara;Nr1i3;Nr1i3;Nr1i3;Ascl1;Onecut1;Vax2;Atf3;RGD1562865; LOC682968;Batf3;LOC294497;Esr2;Esr2;Esr2;Esr2;Esr2;Ppard;Six4;Six4;Six4;Foxb1;LOC680549;Hoxa1
GO:0004867 serine-type endopeptidase inhibitor activity	16	1.210945 E-11	Spink1;Spink1;Serpina3m;Spink3;Spink3;Serpina7;A2m;Serpinb8;LOC299282;LOC299282;LOC299282; LOC299282;LOC299282;LOC299282;LOC299282;Spin4;LOC690319;Spinlw1

Supplementary Table 6.2 **Liver Go-molecular function** (continued)

GO Term	Count	p-Value	Gene Symbol
GO:0003707 steroid hormone receptor activity	11	4.142930 E-11	Hnf4a;Ppara;Nr1i3;Nr1i3;Nr1i3;Esr2;Esr2;Esr2;Esr2;Esr2;Ppard
GO:0005520 insulin-like growth factor binding	8	8.567756 E-10	Ctgf;Igfbp2;Igfbp2;Igfbp1;Igfbp1;Igfbp1;Igfbp1;Cyr61

Supplementary Table 6.3 **Liver Go-biological process**

GO Term	Count	p-Value	Gene Symbol
GO:0055114 oxidation reduction	36	1.201595 E-18	Cyp2c13;Cyp2c13;Cyp1a1;Aldh3b1;Aldh3b1;Aldh3b1;Me1;Hsd11b2;Akr1c1;Gpx2;G6pd;Cyp17a1;Hsd3b7;Sqrdl;Sqrdl;Sqrdl;Aldh1l2;Aldh1l2;Loxl2;Loxl2;Loxl2;Loxl2;Srd5a2;Fmo1;Fmo2;Fmo2;Rtn4ip1;Cyp2s1;Gapdhs;Alox15b;Alox15b;Alox15b;RGD1306636;RGD1306636;Aoc3;Hsd3b5
GO:0006355 regulation of transcription, DNA-dependent	57	1.482721 E-17	Foxi2;Zfp777;Irx2;Irx2;Tsc22d2;Tsc22d1;Tsc22d1;Tsc22d1;Zfp641;Myc;Creb3l2;Hnf4a;Jun;Ppara;Egr1;Nr1i3;Nr1i3;Nr1i3;Ascl1;Vax2;Zfp354a;Atf3;Clock;Clock;RGD1562865;Gmeb2;Zfp192;Zfp192;Zfp7;LOC682968;Zfp324;Lrrfip1;Batf3;Zfp169;LOC294497;Esr2;Esr2;Esr2;Esr2;Esr2;Rela;Rela;LOC100233177;Ppard;Six4;Six4;Six4;Zfp483;Rfx3;Rfx3;Rfx3;Rfx3;LOC680549;Zfp9;Hoxa1;Zfp275;RGD1560314
GO:0006955 immune response	29	1.207293 E-15	RT1-CE10;RT1-CE10;RT1-CE10;Pf4;RT1-N1;Prg2;RT1-N2;RT1-N2;Cxcl1;Oas1i;Oas1i;Oas1i;Oas1i;Oas1a;Oas1a;RT1-Bb;RT1-Bb;RT1-Bb;RT1-Bb;RT1-Bb;RT1-Bb;Oas1k;Cxcl13;RT1-CE11;RT1-M10-1;RT1-M10-1;Cd300a;RT1-CE15;RT1-CE15;Ccl26;Oas3
GO:0006511 ubiquitin-dependent protein catabolism	16	2.121639 E-11	Cyld;Cyld;Cyld;Cyld;Cyld;Usp26;Usp43_predicted;Usp25;Usp53;Usp5;Usp31;Usp31;Usp31;Usp31;Usp31;Usp31
GO:0046488 phosphatidyli-nositol metabolism	7	1.051193 E-10	Pip5k1a;Pip5k1a;Pip5k1a;Pip5k1a;Pip5k1c;Pip5k1c;LOC687758
GO:0019835 cytolysis	7	3.258810 E-10	Mmd;Mmd;Mmd;Mmd2;Mmd2;Mmd2;Mmd2

Supplementary Table 7.1 **Hypothalamus Go-cellular component**

GO Term	Count	p-Value	Gene Symbol
GO:0005576 extracellular region	36	1.044313 E-21	Cntn4;Nmu;Tshb;Sostdc1;Wnt9b;Wnt3;Ttr;Ucn;Vip;LOC686143;LOC686143;Ace;Ace;Ctgf;Prss23;Bmp7;Agrp;Ecm1;Ecm1;Ecm1;Timp1;Kiss1;Fmod;Pcolce;Pcolce;Ccl19;Apol9a;Col1a1;Aebp1;Prl;Pomc;Pomc;Omd;Cyr61;Cpz;Col3a1
GO:0016021 integral to membrane	55	1.240785 E-14	Chrna3;Kcnh2;Kcnh2;Sdc1;Trhr2;Adra1d;Adra1d;Nmbr;Nmbr;Sv2b;Gjd3;Vamp1;Vamp1;Ramp3;Pcdha3;Kcne2;Sema6c;Sema6c;Clstn1;Slc2a6;RGD1560324;Slc40a1;Slc40a1;Chrna4;Hcn3;B3gat1;RGD1560028;Ptger3;Ptger3;Gca;Galnt9;Atp2a1;Gabra4;Ace;Ace;Gabrd;Tlr3;Mpz;Itga8;Cd74;Pln;Colec12;Emp3;Fmo2;Ifitm1;RT1-CE11;RT1-CE4;Slc22a6;Ch25h;Slc44a2;RT1-Cl;RT1-CE15;Mtdh;Aoc3;RGD1305793
GO:0016020 membrane	68	1.743012 E-14	Kcnf1;Kcnh2;Sdc1;Sdc1;Pde4d;Clcn6;Clcn6;Clcn6;Sv2b;Vamp1;Pcdhb18;Ramp3;Prkcd;Rph3a;Rph3a;Rph3a;Sema6c;Sema6c;Clstn1;Clstn1;Slc2a6;Hcn3;B3gat1;B3gat1;Pex19;Zfp280b;Gca;Galnt9;Wdr44;Atp2a1;Ace;B3galt1;Rnf34;Tlr3;Mpz;Mpz;Itga8;Cox6a2;Pln;Ada;Colec12;Slc6a13;Emp3;Fmo2;RT1-Da;RT1-CE11;RT1-CE4;RT1-CE4;RT1-CE4;Apol9a;Scara5;Ch25h;Slc44a2;Slc6a20;Slc6a20;Slc6a20;Slc6a20;Slc6a20;Slc6a20;Slc6a20;Slc6a20;RT1-Cl;RT1-CE15;RT1-CE15;Mtdh;LOC685106;RGD1305793;MGC105567
GO:0045202 synapse	13	2.116315 E-11	Chrna3;Sv2b;Vamp1;Homer2;Rph3a;Myo7a;Clstn1;Chrna4;Ncs1;Gabra4;Rims2;Gabrd;Des

Supplementary Table 7.1 **Hypothalamus Go-cellular component** (continued)

GO Term	Count	p-Value	Gene Symbol
GO:0005886 plasma membrane	27	9.093518 E-11	Chrna3;Kcnh2;Cntn4;Cd7;Adra1d;Nmbr;Gjd3;Homer2;Pcdha3;Kcne2;Capn10;Clstn1;Rhebl1;Slc40a1;Chrna4; Ptger3;Ncs1;Gabra4;Ace;Ace;Rab3a;Rims2;Gabrd;Cd74;Slc22a6;Slc6a20;Aoc3
GO:0030054 cell junction	13	1.092794 E-10	Chrna3;Sv2b;Gjd3;Vamp1;Homer2;Rph3a;Clstn1;Chrna4;Ncs1;Gabra4;Rims2;Gabrd;Mtdh
GO:0005634 nucleus	38	1.266871 E-10	Smpx;Capn10;Clstn1;Etv1;Lef1;Lef1;Cbx8;Gbx2;Gbx2;Ubxn2b;E2f1;Taf5l;Foxk1;Foxk1;Foxk1;Hes7;Shox2; Shox2;Rnf34;Taf6l;Taf6l;Snrpb;Snrpb;Nupr1;Prss23;S100a6;Mustn1;Anxa1;Ilf3;Cdkn1c;Cdkn1c;Foxc2;Crabp2; Aebp1;Parp11;Parp11;Parp11;Mtdh
GO:0005578 extracellular matrix (sensuMeta-zoa)	11	6.581248 E-10	Ntng1;Ntng1;Ntng1;Ntng1;Ntng1;Ntng1;Ctgf;Ecm1;Fmod;Omd;Cpz

Supplementary Table 7.2 **Hypothalamus Go-molecular function**

GO Term	Count	p-Value	Gene Symbol
GO:0005515 protein binding	73	1.896748 E-25	Kcnf1;Cntn4;Lrrtm2;Trhr2;RGD1566215;RGD1566215;Rcbtb1;Rnf170;Sostdc1;Pcdha3;Lonrf1;Lonrf1;Snx29; Grid2ip;Ppm1j;Rph3a;Rph3a;Klhl30;Clstn1;Chrna4;Rnf152;Hcn3;Shc3;Lef1;Frmpd4;Ptger3;Zbtb2;Alas2;Sytl1; Galnt9;E2f1;Cidea;Ncs1;Atp2a1;Kbtbd8;Rab3a;Rims2;Rims2;Rims2;Rims2;Rims2;Mybpc1;Rnf34;Snrpb;Tlr3; Tlr3;Ctgf;Actg2;Actg2;Itga8;Bmp7;Pln;Ilf3;Timp1;Cdkn1c;Ada;Des;Acta2;Fmod;Pcolce;Pcolce;Pcolce;Pdlim7; Pdlim7;Pdlim7;Pdlim7;Pdlim3;Lrg1;Omd;RGD1310212;Gfap;Aoc3;LOC686539
GO:0008270 zinc ion binding	44	1.586173 E-18	LOC365723;Cit;Zfp235;Zfp235;Rnf170;Lonrf1;Lonrf1;Prkcd;Rph3a;Rph3a;Plagl1;Plagl1;Rnf152;Car7; Zfp280b;Zbtb2;Zic5;Zfp1;Zfp804a;RGD1564243;Ace;Ace;Ace;Rims2;Rims2;Rims2;Zic2;Rnf34;Zmynd12; Zfyve20;Fezf1;S100a6;Ada;Pdlim7;Ttf2;Ttf2;Pdlim3;Aebp1;Osr1;Apobec2;RGD1310212;Cpz;Wtip;Wtip
GO:0005328 neurotransmit-ter:sodium -symporter activity	10	5.427269 E-17	Slc6a13;Slc6a20;Slc6a20;Slc6a20;Slc6a20;Slc6a20;Slc6a20;Slc6a20;Slc6a20;Slc6a20
GO:0005524 ATP binding	38	8.643347 E-17	Rnasel;Cit;Cit;Cit;Cit;Cit;Camkk2;Camkk2;Camkk2;Camkk2;Prkcd;Prkcd;Myo7a;Rem2;Gca;Ttk;Stk32c;Kif27; Kif27;Atp2a1;Actg2;Actg2;Hspa1b;Acta2;Ttf2;Ttf2;Myh11;Myh11;Myh11;Myh11;Myh11;Myh11;Osr1;Stk38l; Stk38l;Stk38l;Hfm1;Hfm1
GO:0005509 calcium ion binding	24	3.682778 E-14	Camkk2;Pcdhb18;Pcdha3;Rph3a;Clstn1;Clstn1;Clstn1;Megf6;Megf6;Megf6;Necab3;Necab3;Gca;Galnt9;Ncs1; Atp2a1;S100a6;S100g;Anxa1;C1r;C1r;Colec12;Myl9;Aoc3
GO:0017137 RabGTPase binding	7	5.435991 E-12	Rph3a;Rph3a;Sytl1;Wdr44;Rims2;Rims2;Rims2

Supplementary Table 7.3 **Hypothalamus Go-biological process**

GO Term	Count	p-Value	Gene Symbol
GO:0006836 neurotransmitter transport	11	1.196447E-13	Rims2;Slc6a13;Slc6a20;Slc6a20;Slc6a20;Slc6a20;Slc6a20;Slc6a20;Slc6a20;Slc6a20;Slc6a20