

**Supplementary Table 1a: Summary of comprehensive blood chemistry analysis**

	Normal range (unit)	WT_SAL	Shank3_UNC0642
ALB	2.5-4.8 g/dl	2.13 ±0.36	1.8 ±0.15
ALKP	62-209 U/L	199.0 ±59.1	165.3 ±19.8
ALT	28-132 U/L	92.7 ±7.1	82.7 ±18.5
AMYL	1691-3615 U/L	2404.0 ±106.0	1766.7 ±279.4
BUN	10.0-33.0 mg/dl	22.3 ±2.16	15.0 ±1.9
Calcium	5.9-9.4 mg/dl	11.1 ±0.66	9.9 ±1.0
Cholesterol	50-250 mg/dl	129.0 ±9.3	105.3 ±6.2
Creatine	0.2-0.8 mg/dl	0.0 ±0.0	0.0 ±0.0
Glucose	190-280 mg/dl	218.3 ±14.7	202.3 ±28.1
Phosphorus	6.1-10.1 mg/dl	9.8 ±1.2	7.5 ±0.58
Total bilirubin	0-1 mg/dl	n.d.	0.1
Total protein	3.6-6.6 g/dl	5.9 ±0.21	5.2 ±0.51
Globulin	g/dl	3.8 ±0.36	3.4 ±0.39

ALB: albumin; ALKP: Alkaline phosphatase; ALT: alanine aminotransferase; AMYL, amylase; BUN, blood urea nitrogen; n=3/group.

**Supplementary Table 1b: Summary of comprehensive blood chemistry analysis**

	Normal range (unit)	WT_SAL	Shank3_UNC0642
White blood cell	6-15 10 <sup>9</sup> /L	7.2 ±0.57	6.2 ±1.5
Lymphocyte	3.4-7.44 10 <sup>9</sup> /L	6.0 ±0.46	5.1 ±1.3
Monocyte	0-0.6 10 <sup>9</sup> /L	0.07 ±0.02	0.11 ±0.04
Neutrophil	0.5-3.8 10 <sup>9</sup> /L	1.1 ±0.17	1.1 ±0.23
Eosinophil	10 <sup>9</sup> /L	n.d.	n.d.
Basophil	10 <sup>9</sup> /L	n.d.	n.d.
Lymphocyte%	57-93 %	83.5 ±1.5	80.6 ±2.6
Monocyte%	0-7 %	1.0 ±0.30	1.7 ±0.23
Neutrophil%	8-48 %	15.4 ±1.7	17.6 ±2.6
Eosinophil %	%	n.d.	n.d.
Basophil %	%	n.d.	n.d.
Red blood cell	7-12 10 <sup>12</sup> /L	9.7 ±0.06	10.6 ±0.40
Hemoglobin	12.2-16.2 g/dl	13.8 ±0.11	15.1 ±0.29
Hematocrit	35-45 %	43.4 ±0.07	46.1 ±1.4
Mean corpuscular vol	45-55 fl	44.8 ±0.29	44.0 ±0.0
Mean corpuscular Hb.	11.1-12.7 pg	14.2 ±0.14	14.4 ±0.18
Mean corpuscular Hb conc.	22.3-32 g/dl	31.8 ±0.31	32.9 ±0.39
Red cell distribution width	%	21.7 ±0.41	18.9 ±0.29
Platelet	200-450 10 <sup>9</sup> /L	422.0 ±47.2	485.3 ±29.5
Procalcitonin	%	0.28 ±0.03	0.31 ±0.02
Mean platelet vol.	fl	6.6 ±0.06	6.4 ±0.11
Platelet distribution width	%	29.1 ±0.54	29.1 ±0.39

Hb, hemoglobin; n.d., not detected; n=3/group

**Suppl. Table 2 List of genes down-regulated in *Shank3*-deficient mice and recovered by UNC0642 treatment [ Het+SAL\_vs\_WT (fold change < -1.2 & P < 0.05) and Het+UNC\_vs\_Het+SAL (fold change > 1.1 & P < 0.05)]**

Gene Symbol	logFC (SAL_vs_WT)	Fold change (SAL_vs_WT)	P.Value (SAL_vs_WT)	logFC (UNC_vs_SAL)	Fold change (UNC_vs_SAL)	P.Value (UNC_vs_SAL)	Restored
Dynlt1b	-1.686232856	-3.218152862	0.001903647	1.772854827	3.417295077	0.001270009	yes
Acan	-1.360379681	-2.567527414	0.00060683	1.241511211	2.364460778	0.001330884	yes
3930402G23Rik	-1.254679845	-2.386141907	0.013584285	0.985397006	1.979858062	0.044904906	yes
Gas2l3	-1.211515426	-2.315807645	0.007269459	1.000375133	2.000520113	0.022021224	yes
Klk6	-1.157947088	-2.231396805	0.026018677	1.332903634	2.519091689	0.012191891	yes
Gm19710	-1.042140987	-2.0592814	0.017963941	0.908666989	1.877310113	0.035416621	yes
Lrrc26	-0.971444044	-1.960802249	0.003848454	0.861946234	1.817488497	0.008590058	yes
Lrrc38	-0.903285261	-1.870320174	0.00633933	0.995029083	1.993120704	0.003226762	yes
A330032B11Rik	-0.868251252	-1.82544886	0.003419838	0.617553432	1.534271109	0.026842111	yes
Zfhx3	-0.862181774	-1.817785252	0.039478841	0.909606387	1.878532905	0.031109227	yes
Elf4	-0.861836542	-1.817350315	0.02838555	0.881330531	1.842073377	0.025446792	yes
Pim1	-0.858364134	-1.812981413	0.002715471	0.62890375	1.546389504	0.019708153	yes
Gas2l2	-0.833230752	-1.781670748	0.010578015	0.772950662	1.708761044	0.016313643	yes
Hmmr	-0.831523028	-1.779563024	0.001861283	0.506037873	1.420144639	0.038212941	yes
Gm19522	-0.820873623	-1.766475357	0.012864953	0.639424371	1.557707517	0.044673195	yes
Tmem181b-ps	-0.812906234	-1.756746755	0.000386121	0.447553049	1.363725283	0.019620031	yes
Fndc8	-0.797516369	-1.738106361	0.02356772	0.678350922	1.600309469	0.049300458	yes
Prkd2	-0.79169896	-1.73111187	0.003595224	0.650156365	1.569338277	0.012938932	yes
Cenpf	-0.786416284	-1.724784699	0.030758435	0.749214699	1.680877631	0.038379238	yes
C920021L13Rik	-0.771945453	-1.707570866	0.042234534	0.96098336	1.946636295	0.014230578	yes
Adamts15	-0.758345339	-1.691549433	0.003947203	0.500688411	1.414888544	0.041432088	yes
Adgrl4	-0.75752285	-1.690585346	0.000328105	0.563949763	1.478310953	0.003785073	yes
Adamts6	-0.737025764	-1.666736179	0.023362888	0.698144163	1.622416425	0.03045906	yes
St6galnac2	-0.733841953	-1.663061999	0.017644839	0.636774932	1.554849488	0.035658954	yes
Gabra2	-0.73113798	-1.659947922	0.000165951	0.331349817	1.258190014	0.038298089	yes
Nfkb2	-0.719153459	-1.646215788	0.009995371	0.546661821	1.460701938	0.041366423	yes
Sdf2l1	-0.7125632	-1.638712993	0.001197558	0.486672869	1.401209689	0.016251805	yes
Icam1	-0.695441702	-1.619380154	0.036296529	0.766611044	1.701268729	0.022752579	yes
Zbtb40	-0.692013546	-1.615536724	0.004988962	0.468279227	1.383458365	0.04118306	yes
Megf10	-0.687489041	-1.610478099	0.002438207	0.552007809	1.466124693	0.010369724	yes
5730559C18Rik	-0.680590814	-1.602796	0.012049682	0.584096323	1.499099687	0.027349106	yes
Bank1	-0.665442935	-1.586055148	0.034048215	0.633853136	1.55170374	0.042251221	yes
Blnk	-0.621441449	-1.538411496	0.001816217	0.361958935	1.285169756	0.045558767	yes
Flt1	-0.618475612	-1.535252138	0.001013797	0.438968816	1.355635024	0.011075583	yes
Mdga1	-0.613171634	-1.529618242	0.000390838	0.397369405	1.317104126	0.01075464	yes
Zfp217	-0.601524832	-1.517319424	0.023623135	0.534544881	1.448485137	0.041077119	yes

Gm10658	-0.594932553	-1.510401972	0.039531825	0.646255851	1.565101098	0.026947525	yes
Cep76	-0.593053956	-1.50843649	0.002601643	0.379920531	1.301270174	0.036867445	yes
Inf2	-0.566895812	-1.481332816	9.58E-05	0.288177346	1.221096609	0.018415998	yes
Pik3c2b	-0.54461455	-1.458630585	0.001551663	0.472764236	1.387765913	0.004506321	yes
Pon2	-0.526513682	-1.440444108	0.00376161	0.326687725	1.254130715	0.049618418	yes
D630045J12Rik	-0.512322708	-1.426344733	0.001554162	0.326484692	1.253954231	0.026268065	yes
Cachd1	-0.50261879	-1.416782984	0.028866374	0.51251814	1.426537963	0.026263119	yes
Mcm4	-0.502247956	-1.416418858	0.004990877	0.512053819	1.426078915	0.004362853	yes
Mme	-0.495187168	-1.409503606	0.023869479	0.424080888	1.341717449	0.048437277	yes
Col4a2	-0.491861306	-1.406258002	0.000251513	0.291748167	1.224122695	0.0137686	yes
Ankdd1b	-0.488133143	-1.40262869	0.042542254	0.721140984	1.648485256	0.004908205	yes
Itga6	-0.47346961	-1.388444596	0.008037582	0.339018856	1.264896075	0.04531925	yes
Pvalb	-0.472882842	-1.387880008	0.002406593	0.374869226	1.296722007	0.011579351	yes
Fgfr2	-0.471051537	-1.386119401	0.005561295	0.362821475	1.285938347	0.024987466	yes
Lrrc14b	-0.449231523	-1.365312805	0.001434953	0.288971466	1.221768937	0.025305264	yes
Kif13b	-0.447583197	-1.363753781	0.005435071	0.348870427	1.273563087	0.023620515	yes
Pvrl1	-0.441625852	-1.358134021	0.005632311	0.306925266	1.237068395	0.040723211	yes
Eng	-0.439292183	-1.355938912	0.00322736	0.298926772	1.230228899	0.031929335	yes
Nefh	-0.432832568	-1.349881316	0.00406597	0.27496188	1.209962118	0.048855034	yes
Sgpp2	-0.429772127	-1.347020799	0.010221349	0.34958862	1.274197242	0.030979597	yes
Lrp8	-0.422080573	-1.33985843	0.002808045	0.261760583	1.198940932	0.04335402	yes
Mpp3	-0.41321226	-1.331647521	0.002423887	0.311329972	1.240851072	0.015615785	yes
Eya1	-0.412097784	-1.330619226	0.026328452	0.382232819	1.303357465	0.037445887	yes
Itpkb	-0.407566847	-1.32644683	0.005934935	0.401803213	1.321158185	0.006523489	yes
Olig2	-0.39747201	-1.317197803	0.01914607	0.390205948	1.310580479	0.021079485	yes
Phka1	-0.384075152	-1.305022927	0.019876556	0.382845363	1.303910967	0.02021281	yes
Wdfy1	-0.377366915	-1.298968922	0.014050186	0.408731762	1.327518312	0.008803945	yes
Plxd1	-0.375328069	-1.29713449	0.001687297	0.284802141	1.218243175	0.01148895	yes
Sh3pxd2b	-0.374704875	-1.296574294	0.004497927	0.261793901	1.19896862	0.034994252	yes
Shc3	-0.374682965	-1.296554603	0.018953276	0.319873107	1.248220756	0.040162089	yes
Pygm	-0.372616069	-1.294698407	0.013256463	0.336580516	1.262760043	0.023004126	yes
Kcnc3	-0.363510499	-1.28655265	0.000312396	0.242215308	1.18280751	0.00781202	yes
Gng5	-0.361987264	-1.285194992	0.011775216	0.331035223	1.257915683	0.019419779	yes
Gm10336	-0.359581479	-1.283053634	0.034388676	0.385733949	1.306524292	0.024581573	yes
Prkca	-0.358920398	-1.28246584	0.001142973	0.282051964	1.215923078	0.006869906	yes
Anxa11	-0.358318557	-1.281930952	0.005117079	0.275493913	1.210408407	0.024207185	yes
Usp31	-0.352440018	-1.276718105	0.002361915	0.239936948	1.180941048	0.026101465	yes
Arhgap31	-0.349363548	-1.273998472	0.022589004	0.306667658	1.236847524	0.041422819	yes
Fat3	-0.342910528	-1.26831274	0.00259487	0.249897863	1.189122927	0.019640623	yes

Rasd2	-0.339658024	-1.265456595	0.001699513	0.2765827	1.211322234	0.007468324	yes
Cabp1	-0.339528877	-1.265343319	0.001334549	0.255391614	1.193659713	0.010180018	yes
Igfn1	-0.338949857	-1.26483558	0.020937428	0.367001886	1.289669937	0.013556446	yes
Klhl29	-0.33696479	-1.263096435	0.002917143	0.264515081	1.201232224	0.014235335	yes
Hivep2	-0.333360343	-1.259944638	0.003547895	0.229391986	1.17234077	0.032198239	yes
Unc79	-0.332246007	-1.258971834	0.002635943	0.272675121	1.208045775	0.010123106	yes
Manf	-0.330194326	-1.257182701	0.004945523	0.21543951	1.161057571	0.049839203	yes
Arhgef40	-0.329495554	-1.25657393	0.017650485	0.358033015	1.281677254	0.010996038	yes
Hus1	-0.325440702	-1.25304715	0.033519125	0.323024995	1.250950753	0.034682491	yes
Cacng2	-0.316839195	-1.245598571	0.006571596	0.264530105	1.201244732	0.019170058	yes
Plec	-0.314430032	-1.243520276	0.006252312	0.226690185	1.170147329	0.037704421	yes
Sipa1l1	-0.309205976	-1.239025583	0.002746367	0.199466899	1.148273969	0.036902658	yes
Phtf1	-0.307609167	-1.237654958	0.004699608	0.266219729	1.202652405	0.01187511	yes
Ncor2	-0.305762593	-1.236071839	0.003811518	0.213011715	1.159105364	0.031841526	yes
Zdhhc14	-0.303429075	-1.234074143	0.024045384	0.330120888	1.257118708	0.015383895	yes
Pknox1	-0.302824315	-1.233556944	0.031127875	0.374814277	1.296672619	0.009868674	yes
Ssh3	-0.299508416	-1.230724985	0.017202735	0.240800244	1.181647924	0.048568782	yes
Gpc5	-0.299057896	-1.230340718	0.02532466	0.274635936	1.209688786	0.037783286	yes
Ppp1r16b	-0.297742682	-1.229219605	0.00500573	0.201307998	1.149740277	0.043276835	yes
Hip1	-0.292252375	-1.224550588	0.013810956	0.242811102	1.183296077	0.035565593	yes
Kcnip2	-0.290653066	-1.223193857	0.008456357	0.262153634	1.199267618	0.015586447	yes
Cdh22	-0.290233216	-1.222837937	0.012296802	0.281309367	1.215297369	0.01471312	yes
Plcl1	-0.28992928	-1.222580346	0.021610006	0.255045451	1.193373338	0.039791713	yes
Nwd1	-0.289666042	-1.222357291	0.026560005	0.26927757	1.20520417	0.037263261	yes
Fam84a	-0.286695574	-1.219843081	0.003182388	0.205756779	1.153291158	0.024457126	yes
Pou3f2	-0.286393192	-1.219587435	0.008011587	0.222494483	1.166749204	0.031974749	yes
Zfpm1	-0.281449746	-1.215415627	0.008390224	0.278460741	1.212900111	0.008970335	yes
9430015G10Rik	-0.275310566	-1.21025459	0.034367852	0.253688928	1.192251773	0.048979731	yes
Rasa3	-0.272425624	-1.207836875	0.011800756	0.270531213	1.206251899	0.012294802	yes
Ankrd63	-0.272392551	-1.207809187	0.025029286	0.240005057	1.180996801	0.044758334	yes
Osgin2	-0.265105373	-1.201723819	0.031854393	0.271284735	1.20688209	0.02855991	yes
Tspan12	-0.264281658	-1.201037884	0.038887308	0.255941844	1.19411505	0.044657793	yes
Gm3636	-1.527102718	-2.88206469	0.047699908	0.848735199	1.800921377	0.249191998	no
Rxfp2	-1.084176686	-2.120165207	0.006213568	0.603165345	1.519045776	0.099585938	no
Nlrp3	-1.047799073	-2.067373525	0.029386382	0.804002118	1.745937746	0.085309594	no
Plekhg4	-1.023446817	-2.032769758	0.005517209	0.53611268	1.450060084	0.113291648	no
Robo3	-1.002073512	-2.002876565	0.004396831	0.47456091	1.389495257	0.118151464	no
Runx1	-0.962826635	-1.949125027	0.045881779	0.778794883	1.715697112	0.099270598	no
Npc1l1	-0.942629411	-1.922028077	0.0086858	0.518970757	1.432932605	0.120032107	no

Slc25a13	-0.932712313	-1.908861346	0.011607286	0.563244348	1.4775883	0.105130234	no
Xirp2	-0.927229125	-1.901620188	0.021105038	0.447194643	1.363386538	0.235544301	no
Adam33	-0.906193596	-1.874094363	0.042789843	0.4527486	1.368645296	0.286465203	no
Rad54b	-0.899913044	-1.865953512	0.044426019	0.606528153	1.522590681	0.161232596	no
Vav3	-0.885497038	-1.847400979	0.014147796	0.511437724	1.425470046	0.128936742	no
E330020D12Rik	-0.88051123	-1.841027568	0.0239304	0.569744041	1.484260214	0.126424928	no
Flt3	-0.874450806	-1.833310063	0.005510419	0.437355698	1.354120098	0.129192543	no
1810009A15Rik	-0.873724999	-1.832387973	0.025562828	0.741409442	1.671808316	0.053153316	no
Scn4b	-0.858324121	-1.81293113	0.034629076	0.441297737	1.357825173	0.223651803	no
Jph2	-0.847085718	-1.798863501	0.029994343	0.731107823	1.659913224	0.0566207	no
Moap1	-0.836460071	-1.785663295	0.045623323	0.377820477	1.299377364	0.342697142	no
Tmem170	-0.832102272	-1.780277665	0.021502565	0.451173341	1.367151706	0.186740308	no
Gm20219	-0.83022059	-1.777957194	0.030640497	0.523922096	1.437858888	0.154478308	no
Kif4	-0.8019697	-1.743479862	0.02366318	0.60424314	1.520181033	0.078118688	no
Ska3	-0.797046387	-1.737540236	0.010542148	0.499989366	1.414203138	0.088547611	no
Irf7	-0.792319934	-1.731857147	0.014048279	0.606556461	1.522620556	0.051132988	no
Sbk3	-0.790364973	-1.729511939	0.033340227	0.562829894	1.477163884	0.117081866	no
Tmem210	-0.787544115	-1.72613358	0.046708368	0.630961814	1.548597066	0.103619049	no
Psg23	-0.782478374	-1.720083229	0.04905449	0.564656086	1.47903489	0.144101119	no
Greb1	-0.779837537	-1.716937517	0.025588759	0.516809362	1.430787443	0.122753726	no
Nusap1	-0.769628605	-1.70483085	0.027132285	0.634482004	1.552380271	0.062327254	no
Pq1c3	-0.764887515	-1.699237506	0.013092076	0.4036738	1.322872299	0.160881803	no
Bag3	-0.735106185	-1.664519977	0.021113483	0.469347732	1.384483377	0.121433763	no
Tanc1	-0.729566189	-1.658140422	0.002275916	0.273432535	1.208680164	0.188793754	no
Gm14827	-0.718577232	-1.645558405	0.033866254	0.359392635	1.282885698	0.259238464	no
Tbc1d2	-0.715712589	-1.642294194	0.004309248	0.439384927	1.356026081	0.058671237	no
9530052E02Rik	-0.712079531	-1.638163699	0.021767178	0.431302293	1.348450248	0.143704299	no
Fam60a	-0.707841183	-1.633358166	0.044528824	0.332173453	1.258908521	0.322058281	no
Bfsp2	-0.702266408	-1.627058821	0.022109161	0.511811811	1.425839715	0.083204865	no
Adgrg6	-0.695270914	-1.619188461	0.004730527	0.346079037	1.271101324	0.123047168	no
Stc1	-0.684270947	-1.606889749	0.045118099	0.454135937	1.369962058	0.168824031	no
Stac3	-0.674504946	-1.596049002	0.020218184	0.53171539	1.445647074	0.05923168	no
Dok3	-0.674452688	-1.59599119	0.007365405	0.272130564	1.207589873	0.234379985	no
Gpr63	-0.672974186	-1.594356425	0.041749596	0.298338311	1.229727204	0.341406782	no
Tbc1d4	-0.672240957	-1.593546322	0.025545245	0.364910198	1.287801466	0.197801756	no
5730507C01Rik	-0.667226039	-1.58801665	0.019842442	0.287478809	1.220505511	0.282169646	no
Banp	-0.665869436	-1.5865241	0.012898133	0.273634722	1.208849567	0.252559259	no
Kif23	-0.6628973	-1.583259022	0.045656592	0.574574195	1.489237857	0.07876986	no
Tmem181a	-0.661178017	-1.58137335	0.009551363	0.302310038	1.233117296	0.178471644	no

AA986860	-0.659096016	-1.579092863	0.026011598	0.372052471	1.294192723	0.185673558	no
Polq	-0.652755596	-1.572168223	0.014914022	0.377419305	1.299016094	0.134928216	no
Slc39a2	-0.652184003	-1.571545457	0.031269055	0.319358516	1.247775611	0.262355685	no
Pcdhgb2	-0.625694361	-1.542953262	0.00634785	0.420881794	1.338745563	0.051165312	no
Acer2	-0.624022189	-1.54116592	0.01185421	0.397911068	1.317598729	0.08951067	no
Tmem86b	-0.621875455	-1.538874366	0.019028895	0.444864669	1.361186425	0.080807241	no
Col11a1	-0.620833668	-1.537763528	0.027739773	0.4863359	1.400882448	0.076267336	no
Sh3bp1	-0.615882477	-1.532495117	0.002352303	0.358942139	1.282485166	0.052072522	no
Erbp3	-0.613277525	-1.529730517	0.043871868	0.376042133	1.297776667	0.19676018	no
Grk4	-0.610388577	-1.526670349	0.038984154	0.311261252	1.240791968	0.263572372	no
Egfl8	-0.603976263	-1.519899849	0.049330002	0.49303836	1.407405796	0.101878277	no
Prkg2	-0.603619458	-1.519523996	0.027147838	0.385002594	1.305862135	0.136436613	no
Abcc9	-0.602315309	-1.518151017	0.020122158	0.478482096	1.393276985	0.057000038	no
Cfp	-0.601741723	-1.517547551	0.005807347	0.28765802	1.220657131	0.148751143	no
Lonrf3	-0.59635383	-1.511890683	0.031641834	0.478570671	1.393362529	0.074845132	no
Paqr5	-0.592379246	-1.5077312	0.032745351	0.346185481	1.271195111	0.191332059	no
Onecut2	-0.57790406	-1.492679116	0.043966449	0.229717309	1.172605159	0.398192969	no
Card10	-0.576520023	-1.491247814	0.019246901	0.243043919	1.183487049	0.289650301	no
Lrrc1	-0.573649204	-1.48828333	0.03658407	0.35329737	1.277477047	0.179609576	no
Prss23	-0.569272201	-1.483774859	0.000721364	0.266968975	1.203277149	0.069028571	no
Cdh24	-0.564351914	-1.47872309	0.012655415	0.269992262	1.20580136	0.198621313	no
Tlr13	-0.560647609	-1.474931148	0.046309957	0.492285735	1.406671772	0.076194533	no
Il1r1	-0.557730482	-1.471951853	0.025787968	0.30508641	1.235492635	0.198189391	no
Serpinb8	-0.546889443	-1.46093242	0.013367054	0.257912145	1.195746978	0.20903222	no
Cbfa2t3	-0.54070776	-1.454685985	0.002553356	0.21408256	1.159966033	0.171694752	no
Kcng4	-0.529281097	-1.443209857	0.029128692	0.244183785	1.184422486	0.285931025	no
Arc	-0.528653267	-1.44258194	0.016827728	0.161092925	1.118133868	0.404597411	no
Pp2d1	-0.526558301	-1.440488657	0.021647341	0.320182392	1.248488378	0.141211398	no
Aldh1a1	-0.525452676	-1.439385146	0.00348305	0.319643406	1.248022035	0.054129494	no
Rrp1b	-0.525023672	-1.438957191	0.024749017	0.272337291	1.207762925	0.216366608	no
Rmi2	-0.524496811	-1.43843179	0.029910406	0.320575547	1.248828655	0.165032518	no
Rasd1	-0.523735197	-1.437672628	0.035719482	0.296848456	1.228457934	0.212590917	no
Cyp26b1	-0.5216991	-1.435645049	0.014333716	0.370772447	1.293044967	0.068939765	no
Pnpla3	-0.51813419	-1.43210194	0.006235893	0.223000416	1.167158438	0.195439637	no
Oxtr	-0.515255245	-1.429246983	0.014696241	0.311995998	1.241424048	0.117734277	no
Dio2	-0.513612889	-1.427620862	0.018960726	0.33549851	1.261813342	0.098821661	no
Fndc3b	-0.50915008	-1.423211506	0.003546092	0.25476251	1.193139318	0.10761695	no
Nos3	-0.507491319	-1.421576088	0.009888233	0.288134969	1.221060741	0.116682739	no
Cxcr2	-0.499019361	-1.413252609	0.046195312	0.444415155	1.360762373	0.072325746	no

Aoc2	-0.494047459	-1.408390556	0.039556152	0.351770743	1.276125965	0.130396658	no
Al414108	-0.492167734	-1.406556723	0.007838142	0.232905491	1.17519934	0.161341811	no
Cys1	-0.488191103	-1.402685042	0.03977813	0.145246049	1.10591925	0.515156384	no
F730043M19Rik	-0.487825309	-1.402329437	0.049371881	0.225594105	1.169258653	0.340595515	no
Osbp13	-0.48775825	-1.402264256	0.005169208	0.263515796	1.200400476	0.097438694	no
Faap100	-0.485641367	-1.400208206	0.008842863	0.320955257	1.249157384	0.066832642	no
Col15a1	-0.483857289	-1.398477739	0.04720866	0.288194747	1.221111338	0.219053212	no
Mirg	-0.480644249	-1.395366641	0.026100276	0.160209417	1.117449332	0.424579835	no
Pfkfb3	-0.479187658	-1.393958545	0.005624211	0.233168853	1.175413891	0.136144821	no
Cobll1	-0.476941586	-1.391790038	0.034793246	0.368604312	1.291103191	0.093828445	no
Gse1	-0.475364832	-1.39026975	0.000674159	0.217293951	1.162550955	0.073037263	no
Homer1	-0.473185673	-1.388171364	0.042254061	0.214186794	1.160049843	0.314778722	no
Gfod1	-0.472958182	-1.387952487	0.003218064	0.225944664	1.169542804	0.112450535	no
Luzp1	-0.466341908	-1.381601839	0.004902437	0.212724051	1.158874269	0.150644344	no
Egr3	-0.464719573	-1.380049077	0.037571932	0.205549131	1.153125176	0.313926349	no
Abcc4	-0.463927951	-1.379292038	0.02049145	0.217157618	1.1624411	0.246949722	no
Ovca2	-0.462464798	-1.377893895	0.024718715	0.377215272	1.298832394	0.060045936	no
Snrnp48	-0.460171847	-1.375705676	0.029287564	0.306404796	1.236622188	0.130805637	no
Fbxo32	-0.45823554	-1.373860517	0.018039647	0.213801944	1.159740432	0.237084233	no
Gm8234	-0.45707467	-1.372755479	0.049536504	0.317831986	1.246456026	0.159252785	no
Cep95	-0.454419757	-1.370231595	0.024893015	0.319851888	1.248202398	0.100976152	no
Adam19	-0.451760467	-1.367708202	0.005827501	0.268591287	1.204630997	0.076505185	no
Trpm3	-0.448572295	-1.364689078	0.028452191	0.313782698	1.242962437	0.109779639	no
Rasgrp3	-0.448257532	-1.364391367	0.034512858	0.228491811	1.171609512	0.25553642	no
Slfn5	-0.447778039	-1.363937975	0.02429174	0.307565883	1.237617827	0.107213735	no
D930015E06Rik	-0.445503744	-1.361789528	0.010537125	0.202243564	1.150486108	0.208081964	no
Robo4	-0.443224204	-1.359639522	0.037303206	0.270939751	1.206593529	0.184500225	no
Lsm11	-0.442514756	-1.358971081	0.009246422	0.269509908	1.205398278	0.088325686	no
Fmnl1	-0.432218014	-1.34930642	0.006043282	0.228685301	1.171766655	0.109843129	no
Zswim6	-0.429098009	-1.346391533	0.020406205	0.207906516	1.155010939	0.227556716	no
Gmip	-0.427672334	-1.345061682	0.018608852	0.176497973	1.130137235	0.296623729	no
Scrt2	-0.4264494	-1.343921992	0.027287818	0.186999245	1.138393433	0.303315197	no
Per2	-0.425678206	-1.34320379	0.008319344	0.198509707	1.147512371	0.176844614	no
Mtm1	-0.425280414	-1.342833481	0.047142067	0.246223567	1.186098288	0.231465695	no
Pde7b	-0.425230662	-1.342787174	0.027325773	0.367738972	1.290329009	0.051687365	no
Plekha2	-0.423841824	-1.341495136	0.009787461	0.216983099	1.162300491	0.153672307	no
Cntn2	-0.419626977	-1.337581666	0.008738805	0.223873422	1.167864925	0.126759707	no
Sfi1	-0.418512016	-1.336548339	0.032450608	0.13480359	1.097943328	0.45571248	no
Fmn1	-0.418391564	-1.336436754	0.04419802	0.066702172	1.047319897	0.730451476	no

Ccdc134	-0.415562024	-1.333818185	0.041504212	0.104405567	1.075051346	0.585901119	no
Steap2	-0.413238888	-1.3316721	0.019682673	0.171811077	1.126471706	0.298089747	no
Gm11549	-0.412866455	-1.331328371	0.022690073	0.178292613	1.131543944	0.288104339	no
Pisd-ps2	-0.411678089	-1.330232191	0.020885835	0.102371738	1.073536868	0.531334902	no
lqck	-0.411230755	-1.329819793	0.028081395	0.299979642	1.231127041	0.097170551	no
Cfap69	-0.409918275	-1.32861055	0.007742406	0.237299333	1.178783959	0.097730213	no
Hspa5	-0.402897728	-1.322160874	0.006596357	0.244833726	1.184956194	0.074018843	no
Htr7	-0.40125434	-1.320655645	0.029014205	0.351311869	1.275720135	0.052040828	no
Fat1	-0.401194045	-1.320600452	0.029435205	0.299014502	1.230303712	0.091388398	no
3300002P13Rik	-0.399434475	-1.318990776	0.044676475	0.218266548	1.163334956	0.249318673	no
Kdm7a	-0.396334885	-1.316160003	0.026398669	0.144444195	1.105304747	0.378353318	no
lqcg	-0.39303162	-1.313149906	0.046468603	0.308895538	1.238758999	0.109198242	no
Apln	-0.392348856	-1.312528597	0.013684515	0.272247985	1.207688163	0.072369959	no
Kmt2a	-0.391805953	-1.31203477	0.014623877	0.198171287	1.147243225	0.179152383	no
Runx2	-0.391573829	-1.311823686	0.01955424	0.140597618	1.10236166	0.366247941	no
Spred1	-0.391257327	-1.311535926	0.00704886	0.221726149	1.166127995	0.096626699	no
Ago3	-0.389601804	-1.310031775	0.020653648	0.250783518	1.189853141	0.117482529	no
Ccdc117	-0.38892196	-1.309414591	0.031859963	0.166428298	1.122276605	0.328257592	no
Mdn1	-0.386309743	-1.307045843	0.022059608	0.217941401	1.163072799	0.167155229	no
Myh9	-0.384446309	-1.305358708	0.003635753	0.193966243	1.143904207	0.104648812	no
Star	-0.382792786	-1.303863448	0.049777807	0.293504044	1.225613458	0.123427942	no
Pop1	-0.38265986	-1.303743319	0.043884972	0.327074582	1.254467054	0.080024563	no
Kdr	-0.382527163	-1.303623408	0.021264747	0.227595296	1.17088168	0.148742166	no
Irs2	-0.379863288	-1.301218544	0.010211112	0.270808231	1.206483538	0.054387849	no
Mir124a-1hg	-0.378747022	-1.300212133	0.03113707	0.104030412	1.074771829	0.515772332	no
Ccdc88c	-0.378710219	-1.300178965	0.008083811	0.191741263	1.142141394	0.146182418	no
Trip11	-0.378617074	-1.300095025	0.013427853	0.232416618	1.174801179	0.10766699	no
Rnft1	-0.373901945	-1.295852888	0.02013993	0.249406043	1.18871762	0.104888611	no
Cdr2	-0.373700538	-1.295671994	0.013051031	0.221576533	1.166007067	0.117809774	no
Nipbl	-0.373228107	-1.295247776	0.034985409	0.266533138	1.202913695	0.117035029	no
Igf1r	-0.370966828	-1.293219197	0.028587988	0.21187881	1.158195511	0.184173613	no
Mxd3	-0.369103561	-1.291550058	0.029634277	0.213185561	1.159245046	0.187340592	no
Nav2	-0.367958916	-1.290525739	0.005777077	0.167990053	1.123492157	0.165528188	no
Etv4	-0.367582167	-1.290188772	0.023354342	0.208457048	1.155451776	0.174883723	no
Zfp141	-0.365932272	-1.28871413	0.045042661	0.188612158	1.139666853	0.279371235	no
Clgn	-0.365552112	-1.28837459	0.040597044	0.258301087	1.196069388	0.135304033	no
Chuk	-0.365225552	-1.288082994	0.025729946	0.121934135	1.08819276	0.421561031	no
Maml3	-0.36306015	-1.286151105	0.041135571	0.205196892	1.152843671	0.227884035	no
Bcor	-0.361667884	-1.28491051	0.012439271	0.153152529	1.111996718	0.251050761	no



Fam53b	-0.360877829	-1.284207054	0.023314407	0.088772026	1.063464612	0.544050693	no
Egln3	-0.360768035	-1.284109326	0.042695638	0.149987896	1.109560163	0.374183139	no
Lyst	-0.359671958	-1.283134104	0.008481039	0.237499859	1.178947814	0.065019696	no
Kmt2c	-0.359620193	-1.283088065	0.01899435	0.172304786	1.126857265	0.225318626	no
Pecam1	-0.356656744	-1.28045517	0.009647174	0.255568977	1.193806469	0.051665762	no
P4ha1	-0.355534978	-1.27945994	0.046157548	0.083569709	1.059636694	0.612612353	no
Zfp397	-0.355385584	-1.279327457	0.031613663	0.154226826	1.11282507	0.319256106	no
Ccdc141	-0.354322484	-1.278385088	0.036907666	0.084157064	1.060068185	0.596728954	no
Eml5	-0.352449783	-1.276726746	0.007783031	0.155375473	1.113711433	0.197863041	no
Nme7	-0.352067261	-1.276388275	0.035773952	0.206464045	1.153856685	0.192756698	no
Dusp4	-0.352029341	-1.276354727	0.033669544	0.179859526	1.132773582	0.253136695	no
Lrrk2	-0.351729497	-1.276089482	0.022443757	0.177732254	1.131104525	0.217156391	no
Raver2	-0.349836541	-1.274416226	0.029097363	0.166725734	1.122508006	0.270776986	no
Chfr	-0.348185554	-1.272958648	0.011800234	0.159816631	1.117145138	0.211500137	no
Hipk3	-0.343689056	-1.26899735	0.015893774	0.243697355	1.184023204	0.072939791	no
Sos1	-0.343652328	-1.268965044	0.01338424	0.167918873	1.123436727	0.192674646	no
Trim59	-0.342611263	-1.268049675	0.047341745	0.232541944	1.174903237	0.164461438	no
Nktr	-0.341441093	-1.267021576	0.021868194	0.158827883	1.116379768	0.250823831	no
Sbk1	-0.339970526	-1.265730735	0.003781226	0.147928484	1.107977423	0.161277533	no
Zfp937	-0.339665478	-1.265463133	0.029554594	0.243787948	1.184097557	0.105973866	no
Lamc2	-0.339324287	-1.265163892	0.049457077	0.215771081	1.161324445	0.195659716	no
Ptchd2	-0.337533534	-1.263594475	0.008616637	0.230582248	1.173308382	0.05806541	no
Mast4	-0.337068413	-1.263187161	0.025048634	0.129922564	1.094234967	0.352726633	no
Lipa	-0.336527163	-1.262713345	0.02196005	0.269698119	1.205555542	0.059098633	no
Fam166a	-0.336352597	-1.262560566	0.017442881	0.217315082	1.162567983	0.106488978	no
Sirt1	-0.334590785	-1.261019675	0.039371522	0.274837053	1.209857433	0.08410515	no
Slc4a7	-0.334005729	-1.260508397	0.038785121	0.156930193	1.114912271	0.305333225	no
Arl15	-0.332792275	-1.259448626	0.003766414	0.186275846	1.137822761	0.076825324	no
Numb	-0.332733222	-1.259397075	0.006063197	0.178842187	1.131975071	0.109419797	no
Pcgf6	-0.332633117	-1.259309692	0.047836178	0.204105313	1.15197173	0.207468316	no
Jak2	-0.331543858	-1.25835925	0.01010447	0.209859499	1.156575542	0.08394071	no
Chd9	-0.331284948	-1.258133442	0.005200408	0.191394823	1.141867159	0.080733037	no
Zc3h11a	-0.328784597	-1.255954845	0.016268127	0.171902736	1.126543276	0.177785669	no
Gatm	-0.328723365	-1.25590154	0.040884821	0.197246457	1.146508028	0.198220687	no
Sgsm1	-0.328686555	-1.255869497	0.013646842	0.181372562	1.13396221	0.144322494	no
Vamp1	-0.327923665	-1.255205574	0.012736802	0.181197878	1.133824916	0.140264357	no
Otub2	-0.327694438	-1.255006154	0.014552209	0.193151746	1.14325858	0.126333587	no
Slco1c1	-0.327513733	-1.254848967	0.018843688	0.252728758	1.191458547	0.060574465	no
Rps6ka3	-0.32541973	-1.253028936	0.00300388	0.182355575	1.134735124	0.068514345	no

Ascc2	-0.324645578	-1.252356739	0.049033279	0.15510618	1.113503567	0.324503022	no
Abca7	-0.32375286	-1.251582039	0.004970194	0.163081937	1.119676478	0.121396254	no
Sipa1l3	-0.323041221	-1.250964822	0.01774172	0.216413248	1.161841484	0.09561693	no
Zmynd8	-0.320502772	-1.248765662	0.00517239	0.112739593	1.081279575	0.273025009	no
Jade2	-0.31939881	-1.247810461	0.010346773	0.128219389	1.092943929	0.26104958	no
Bdp1	-0.318924855	-1.247400597	0.013880995	0.186456508	1.137965254	0.126409516	no
Map3k2	-0.3182591	-1.246825097	0.044764575	0.200518932	1.149111612	0.188302433	no
Zc3h3	-0.318251053	-1.246818142	0.017555274	0.175239642	1.129151949	0.164825834	no
Cdk13	-0.317813002	-1.246439624	0.011812711	0.170091701	1.125129998	0.14863614	no
Epb4.1	-0.317750647	-1.246385753	0.030223943	0.095935151	1.068757949	0.483883557	no
Zfhx2	-0.317717493	-1.24635711	0.012392247	0.150320057	1.109815653	0.201572809	no
Dnajc3	-0.317183586	-1.245895949	0.027664531	0.176589327	1.1302088	0.194839317	no
Ccnd1	-0.316469883	-1.245279755	0.009228839	0.21969591	1.16448811	0.056935179	no
Slc7a6	-0.315504194	-1.244446487	0.014422042	0.202572348	1.150748329	0.097643157	no
Tet3	-0.315396857	-1.244353903	0.038247917	0.056266803	1.039771706	0.68977018	no
Stard8	-0.314992254	-1.244004974	0.024300026	0.227357493	1.170688697	0.091644397	no
Gpr17	-0.314575405	-1.243645586	0.039632212	0.210189917	1.15684046	0.152008508	no
Ssh2	-0.314443238	-1.243531659	0.02423383	0.213097101	1.159173968	0.110799309	no
Utrn	-0.314352869	-1.243453769	0.010341508	0.220529917	1.165161484	0.058607782	no
Mcf2l	-0.313773212	-1.242954264	0.017549388	0.18998554	1.140752282	0.127205676	no
Kcnj10	-0.313107233	-1.242380622	0.024821234	0.262563849	1.199608666	0.053777447	no
Bmp2k	-0.312628022	-1.241968017	0.039593709	0.19251811	1.142756567	0.187049842	no
Myo9b	-0.31222846	-1.241624095	0.025491819	0.160446517	1.117632994	0.222691117	no
Zfp462	-0.312027316	-1.241450997	0.019154537	0.182632837	1.134953222	0.147236857	no
Krit1	-0.311806757	-1.241261219	0.022053429	0.13468788	1.097855273	0.28963659	no
Col4a1	-0.311161291	-1.240705999	0.044998376	0.10777613	1.077565921	0.459839442	no
Vwa1	-0.310978027	-1.240548404	0.02131665	0.203252003	1.151290576	0.115155226	no
Slc24a5	-0.309824035	-1.239556502	0.040486031	0.055038356	1.038886723	0.697649688	no
Kcna1	-0.309671619	-1.239425555	0.008138963	0.13745276	1.099961295	0.199391956	no
Vcam1	-0.309585413	-1.239351497	0.047992802	0.265146003	1.201757663	0.085158393	no
Sfpq	-0.309376841	-1.239172335	0.01283162	0.159255767	1.11671092	0.16805359	no
Plcx2	-0.308741473	-1.23862672	0.049815119	0.140167436	1.102033008	0.345317739	no
Pde7a	-0.308277525	-1.23822846	0.011602581	0.178807541	1.131947887	0.118457613	no
Zbtb44	-0.307553182	-1.237606931	0.047025244	0.261836992	1.199004432	0.085591586	no
Rnf165	-0.307284394	-1.237376374	0.009313379	0.160284832	1.117507746	0.1434772	no
D930016D06Rik	-0.306666144	-1.236846225	0.043539052	0.192405475	1.142667353	0.188437411	no
Usp35	-0.305969135	-1.236248813	0.014432184	0.168512021	1.12389871	0.150931276	no
Grin2c	-0.305739417	-1.236051982	0.026151417	0.187012313	1.138403745	0.152907884	no
Ikzf5	-0.305281802	-1.235659975	0.023603161	0.148521891	1.108433248	0.241929834	no

Ppp1r3c	-0.303516841	-1.234149221	0.045552277	0.206089901	1.153557486	0.159463848	no
Rfx7	-0.302902349	-1.233623667	0.026016389	0.261302189	1.198560047	0.050405465	no
Gm17066	-0.302799552	-1.233535771	0.042444385	0.150376545	1.109859109	0.29014636	no
Itpr1	-0.302604024	-1.233368601	0.007639801	0.1836192	1.135729449	0.083242677	no
Slco2b1	-0.302525274	-1.233301279	0.021370385	0.219564044	1.164381678	0.082939286	no
Mapk11	-0.302286966	-1.233097576	0.007057894	0.135697832	1.09862409	0.185661292	no
Wipf3	-0.301839833	-1.232715463	0.017840882	0.20285808	1.150976263	0.094733143	no
Coro6	-0.301615728	-1.23252399	0.039191564	0.078190152	1.055692853	0.569134407	no
Tacc1	-0.300894578	-1.231908051	0.00412747	0.172397231	1.126929474	0.074041867	no
Lingo3	-0.299995541	-1.231140608	0.018898574	0.195384824	1.145029545	0.108725009	no
Glcci1	-0.299152359	-1.230421279	0.014410809	0.114272373	1.082428982	0.311070175	no
Fam126b	-0.29881915	-1.23013713	0.025974516	0.14666977	1.107011163	0.244063062	no
Rgs5	-0.298502248	-1.229866948	0.016135734	0.137309534	1.0998521	0.234774058	no
Hook3	-0.297282048	-1.228827193	0.036849518	0.191816869	1.14220125	0.159416387	no
Sfswap	-0.296926868	-1.228524703	0.014881912	0.1736009	1.127870086	0.130770988	no
Sik2	-0.296082028	-1.227805491	0.032076134	0.11104634	1.08001125	0.392307786	no
Vegfa	-0.295321563	-1.227158469	0.01581272	0.152653505	1.111612148	0.182369371	no
Suclg2	-0.294223259	-1.226224605	0.04395959	0.273921213	1.209089644	0.05871486	no
Dnaja4	-0.29385071	-1.225907997	0.019143433	0.108771728	1.078309801	0.349895559	no
Wee1	-0.293155722	-1.225317583	0.03056573	0.19140968	1.141878919	0.141347997	no
Dimt1	-0.293140562	-1.225304708	0.037399799	0.12915791	1.093655157	0.332797196	no
Dnaja1	-0.292641276	-1.224880729	0.011865206	0.142052159	1.103473634	0.18802979	no
Akap17b	-0.292041301	-1.224371443	0.038172401	0.187672943	1.138925155	0.16623749	no
Golm1	-0.291645987	-1.224035998	0.016980616	0.206558079	1.153931895	0.077767122	no
Fstl4	-0.291012881	-1.223498965	0.047279252	0.213568193	1.159552541	0.134573897	no
Osbpl6	-0.290234644	-1.222839148	0.012075638	0.119302456	1.086209552	0.262740687	no
Ahsa2	-0.289986845	-1.222629129	0.016137149	0.168233718	1.123681926	0.138861258	no
Apbb2	-0.289017817	-1.221808191	0.022689568	0.165327431	1.121420564	0.169082967	no
Ndufaf4	-0.288876222	-1.22168828	0.033022523	0.157574742	1.115410489	0.221868529	no
Xbp1	-0.288854411	-1.221669811	0.00632261	0.167502475	1.123112522	0.087902327	no
Srrm2	-0.288604302	-1.221458038	0.01027349	0.189870755	1.140661524	0.074179964	no
Daam2	-0.287367986	-1.22041176	0.04634826	0.230847086	1.173523788	0.101341158	no
Ipmk	-0.286612476	-1.219772822	0.007380409	0.176860359	1.130421146	0.077150067	no
Akap13	-0.286389208	-1.219584068	0.03107377	0.136387157	1.099149142	0.276611244	no
F420014N23Rik	-0.286031762	-1.219281937	0.046293702	0.16468778	1.120923468	0.231993049	no
Slc25a42	-0.285747804	-1.219041976	0.029690536	0.154016449	1.112662807	0.21714714	no
Tra2a	-0.285627105	-1.218939992	0.046166866	0.159886547	1.117199278	0.242379047	no
Ltbp3	-0.285476818	-1.218813021	0.027274692	0.207452179	1.154647258	0.096833858	no
Med12l	-0.285212183	-1.218589473	0.034866784	0.223576491	1.167624584	0.089551356	no

Mat2a	-0.284344091	-1.217856449	0.017075778	0.098833131	1.07090695	0.368442107	no
Cntnap1	-0.284292847	-1.217813193	0.009497783	0.16097472	1.11804226	0.115377991	no
Ick	-0.283401836	-1.217061302	0.02221283	0.232634652	1.174978739	0.054287068	no
Eif5a2	-0.28223429	-1.216076755	0.037490259	0.105664262	1.075989696	0.407592639	no
Atp2b2	-0.281902962	-1.215797504	0.013691591	0.168910966	1.124209543	0.116936151	no
Efcab14	-0.281471931	-1.215434317	0.031609132	0.208329731	1.155349812	0.100663402	no
Ralgps2	-0.28102771	-1.21506013	0.025567429	0.173335752	1.127662818	0.148881271	no
Syne1	-0.280852672	-1.214912719	0.00821196	0.164714448	1.120944188	0.096575664	no
Ptpn1	-0.280499631	-1.214615454	0.006740767	0.173443945	1.127747389	0.072923204	no
Dpf2	-0.280062954	-1.214247869	0.013493603	0.133919105	1.09727041	0.203787821	no
Tnks	-0.279424087	-1.213710284	0.009996784	0.163011035	1.119621453	0.108257169	no
Rgs20	-0.279106832	-1.213443413	0.014472544	0.210512456	1.157099121	0.055406565	no
Setd8	-0.278407535	-1.21285538	0.019728335	0.141617114	1.103140932	0.206871353	no
9330159F19Rik	-0.277159848	-1.211806919	0.033756964	0.173510653	1.127799535	0.164734663	no
Sorl1	-0.276953851	-1.211633902	0.043954523	0.143739515	1.104764997	0.270753931	no
Asap2	-0.276931443	-1.211615083	0.026623569	0.216246741	1.1617074	0.074743208	no
Ptpn3	-0.276692652	-1.211414556	0.026452132	0.144978335	1.105714049	0.218782526	no
Fkbp5	-0.276231772	-1.211027622	0.036220386	0.157134879	1.115070463	0.212355355	no
Rbm12	-0.27605884	-1.210882468	0.048479024	0.14781454	1.107889918	0.270052064	no
Dmx1	-0.275651045	-1.210540247	0.027458621	0.137493244	1.099992162	0.243923644	no
Csmd2	-0.275086092	-1.210066297	0.021119261	0.122284119	1.088456777	0.272759226	no
Stim2	-0.274029346	-1.209180271	0.0447101	0.111210051	1.080133812	0.388838877	no
Adgrf5	-0.271943864	-1.207433609	0.040969896	0.196296337	1.145753217	0.128387513	no
Dcp1a	-0.271673497	-1.207207352	0.035712944	0.143571625	1.10463644	0.243676884	no
Phrf1	-0.270876598	-1.206540713	0.017129424	0.171267643	1.126047467	0.112483709	no
Uggt1	-0.270640525	-1.206343298	0.023763682	0.157464567	1.115325311	0.165807974	no
Bcl11b	-0.270416802	-1.206156242	0.024979555	0.045196355	1.031823604	0.685243095	no
Ccdc88a	-0.270230423	-1.206000431	0.037541437	0.187443268	1.138743855	0.134967746	no
Elac2	-0.270097771	-1.205889548	0.017936559	0.2099448	1.156643927	0.05733053	no
Lynx1	-0.269247936	-1.205179415	0.047505264	0.123482027	1.089360927	0.33716606	no
Srrm1	-0.269054845	-1.205018124	0.010301243	0.168660012	1.124014005	0.087641815	no
Bmi1	-0.268380849	-1.204455297	0.008989875	0.174463684	1.128544795	0.071650578	no
2700029M09Rik	-0.265915132	-1.202398515	0.020043508	0.141734966	1.10323105	0.188260054	no
Mfhas1	-0.265815503	-1.202315483	0.021443575	0.150756746	1.110151634	0.168111176	no
Adgra2	-0.265533863	-1.202080792	0.047147	0.135935946	1.098805431	0.287737296	no
Pde4a	-0.265495701	-1.202048995	0.005209986	0.144063579	1.105013181	0.099217117	no
Sox5	-0.265455206	-1.202015255	0.024488479	0.165092955	1.121238319	0.142487992	no
Zfp385b	-0.265337215	-1.201916952	0.039765931	0.147812686	1.107888494	0.23085925	no
Ttbk2	-0.265045663	-1.201674083	0.013702431	0.181229662	1.133849895	0.076911556	no

Abi3	-0.265044939	-1.20167348	0.031149606	0.132772682	1.096398821	0.254495074	no
Plekha3	-0.264943971	-1.201589383	0.011271291	0.126577333	1.091700663	0.191070693	no
Trove2	-0.264814073	-1.201481199	0.038886858	0.144777333	1.105560007	0.236317546	no
Fubp1	-0.263875541	-1.20069984	0.024517595	0.104828759	1.075366742	0.338968551	no
Kcnab3	-0.263840631	-1.200670787	0.031189812	0.161318409	1.11830864	0.168435553	no
Ubr2	-0.263430508	-1.200329514	0.012723652	0.145312624	1.105970285	0.142029414	no
Ccdc6	-0.263346555	-1.200259667	0.034817855	0.086127444	1.061516976	0.462330105	no
Ints10	-0.26319886	-1.200136797	0.013379165	0.163637845	1.120108002	0.103600698	no

**Suppl. Table 3 List of genes up-regulated in *Shank3*-deficient mice and recovered by UNC0642 treatment [Het+SAL\_vs\_WT (fold change > 1.2 & P < 0.05) and Het+UNC\_vs\_Het+SAL (fold change < -1.1 & P < 0.05)]**

Gene Symbol	logFC (SAL_vs_WT)	Fold change (SAL_vs_WT)	P.Value (SAL_vs_WT)	logFC (UNC_vs_SAL)	Fold change (UNC_vs_SAL)	P.Value (UNC_vs_SAL)	Restored
Fdft1	0.267010659	1.203311916	0.008881474	-0.191759397	-1.14215575	0.048486125	yes
Ric8	0.270509286	1.206233565	0.010698844	-0.209983886	-1.156675264	0.039648919	yes
Phf13	0.271448635	1.207019208	0.024602701	-0.234637686	-1.17661121	0.04779191	yes
Wdr19	0.279204938	1.213525932	0.026421647	-0.28102471	-1.215057603	0.025589026	yes
Gpr89	0.286172119	1.219400565	0.032662567	-0.26733761	-1.203584648	0.044174366	yes
Ppapdc1b	0.289644249	1.222338826	0.015051431	-0.256841696	-1.194860088	0.028160289	yes
Fbxw9	0.289709977	1.222394516	0.018918709	-0.257327159	-1.195262223	0.034015154	yes
2610001J05Rik	0.292826824	1.225038274	0.010456966	-0.238129451	-1.179462419	0.031571044	yes
Arl4a	0.310871463	1.240456774	0.005817242	-0.210903901	-1.157413118	0.0468222	yes
Dusp1	0.311729219	1.241194509	0.004799451	-0.236531488	-1.178156742	0.024684072	yes
Elp6	0.313547912	1.242760172	0.03437204	-0.289450183	-1.222174413	0.04862005	yes
Slc35f5	0.314281822	1.243392535	0.014110315	-0.257376372	-1.195302996	0.038577174	yes
Cd200	0.315194319	1.244179223	0.004222974	-0.236694271	-1.178289684	0.023720793	yes
Usp16	0.316310618	1.245142291	0.036739738	-0.325825336	-1.253381267	0.032123207	yes
Ntng1	0.318867098	1.24735066	0.044813032	-0.361302955	-1.284585534	0.025270739	yes
Leprot	0.319203409	1.247641467	0.00731817	-0.239988687	-1.180983401	0.034841665	yes
Dpysl5	0.32220963	1.250243955	0.007325461	-0.22695725	-1.17036396	0.046332261	yes
Fra10ac1	0.325138553	1.252784747	0.025838075	-0.326479874	-1.253950044	0.025316876	yes
Ddx3y	0.325603989	1.253188981	0.003845087	-0.243259517	-1.183663924	0.02277246	yes
Txn1	0.32616835	1.253679306	0.004057415	-0.245470813	-1.18547958	0.02279755	yes
Ndn	0.330624773	1.257557854	0.003166093	-0.230550943	-1.173282922	0.028080355	yes
Bbs9	0.33704102	1.263163177	0.020381765	-0.280507995	-1.214622496	0.04800753	yes
Atraid	0.340229177	1.26595768	0.002413122	-0.205959348	-1.153453103	0.045161148	yes
Taf6l	0.340403676	1.266110811	0.027967728	-0.30787163	-1.23788014	0.044098628	yes
Wbp5	0.341109449	1.26673035	0.003142542	-0.223571298	-1.167620381	0.03726941	yes
Gap43	0.344691204	1.269879148	0.005091387	-0.243929663	-1.184213875	0.035504084	yes
Cep83os	0.350514036	1.275014838	0.004518219	-0.269281261	-1.205207254	0.022184788	yes
Noa1	0.353128316	1.277327362	0.012013202	-0.300108492	-1.231237	0.028603789	yes
Mrpl57	0.358880962	1.282430784	0.008673912	-0.268340999	-1.204422028	0.040221862	yes
Celf6	0.360576289	1.283938669	0.003825584	-0.256550431	-1.194618883	0.028888868	yes
Coa7	0.367250392	1.289892103	0.010489452	-0.352792007	-1.277029637	0.013294191	yes
Izumo4	0.383402613	1.304414708	0.005250518	-0.33983965	-1.265615918	0.01133896	yes
Fxyd6	0.38569266	1.306486901	0.003898136	-0.245336343	-1.18536909	0.047160206	yes
Bmp3	0.38640318	1.307130498	0.002413442	-0.236943117	-1.178492941	0.042761392	yes
Gm10677	0.391481951	1.311740145	0.00487362	-0.267747009	-1.203926242	0.040502107	yes
Xrcc6	0.397519114	1.31724081	0.02125123	-0.403865124	-1.323047744	0.019560173	yes

Pstpip2	0.398141315	1.317809027	0.023729177	-0.343566452	-1.268889512	0.046713322	yes
Snrpd1	0.403756186	1.322947844	0.004027271	-0.33548177	-1.2617987	0.013248575	yes
Btd	0.406328406	1.325308668	0.014528657	-0.378843906	-1.300299452	0.021231589	yes
Tshz2	0.409130306	1.327885089	0.00179239	-0.255253009	-1.19354504	0.033426068	yes
Rccd1	0.409454649	1.328183655	0.04010269	-0.411328455	-1.329909851	0.039308713	yes
Crhbp	0.413666831	1.332067168	0.00105613	-0.236707314	-1.178300337	0.03692359	yes
Klf5	0.416325613	1.334524335	0.024888494	-0.457743671	-1.373392196	0.015066119	yes
Htr2c	0.42410697	1.341741706	0.001538124	-0.242604331	-1.183126496	0.045044214	yes
Dars2	0.427110945	1.344538387	0.004143206	-0.284631968	-1.218099486	0.04098744	yes
Glra2	0.429039128	1.346336584	0.007216279	-0.352718214	-1.276964319	0.02239096	yes
Tusc1	0.432002607	1.349104972	0.038603785	-0.471629823	-1.386675121	0.025602825	yes
Cdk5rap3	0.434315915	1.351269948	0.000952036	-0.243940413	-1.184222699	0.03799165	yes
Gm9866	0.435625218	1.352496835	0.002372716	-0.340735756	-1.266402278	0.012416673	yes
Ccdc53	0.439627314	1.356253926	0.021457984	-0.373314468	-1.295325313	0.046013593	yes
Cntnap4	0.454226076	1.370047655	0.001085613	-0.418008139	-1.336081616	0.002127626	yes
Nov	0.461867167	1.377323227	0.000634608	-0.256347671	-1.194451	0.031709315	yes
Zkscan4	0.469553978	1.384681315	0.034570138	-0.446557848	-1.362784882	0.043148624	yes
Dhrs7b	0.478561176	1.393353359	0.001195538	-0.347167113	-1.272060346	0.011680323	yes
Cort	0.496265567	1.410557587	0.017580427	-0.513830515	-1.42783623	0.014500916	yes
Tmem169	0.497638529	1.411900604	0.000669336	-0.381016814	-1.302259366	0.005402546	yes
Tmem117	0.504953063	1.419077187	0.024583229	-0.446456344	-1.362689003	0.043437232	yes
Cd24a	0.505623294	1.419736598	0.010650729	-0.408848493	-1.327625728	0.032878847	yes
Sema3f	0.51354144	1.427550161	0.008797098	-0.36746863	-1.290087241	0.048909446	yes
Zfand4	0.533092355	1.447027515	0.026404812	-0.487377736	-1.401894455	0.04001102	yes
Fancl	0.534031978	1.447970267	0.008827883	-0.439695268	-1.35631781	0.026058462	yes
AA414768	0.543200626	1.457201743	0.01499948	-0.442450959	-1.358910988	0.041410066	yes
Bex4	0.556464684	1.470660952	0.00406571	-0.393442859	-1.313524272	0.030995114	yes
Gprn3	0.558098296	1.472327174	0.017392731	-0.483487564	-1.398119391	0.035494597	yes
A730017C20Rik	0.562652661	1.476982427	0.000430213	-0.372719165	-1.294790931	0.009885694	yes
Trhr	0.608935292	1.525133246	0.006022511	-0.488887562	-1.40336235	0.021957713	yes
Epha8	0.616573587	1.533229421	0.011455437	-0.459904793	-1.375451046	0.04927493	yes
Fam26e	0.625080634	1.542297024	0.008614503	-0.486081291	-1.40063524	0.033573834	yes
Rwdd2b	0.627369612	1.544745973	0.008062908	-0.528974167	-1.44290285	0.021333643	yes
Rsph9	0.651867298	1.571200504	0.001529282	-0.384819001	-1.305695966	0.039215544	yes
Cbln1	0.660845538	1.581008953	0.000728386	-0.495934282	-1.41023372	0.006585966	yes
Mtrf1	0.665212215	1.585801521	0.006881654	-0.465987028	-1.381262029	0.045536234	yes
Ramp3	0.670362205	1.591472475	0.001240058	-0.467759826	-1.38296038	0.013963639	yes
Lrrc6	0.671994376	1.593273981	0.002253388	-0.501170388	-1.415361311	0.0156782	yes
Adam18	0.773368299	1.709255774	0.013890496	-0.750386216	-1.682243114	0.016448741	yes

3010026O09Rik	0.820439694	1.765944122	0.000753096	-0.551732323	-1.46584476	0.013258109	yes
A930005H10Rik	0.82376712	1.770021789	0.000696262	-0.797617619	-1.738228348	0.000921839	yes
Ucma	0.831025294	1.778949176	0.022887966	-0.84916372	-1.801456381	0.020474738	yes
Efhc2	0.832542664	1.780821189	0.019455861	-0.785561576	-1.723763171	0.026172759	yes
1700003M02Rik	0.890505593	1.853825684	0.010527085	-0.916802774	-1.887926728	0.008804347	yes
Myh3	1.024674345	2.034500091	0.001711059	-0.839232696	-1.789098348	0.007203187	yes
Gm35612	1.088533208	2.126577168	0.011678383	-0.918744111	-1.890468894	0.028893336	yes
Acr	1.188498616	2.279154327	0.003831537	-0.803141084	-1.74489604	0.036724212	yes
Gm11978	1.507810176	2.843780624	0.002202035	-1.236209755	-2.355788065	0.008777633	yes
Gnb4	0.263550135	1.200429048	0.041158987	-0.162353657	-1.119111402	0.19062915	no
Rraga	0.264039266	1.200836111	0.039627033	-0.165710023	-1.121717996	0.17821279	no
Marc2	0.264311814	1.201062989	0.039133477	-0.041405527	-1.029115942	0.729696798	no
Wnt7b	0.264510515	1.201228421	0.018948833	-0.117532677	-1.084877898	0.263944442	no
Iscu	0.264637738	1.201334356	0.02366523	-0.198333379	-1.147372129	0.07957084	no
Sstr1	0.265357425	1.201933789	0.010470638	-0.173939691	-1.128134977	0.075976916	no
Ccdc71	0.265884081	1.202372636	0.030141049	-0.166311123	-1.122185458	0.156565777	no
Pnma3	0.266884536	1.203206725	0.036303802	-0.142488484	-1.103807416	0.240710871	no
Gpr61	0.267503248	1.203722842	0.042247758	-0.158072344	-1.115795272	0.211023413	no
Gpr85	0.268427119	1.204493927	0.022528036	-0.144549024	-1.105385064	0.193428503	no
Slc25a11	0.269315505	1.205235861	0.038838074	-0.130266114	-1.094495569	0.291515683	no
Zfp330	0.269716926	1.205571257	0.024564236	-0.156331083	-1.114449376	0.170110332	no
Lcorl	0.270001593	1.205809159	0.048740462	-0.182283305	-1.134678282	0.169418677	no
Coq7	0.27021611	1.205988466	0.04477379	-0.222623826	-1.166853812	0.091906177	no
Carkd	0.271810631	1.207322107	0.026839285	-0.124713551	-1.090291233	0.280617409	no
Sumo3	0.272064301	1.20753441	0.016408714	-0.154783661	-1.113254668	0.14731976	no
Tceal1	0.272831486	1.208176714	0.039244582	-0.180915392	-1.13360293	0.15634461	no
Cnrip1	0.273032398	1.208344978	0.024400342	-0.17340736	-1.12771879	0.134139027	no
Ap2m1	0.273092064	1.208394953	0.037746017	-0.155240617	-1.113607334	0.214943159	no
Rpl22l1	0.273297968	1.20856743	0.012159457	-0.192565482	-1.142794091	0.064062501	no
Grb10	0.273633016	1.208848138	0.021508202	-0.062474663	-1.044255443	0.569658678	no
Zdhhc16	0.276057203	1.210881094	0.01998788	-0.170654037	-1.125568638	0.130219516	no
Pls3	0.276118604	1.210932631	0.020340525	-0.204547811	-1.152325112	0.074440882	no
Prpf31	0.276966518	1.21164454	0.047584031	-0.073792578	-1.052479825	0.575708442	no
Zc4h2	0.277061721	1.211724499	0.034924297	-0.18941387	-1.140300347	0.135008748	no
Tm7sf2	0.277282796	1.211910195	0.044854333	-0.210405945	-1.157013698	0.118352509	no
Ncald	0.278576764	1.212997658	0.043221315	-0.190537291	-1.141188641	0.151332429	no
Efnb3	0.280297742	1.214445495	0.040311936	-0.183053097	-1.135283884	0.163464014	no
Eif6	0.281428263	1.215397529	0.024651163	-0.111608345	-1.080432052	0.340790109	no
Snca	0.281556542	1.215505601	0.029993207	-0.176995023	-1.130526667	0.152773127	no



Pigp	0.283060362	1.216773267	0.036468696	-0.131611401	-1.095516642	0.304915019	no
Wibg	0.283528233	1.217167935	0.037727022	-0.221554704	-1.165989425	0.095938762	no
Zscan18	0.283617721	1.217243436	0.022115192	-0.115348018	-1.083236321	0.318894607	no
Prss12	0.283951301	1.21752492	0.03091357	-0.139038311	-1.101170839	0.263832242	no
Rabac1	0.284640904	1.218107031	0.033953686	-0.140431498	-1.102234736	0.267653302	no
Nelfe	0.285043419	1.218446933	0.031475353	-0.140074647	-1.101962131	0.264304825	no
Lrrc24	0.285422954	1.218767517	0.016083432	-0.167920351	-1.123437878	0.133539911	no
Coasy	0.285902082	1.219172344	0.032314421	-0.179842968	-1.132760582	0.160164601	no
Orc6	0.286584655	1.2197493	0.041645352	-0.208061616	-1.155135118	0.127680378	no
Tmem29	0.287685488	1.220680372	0.040240709	-0.212570589	-1.158751004	0.118793862	no
Pex11b	0.288882967	1.221693993	0.043089004	-0.207479572	-1.154669182	0.1338793	no
Smyd3	0.289017949	1.221808302	0.045528948	-0.131398814	-1.095355225	0.338545868	no
Ngfrap1	0.291434871	1.223856892	0.02201971	-0.150280506	-1.109785229	0.208401789	no
Tmem199	0.291672652	1.224058621	0.017819757	-0.226732371	-1.170181545	0.057043936	no
1700037H04Rik	0.292733522	1.22495905	0.02871613	-0.116598795	-1.084175864	0.352408348	no
Isoc1	0.294852275	1.226759357	0.046351861	-0.200337204	-1.148966874	0.162031144	no
2210015D19Rik	0.295156475	1.227018053	0.043460649	-0.215176954	-1.160846289	0.129742991	no
Acat2	0.296328536	1.2280153	0.015697478	-0.141771414	-1.103258922	0.215175862	no
Slc35b2	0.297976287	1.22941866	0.021059097	-0.131581373	-1.095493841	0.276070766	no
Lhpp	0.299420286	1.230649805	0.023620672	-0.215585174	-1.161174805	0.090877976	no
Nfkbib	0.300079142	1.231211952	0.045065518	-0.241481152	-1.182205758	0.099536564	no
Sf3b6	0.300334062	1.231429523	0.019928229	-0.208385345	-1.15539435	0.092081064	no
Rnasel	0.300856673	1.231875685	0.028128454	-0.181411961	-1.133993178	0.16531724	no
Ahr	0.300923198	1.231932489	0.049560122	-0.281607731	-1.21554873	0.06422471	no
Trappc2l	0.301467239	1.23239714	0.025237459	-0.110525958	-1.079621758	0.379728136	no
Klf15	0.302299484	1.233108276	0.038005986	-0.119566825	-1.086408615	0.384964787	no
Zcchc12	0.304506761	1.234996336	0.008394114	-0.136713887	-1.099398097	0.19700961	no
Psmc9	0.305462274	1.235814558	0.01842273	-0.208248391	-1.155284674	0.092918528	no
lft81	0.305519596	1.235863661	0.0101765	-0.205884166	-1.153392995	0.067657849	no
Supt4a	0.30614265	1.236397507	0.019023619	-0.23206095	-1.17451159	0.065745243	no
Tuba1a	0.306256309	1.236494917	0.022989111	-0.21163244	-1.157997742	0.100457992	no
Cdh13	0.306540833	1.236738799	0.028207395	-0.266214376	-1.202647942	0.052191232	no
Sdr39u1	0.30679258	1.236954625	0.018752989	-0.167000291	-1.122721649	0.174196436	no
Stmn4	0.30762419	1.237667846	0.009560701	-0.160121156	-1.11738097	0.145240661	no
Tmem9	0.307871898	1.23788037	0.026260011	-0.166943868	-1.12267774	0.20199185	no
Lingo2	0.308156239	1.238124369	0.020616932	-0.185878605	-1.137509508	0.141338948	no
Psen2	0.308818061	1.238692476	0.033695175	-0.206658926	-1.15401256	0.139982372	no
Apoa1bp	0.30890012	1.238762934	0.046207102	-0.139900159	-1.101828862	0.341357519	no
Pithd1	0.310380407	1.240034627	0.017474634	-0.216879728	-1.162217214	0.082342666	no

Ydjc	0.311321897	1.240844126	0.032946162	-0.149381833	-1.109094144	0.279850595	no
Ube2s	0.312388229	1.241761604	0.017879722	-0.210641889	-1.157202936	0.094185665	no
Pet100	0.312778835	1.242097854	0.037520364	-0.279086112	-1.213425986	0.060096635	no
Wdpcp	0.313253914	1.242506943	0.043109239	-0.22835709	-1.17150011	0.129084606	no
Lrrcc1	0.313944484	1.243101832	0.019527003	-0.148573174	-1.108472649	0.23786186	no
Tab1	0.314012431	1.243160381	0.011947981	-0.16670471	-1.122491648	0.152472389	no
Cntn6	0.315381632	1.244340772	0.042629328	-0.157604938	-1.115433834	0.287855791	no
Chid1	0.315392193	1.244349881	0.023565004	-0.20634186	-1.153758967	0.120751272	no
Snx8	0.31632719	1.245156594	0.038047408	-0.185458519	-1.137178335	0.204052239	no
Thtpa	0.317432684	1.246111085	0.020205776	-0.22721945	-1.170576686	0.083804883	no
Yif1a	0.317488442	1.246159246	0.038863344	-0.27631112	-1.21109423	0.067958915	no
1110004F10Rik	0.317632583	1.246283758	0.006864883	-0.193206442	-1.143301924	0.078013808	no
Dolk	0.318784303	1.247279077	0.021817578	-0.234351832	-1.1763781	0.080487395	no
Glt8d2	0.318860432	1.247344896	0.036940654	-0.140780527	-1.10250143	0.329656895	no
Lrrc61	0.318959899	1.247430898	0.048252476	-0.144779267	-1.105561489	0.345991862	no
Cdk11	0.320202717	1.248505968	0.03621484	-0.268151678	-1.204263985	0.073730607	no
Tceal6	0.322529808	1.250521454	0.027083608	-0.193054584	-1.143181587	0.164219473	no
Tceal8	0.322741617	1.250705062	0.007357533	-0.159454322	-1.116864621	0.149888425	no
Cdc26	0.323057727	1.250979135	0.033219852	-0.215238622	-1.160895911	0.140470058	no
Omg	0.323490334	1.25135431	0.014267681	-0.200193043	-1.14885207	0.107513774	no
Snrnp25	0.324022673	1.251816132	0.036074598	-0.215187633	-1.160854882	0.148475132	no
C030006K11Rik	0.324080852	1.251866614	0.047456149	-0.295043383	-1.226921871	0.068379814	no
Fabp3	0.32478696	1.252479474	0.021395037	-0.162667746	-1.11935507	0.218000154	no
Tceal5	0.326028895	1.253558127	0.015647789	-0.181916768	-1.134390037	0.150696911	no
Dpysl3	0.3272343	1.254605942	0.013466104	-0.159036241	-1.116541009	0.195203264	no
Plcd3	0.32932505	1.256425431	0.038101594	-0.179241562	-1.132288475	0.236923231	no
Tmem86a	0.330547106	1.257490156	0.02056093	-0.177327083	-1.130786907	0.187589755	no
Fam185a	0.330659704	1.257588303	0.02134511	-0.225676759	-1.169325643	0.101151774	no
Itпка	0.331108703	1.257979753	0.019626819	-0.153943227	-1.112606336	0.24219705	no
Thsd4	0.331334288	1.258176471	0.045373396	-0.113724854	-1.082018266	0.46770334	no
Cisd3	0.333822463	1.260348285	0.033773643	-0.1768639	-1.130423921	0.237010164	no
Rab33a	0.333960772	1.260469118	0.037028742	-0.13136079	-1.095326357	0.383875842	no
Tubb2a	0.334350004	1.260809232	0.022562622	-0.20283506	-1.150957897	0.142730825	no
Acot9	0.335577081	1.261882064	0.025617539	-0.278753665	-1.213146402	0.057898067	no
Sfxn4	0.337767348	1.263799279	0.027361682	-0.228009181	-1.171217635	0.12109515	no
Rbp4	0.341184795	1.266796507	0.012545763	-0.232195844	-1.174621414	0.07411082	no
Ddt	0.344025639	1.269293443	0.015493989	-0.195528197	-1.145143342	0.143792288	no
Fbll1	0.34768045	1.272513049	0.008587012	-0.184800958	-1.136660142	0.131772028	no
Ofd1	0.350006941	1.274566759	0.038149864	-0.286009663	-1.219263261	0.083555433	no

Emc9	0.350355514	1.274874748	0.013023368	-0.194702205	-1.144487896	0.140760535	no
Ndufb4	0.35117386	1.275598105	0.014640987	-0.220270766	-1.164952205	0.104676379	no
Slc22a8	0.353714567	1.27784652	0.02665934	-0.111969987	-1.080702919	0.45176238	no
Cxx1a	0.354365417	1.278423131	0.034692249	-0.176754369	-1.130338102	0.26714057	no
Dnajc30	0.354414466	1.278466596	0.020167095	-0.184132595	-1.13613368	0.198322756	no
Arrdc1	0.360578023	1.283940211	0.048683134	-0.128696656	-1.093305553	0.457957875	no
St6gal2	0.361370697	1.284645853	0.030600525	-0.14011239	-1.101990961	0.372199844	no
Hint2	0.361712984	1.284950678	0.011271138	-0.238763893	-1.179981215	0.077391783	no
Mrgpre	0.361719085	1.284956112	0.019688356	-0.277174683	-1.211819379	0.064691569	no
Zfp575	0.361760765	1.284993235	0.04040521	-0.261320792	-1.198575502	0.126994684	no
6430573F11Rik	0.362835511	1.285950857	0.043956423	-0.236820607	-1.178392871	0.173070817	no
Cryl1	0.364265075	1.287225735	0.027592675	-0.227850183	-1.171088563	0.149462093	no
A930017M01Rik	0.364967298	1.287852437	0.040155726	-0.211911843	-1.15822203	0.213564153	no
Kiss1r	0.368191708	1.290733994	0.042992685	-0.220795462	-1.165375966	0.206415287	no
Znhit2	0.369674069	1.292060897	0.011876477	-0.21874693	-1.163722383	0.113046786	no
Tpst2	0.369933126	1.292292927	0.017967808	-0.196211024	-1.145685466	0.181405628	no
Pcsk5	0.370129819	1.292469127	0.017607208	-0.211968318	-1.15826737	0.149723395	no
Tmem192	0.371518344	1.293713665	0.022860889	-0.309594514	-1.239359315	0.052282816	no
Syt5	0.372466576	1.294564257	0.004761653	-0.228897779	-1.171939244	0.060566439	no
Tmem141	0.372509649	1.294602908	0.012936821	-0.182956315	-1.135207727	0.189311556	no
Sdr42e1	0.374031849	1.295969575	0.017252787	-0.198789178	-1.147734682	0.177838732	no
Tctex1d2	0.374647361	1.296522606	0.034926573	-0.267857192	-1.204018193	0.119184892	no
Mzt2	0.375178493	1.297000012	0.017977727	-0.224910023	-1.168704358	0.134124375	no
Gpr62	0.376644112	1.298318291	0.016394801	-0.211880499	-1.158196867	0.15156064	no
Pnck	0.378254592	1.299768412	0.002511966	-0.216341705	-1.16178387	0.05801157	no
Pcdhb20	0.379279302	1.300691933	0.01493473	-0.210349375	-1.156968331	0.150584675	no
Sdhaf1	0.379597751	1.300979069	0.047989385	-0.225225078	-1.168959606	0.222493989	no
Fxyd1	0.379875232	1.301229317	0.036882253	-0.061624489	-1.043640249	0.716846054	no
Lgals1	0.380974255	1.302220951	0.024679474	-0.213951625	-1.159860762	0.183409194	no
Epm2a	0.38147294	1.302671157	0.016706851	-0.294417789	-1.226389958	0.056012217	no
Tuba1b	0.384704961	1.305592759	0.035637656	-0.209053384	-1.155929478	0.222097593	no
Jsrp1	0.385359804	1.306185505	0.049814877	-0.133975568	-1.097313355	0.471955342	no
Sh2d3c	0.385672055	1.306468241	0.016301049	-0.193883578	-1.143838665	0.195745078	no
Fabp5	0.391657196	1.311899493	0.040052868	-0.150295764	-1.109796966	0.394209405	no
B230217O12Rik	0.393110278	1.313221503	0.027010502	-0.270222399	-1.205993724	0.114028074	no
Ccdc65	0.395027003	1.314967373	0.031526345	-0.200303182	-1.148939779	0.250134645	no
Usb1	0.395642239	1.315528258	0.033175184	-0.355173743	-1.279139618	0.052773777	no
Bmyc	0.398844214	1.318451237	0.022083918	-0.229794683	-1.172668049	0.161183751	no
Zeb2os	0.399640111	1.319178793	0.03842395	-0.207738714	-1.154876606	0.258635145	no

A830009L08Rik	0.399645023	1.319183284	0.048704858	-0.171541104	-1.126260927	0.373931871	no
Man1a	0.403162717	1.322403747	0.008306464	-0.162536045	-1.119252892	0.2408636	no
Rpl14	0.404074743	1.323239992	0.021749619	-0.18850384	-1.13958129	0.243355474	no
Rft1	0.404769875	1.323877721	0.019736914	-0.167540836	-1.123142386	0.300418166	no
Gpr135	0.405787359	1.324811737	0.027235464	-0.257794389	-1.195649382	0.142586502	no
Amigo2	0.409098824	1.327856113	0.03811678	-0.248693945	-1.188131027	0.188283424	no
Polm	0.411248946	1.32983656	0.049940865	-0.185075228	-1.136876253	0.354676848	no
Tmem138	0.412491723	1.330982611	0.021045582	-0.202998856	-1.151088579	0.226766886	no
Spag6	0.41390457	1.332286696	0.030292018	-0.274159652	-1.209289491	0.135355474	no
Trem2	0.416523572	1.334707464	0.016579946	-0.290307707	-1.222901078	0.080959055	no
Nsmce1	0.417148451	1.335285695	0.006684383	-0.271870942	-1.20737258	0.059759624	no
Alg14	0.417811376	1.335899406	0.014766853	-0.242112423	-1.182723161	0.133482514	no
Dbp	0.418429977	1.336472337	0.003527761	-0.161331658	-1.118318909	0.205197537	no
Fan1	0.418675721	1.336700007	0.040924377	-0.209246409	-1.156084147	0.283404968	no
Nrep	0.418891979	1.336900392	0.005899857	-0.232372506	-1.174765258	0.095476528	no
Vwc2l	0.420293322	1.338199603	0.016828404	-0.167029783	-1.1227446	0.305575738	no
Scd3	0.422691494	1.340425925	0.04992302	-0.2829708	-1.216697733	0.175207068	no
Grp	0.423968827	1.341613235	0.006957316	-0.209154929	-1.156010842	0.147171862	no
Cpxm2	0.429492049	1.34675932	0.041326223	-0.253641148	-1.192212288	0.209064928	no
Ccdc94	0.430006167	1.347239336	0.02106906	-0.28195433	-1.215840794	0.113320675	no
Gm1821	0.433584996	1.350585521	0.031614605	-0.26915416	-1.20510108	0.156482113	no
Lor	0.43568648	1.352554268	0.020221196	-0.275300237	-1.210245926	0.123261057	no
Hist1h1c	0.438324145	1.355029391	0.014745222	-0.272994127	-1.208312925	0.108541392	no
Nppc	0.438514065	1.355207783	0.039973535	-0.251662577	-1.19057836	0.21821539	no
Tagln	0.441928848	1.358419287	0.040834039	-0.31238547	-1.241759229	0.135656904	no
Rnf8	0.44329052	1.359702022	0.048308697	-0.278114647	-1.212609178	0.198948233	no
2810029C07Rik	0.445595822	1.361876445	0.015245744	-0.235399608	-1.17723277	0.171172113	no
Nipsnap3b	0.447893109	1.364046767	0.024598497	-0.381130564	-1.302362048	0.05094948	no
Cutc	0.450502271	1.366515923	0.037869869	-0.192667618	-1.142874999	0.348091806	no
Pcsk2os2	0.451116633	1.367097969	0.009654837	-0.216596106	-1.161988754	0.177674464	no
Bola1	0.452212306	1.368136623	0.040804483	-0.250182747	-1.189357762	0.236593719	no
Dtwd1	0.454156001	1.36998111	0.016966346	-0.342667946	-1.268099497	0.061784151	no
Bex2	0.456252741	1.371973619	0.004723326	-0.273069313	-1.208375898	0.064004275	no
Pla2g4e	0.457409468	1.373074084	0.03034853	-0.215692699	-1.161261352	0.279777914	no
Htr1a	0.462248114	1.37768696	0.00491152	-0.285443408	-1.218784796	0.061642773	no
Pcdha12	0.463958231	1.379320987	0.046867814	-0.348220248	-1.272989261	0.125634054	no
Tnfaip8l1	0.464934388	1.380254579	0.005267613	-0.300296209	-1.231397214	0.05387048	no
Gm6297	0.465196805	1.380505662	0.046762294	-0.268361932	-1.204439504	0.232211103	no
Crym	0.467085008	1.382313654	0.009927818	-0.320700266	-1.24893662	0.058084177	no

Gpr39	0.47275211	1.387754249	0.001352075	-0.190955837	-1.141519763	0.134772579	no
Mzf1	0.473143412	1.3881307	0.014899462	-0.254377526	-1.19282097	0.162518453	no
Armcx6	0.473273131	1.388255519	0.049061846	-0.355839431	-1.279729975	0.129085744	no
Cntnap3	0.474228427	1.389175071	0.01886717	-0.297634598	-1.229127517	0.12106118	no
Smim18	0.4744996	1.38943621	0.039257355	-0.260961076	-1.198276691	0.235285205	no
Tacc3	0.47740724	1.392239334	0.027079982	-0.297495084	-1.229008662	0.149432863	no
Fbn1	0.478823929	1.393607148	0.045663754	-0.106883517	-1.076899424	0.634301134	no
Acta2	0.48249799	1.397160722	0.042334059	-0.250711395	-1.189793659	0.267879983	no
6430584L05Rik	0.483675993	1.398302011	0.028914897	-0.416710153	-1.334880091	0.055325559	no
Marcksl1	0.484271552	1.398879363	0.01197469	-0.164447065	-1.120736456	0.334760564	no
Aloxe3	0.484887188	1.399476429	0.043112322	-0.193685565	-1.143681681	0.393811577	no
Srd5a1	0.486868608	1.401399812	0.005635845	-0.316195523	-1.24504296	0.054831297	no
B230216N24Rik	0.487576446	1.402087558	0.012750874	-0.244866475	-1.184983093	0.179021517	no
Ethe1	0.487911955	1.402413661	0.015641047	-0.274389997	-1.209482586	0.148427068	no
Chchd5	0.488341442	1.402831219	0.029630062	-0.409871757	-1.328567711	0.062409775	no
Zfp810	0.488947023	1.40342019	0.009283662	-0.150324769	-1.109819279	0.377981395	no
Amdhd2	0.489251347	1.403716261	0.008958851	-0.21866136	-1.163653361	0.203400677	no
Slc37a1	0.489748145	1.40419972	0.024917508	-0.338937856	-1.264825059	0.106422405	no
Ifitm7	0.490679384	1.405106403	0.015321965	-0.345676521	-1.270746732	0.071723617	no
Galns	0.491296567	1.405707635	0.014685836	-0.197168165	-1.146445811	0.289556654	no
Cirbp	0.496226764	1.41051965	0.020215138	-0.154833524	-1.113293145	0.420691567	no
Ap1s3	0.500755799	1.414954635	0.039440388	-0.276690134	-1.211412442	0.2336687	no
Angpt1	0.500917834	1.415113563	0.037514153	-0.273463354	-1.208705984	0.232621179	no
Lypd1	0.502876008	1.417035604	0.000583743	-0.23154877	-1.174094693	0.065286005	no
3830408C21Rik	0.507120216	1.421210464	0.034918012	-0.452132608	-1.368061046	0.056674529	no
Slc16a10	0.512325107	1.426347104	0.031068193	-0.439372894	-1.356014771	0.059729988	no
Chac1	0.513163649	1.427176385	0.041495003	-0.298771133	-1.230096188	0.215129991	no
Pced1b	0.516303207	1.430285553	0.031257547	-0.293670166	-1.225754592	0.198574779	no
Kcnj8	0.519506123	1.433464447	0.030278895	-0.259428605	-1.197004524	0.253183451	no
Hdhd3	0.523390493	1.437329164	0.024864978	-0.311952461	-1.241386585	0.159968017	no
S100a11	0.53050102	1.444430731	0.024027867	-0.382119376	-1.303254983	0.091764234	no
Tipin	0.532262961	1.44619587	0.014625106	-0.293489243	-1.225600884	0.15137952	no
1700018L02Rik	0.535808751	1.449754635	0.019563469	-0.22412431	-1.168068037	0.294726408	no
Ciart	0.537009796	1.45096206	0.00668036	-0.239127152	-1.180278363	0.185517116	no
Exo5	0.539461531	1.453429941	0.015442234	-0.370457083	-1.292762346	0.08150999	no
Zcchc16	0.54156698	1.455552605	0.048524358	-0.463744974	-1.379117113	0.086263535	no
4930413G21Rik	0.55203259	1.466149876	0.024600575	-0.27789187	-1.212421945	0.228738844	no
Lyplal1	0.555948863	1.470135226	0.013648586	-0.343641849	-1.268955827	0.106581556	no
C8g	0.558640557	1.472880676	0.044375431	-0.331269356	-1.258119845	0.214517795	no

Birc3	0.561081394	1.475374692	0.047155825	-0.163812745	-1.120243803	0.539534303	no
Nudt8	0.564084367	1.478448886	0.010532417	-0.404409308	-1.323546891	0.054616816	no
Col5a2	0.566596287	1.481025301	0.017385327	-0.441303612	-1.357830702	0.055610885	no
E130317F20Rik	0.570390242	1.484925181	0.04606483	-0.336214397	-1.262439628	0.220935036	no
Phf7	0.580094632	1.494947305	0.047960266	-0.40830876	-1.327129137	0.151479663	no
Ninl	0.580401814	1.495265647	0.007691886	-0.327304071	-1.254666618	0.104883763	no
Wdr5b	0.580508988	1.49537673	0.024115937	-0.309777558	-1.23951657	0.20303054	no
Naglu	0.584404376	1.499419818	0.013400583	-0.321997273	-1.25005994	0.14547189	no
Bex1	0.586893457	1.502009	0.007351644	-0.307168188	-1.23727671	0.119785153	no
Eln	0.586975995	1.502094933	0.030201657	-0.321366588	-1.249513586	0.208371292	no
Opn3	0.589462325	1.504685864	0.007773431	-0.391595953	-1.311843803	0.06072254	no
Bbc3	0.596149205	1.511676259	0.023002662	-0.32979018	-1.256830573	0.183384574	no
Aldh1a3	0.599416338	1.515103487	0.009608633	-0.409790609	-1.328492984	0.061923808	no
1600029015Rik	0.605462251	1.521466166	0.032964136	-0.483693641	-1.398319115	0.080860711	no
Neur12	0.606635115	1.52270357	0.021254308	-0.333823538	-1.260349223	0.179679904	no
Usp43	0.610614474	1.526909413	0.011866136	-0.33248579	-1.259181098	0.142411442	no
Cited4	0.613115014	1.529558212	0.009596487	-0.254854846	-1.193215684	0.240260992	no
4732491K20Rik	0.614864103	1.531413737	0.034725936	-0.287549553	-1.220565361	0.297141882	no
Sfrp2	0.615321221	1.531899042	0.046073147	-0.346735671	-1.27167999	0.241142024	no
Slc7a3	0.625240102	1.542467511	0.00518401	-0.394128062	-1.314148273	0.057654741	no
Casp7	0.625608758	1.542861713	0.024350438	-0.433447776	-1.350457068	0.104582024	no
1700101111Rik	0.628479727	1.54593507	0.035822681	-0.321564257	-1.249684798	0.250559702	no
Gjb2	0.631146972	1.548795828	0.029978548	-0.178199432	-1.131470862	0.505021048	no
Scarf2	0.637063537	1.55516056	0.026805299	-0.282741328	-1.216504223	0.295973499	no
Sema3b	0.642036841	1.56053081	0.030903984	-0.351672442	-1.276039017	0.213805595	no
Aldh1a2	0.653730802	1.573231308	0.009012251	-0.281322683	-1.215308586	0.21973885	no
Cd74	0.655892016	1.575589836	0.024118258	-0.207654956	-1.15480956	0.442689676	no
Serping1	0.660311197	1.580423493	0.011428913	-0.173132465	-1.127503932	0.465796626	no
Gm10790	0.664285162	1.584782837	0.038918827	-0.620296624	-1.537191201	0.051937122	no
Slc41a3	0.665801288	1.586449159	0.004291507	-0.395232758	-1.315154924	0.06645444	no
Acot6	0.675250989	1.596874561	0.020719216	-0.469759946	-1.384879015	0.093513275	no
Pcdhb8	0.67840829	1.600373106	0.042873844	-0.429221756	-1.346507024	0.183441513	no
Mxra8	0.681466337	1.603768977	0.013722427	-0.259407514	-1.196987025	0.308670698	no
Adrb3	0.684282106	1.606902178	0.008048613	-0.361693225	-1.28493308	0.130088401	no
Adcy10	0.687950741	1.610993576	0.043118875	-0.637786852	-1.555940457	0.058642304	no
Dcn	0.703289541	1.628213111	0.003896096	-0.299031551	-1.230318251	0.170033095	no
Pycard	0.704594417	1.629686448	0.039533552	-0.55295225	-1.467084786	0.097871038	no
Bche	0.706507736	1.631849192	0.017108122	-0.112176699	-1.080857775	0.677733529	no
Slc16a5	0.721824392	1.649266333	0.023866814	-0.55132102	-1.465426917	0.074929715	no

Rdh5	0.734884455	1.664264174	0.040690378	-0.368306399	-1.290836609	0.281498418	no
Capg	0.746574872	1.677804793	0.045450029	-0.260776935	-1.198123757	0.460182584	no
Msx1os	0.747170493	1.678497622	0.013082758	-0.432181361	-1.349272141	0.126542905	no
Eya2	0.760451621	1.694020837	0.047452029	-0.318216091	-1.246787928	0.38282656	no
Cfap61	0.778785876	1.715686401	0.047132076	-0.724757987	-1.652623385	0.062645096	no
Ccdc110	0.786421703	1.724791177	0.043139258	-0.576062582	-1.490775053	0.127427476	no
Slc13a4	0.789523691	1.728503699	0.012971215	-0.233830434	-1.175953028	0.411077277	no
Bambi-ps1	0.822342557	1.768274875	0.018080063	-0.636074804	-1.554095116	0.058764256	no
Mgp	0.824429133	1.77083419	0.001280112	-0.31952695	-1.247921296	0.147550541	no
Nlrp6	0.846503501	1.798137694	0.030284874	-0.54272114	-1.456717517	0.147464387	no
Ccl28	0.84889528	1.801121218	0.02599385	-0.274940882	-1.209944507	0.436301484	no
Clec3b	0.855205727	1.809016701	0.012695166	-0.473471797	-1.388446701	0.140527163	no
Aox3	0.866688597	1.823472695	0.018641078	-0.541466336	-1.455451067	0.121579475	no
Map2k3os	0.875709907	1.834910769	0.031916994	-0.655975403	-1.575680908	0.097642311	no
Llg12	0.893571197	1.857769094	0.031710733	-0.56785275	-1.482315708	0.154604814	no
Gm10638	0.924283545	1.897741573	0.020735681	-0.476149093	-1.391025718	0.205499678	no
Ahrr	0.939548044	1.917927311	0.031190151	-0.803032905	-1.744765206	0.060702566	no
Ahcy	0.958889107	1.943812559	0.022884657	-0.52683647	-1.440766428	0.162290287	no
3110070M22Rik	1.009315092	2.012955239	0.028370525	-0.180096355	-1.132959551	0.673519106	no
Arr3	1.021889351	2.030576459	0.025020023	-0.636475148	-1.554526433	0.143545931	no
Sec14l3	1.027818719	2.038939148	0.010030297	-0.578400476	-1.493192819	0.120514742	no
Gm16712	1.037354941	2.052461189	0.039864677	-0.439612977	-1.356240448	0.35730639	no
Wnt6	1.046855374	2.066021652	0.048298394	-0.270483536	-1.206212036	0.588150625	no
1700001G11Rik	1.066738244	2.094692169	0.03633697	-0.694053779	-1.617823003	0.156757117	no
4933409K07Rik	1.073513243	2.104552126	0.017341885	-0.653510505	-1.572991097	0.126244419	no
H2-Eb1	1.081988389	2.116951752	0.008752855	-0.483445617	-1.398078741	0.201901169	no
Ptgfr	1.127460536	2.18473839	0.036349898	-0.451657306	-1.367610407	0.374016417	no
0610039K10Rik	1.180220145	2.266113537	0.020074753	-0.722543688	-1.650088825	0.121766088	no
Ctcf1	1.187112402	2.276965452	0.028565106	-0.894545119	-1.859023644	0.088829621	no
Ctxn3	1.273132165	2.416857085	0.012565211	-0.76018224	-1.693704559	0.113243538	no
Rbm3os	1.292612975	2.449713402	0.04197174	-0.571067044	-1.485621957	0.328160124	no
Hmga2	1.334281226	2.521498253	0.019830027	-0.670884178	-1.59204838	0.20624445	no
Gm15421	1.376167759	2.595779358	0.007660707	-0.781849759	-1.719333913	0.103079104	no
Gm9833	1.415295781	2.667144115	0.03749291	-0.538914153	-1.452878594	0.393105355	no
Rpl31-ps12	2.577914247	5.970758623	0.048347921	-1.359709948	-2.566335784	0.247349358	no

**Suppl. Table 4 List of genes found in DEGs that overlapped with ASD susceptibility genes (58)**

<b>Overlapped down-regulated DEGs</b>	<b>Overlapped up-regulated DEGs</b>
Megf10	Ntng1
Flt1	Gap43
Mcm4	Celf6
Pvalb	Gira2
Kif13b	Cntnap4
Unc79	Cbln1
Cdh22	Gpr85
Pou3f2	Cntn6
Lrrc1	Dolk
Rasd1	Fabp3
Oxtr	Dpysl3
Homer1	Ofd1
Zswim6	Fabp5
Per2	Fan1
Htr7	Pcdha12
Fat1	Cntnap3
Kmt2a	Fbn1
Ccdc88c	Ninl
Nipbl	Aldh1a3
Nav2	Slc7a3
Kmt2c	
Gatm	
Rps6ka3	
Abca7	
Cdk13	
Utrn	
Kcnj10	
Myo9b	
Ppp1r3c	
Itpr1	
Suclg2	
Ick	
Atp2b2	
Syne1	
Phrf1	
Pde4a	
Sox5	
Trove2	



**Suppl. Table 5 List of genes down-regulated in *Shank3*-deficient mice and recovered by UNC0642 treatment [Het+SAL\_vs\_WT (fold change < -1.2 & *P* < 0.05) and Het+UNC\_vs\_WT (-1.3 < fold change < 1.3 & *P* > 0.05)]**

Gene Symbol	logFC (SAL_vs_WT)	Fold change (SAL_vs_WT)	P.Value (SAL_vs_WT)	logFC (UNC_vs_WT)	Fold change (UNC_vs_WT)	P.Value (UNC_vs_WT)	Restored
Dynlt1b	-1.686232856	-3.218152862	0.001903647	0.086621971	1.061880906	0.851847966	yes
Acan	-1.360379681	-2.567527414	0.00060683	-0.11886847	-1.085882852	0.71634499	yes
3930402G23Rik	-1.254679845	-2.386141907	0.013584285	-0.269282839	-1.205208572	0.561000844	yes
Gas2l3	-1.211515426	-2.315807645	0.007269459	-0.211140292	-1.157602781	0.600562043	yes
Klk6	-1.157947088	-2.231396805	0.026018677	0.174956546	1.128930401	0.716295836	yes
Gm19710	-1.042140987	-2.0592814	0.017963941	-0.133473998	-1.096931927	0.74056108	yes
Lrrc26	-0.971444044	-1.960802249	0.003848454	-0.10949781	-1.078852632	0.709463707	yes
Lrrc38	-0.903285261	-1.870320174	0.00633933	0.091743821	1.065657491	0.754690105	yes
A330032B11Rik	-0.868251252	-1.82544886	0.003419838	-0.25069782	-1.189782464	0.337907191	yes
Zfhx3	-0.862181774	-1.817785252	0.039478841	0.047424614	1.033418498	0.902507345	yes
Elf4	-0.861836542	-1.817350315	0.02838555	0.019493988	1.013603906	0.957294227	yes
Pim1	-0.858364134	-1.812981413	0.002715471	-0.229460384	-1.172396352	0.359447954	yes
Gas2l2	-0.833230752	-1.781670748	0.010578015	-0.06028009	-1.042668168	0.837237608	yes
Hmmr	-0.831523028	-1.779563024	0.001861283	-0.325485155	-1.25308576	0.165973987	yes
Gm19522	-0.820873623	-1.766475357	0.012864953	-0.181449252	-1.13402249	0.545731492	yes
Fndc8	-0.797516369	-1.738106361	0.02356772	-0.119165447	-1.086106403	0.713934981	yes
Prkd2	-0.79169896	-1.73111187	0.003595224	-0.141542595	-1.103083953	0.552135904	yes
Cenpf	-0.786416284	-1.724784699	0.030758435	-0.037201585	-1.026121514	0.912326207	yes
C920021L13Rik	-0.771945453	-1.707570866	0.042234534	0.189037907	1.140003226	0.596803753	yes
Adamts15	-0.758345339	-1.691549433	0.003947203	-0.257656928	-1.195535465	0.271187686	yes
Adgrl4	-0.75752285	-1.690585346	0.000328105	-0.193573087	-1.143592518	0.263017363	yes
Adamts6	-0.737025764	-1.666736179	0.023362888	-0.038881601	-1.027317126	0.896656142	yes
St6galnac2	-0.733841953	-1.663061999	0.017644839	-0.097067021	-1.069596775	0.731560832	yes
Nfkb2	-0.719153459	-1.646215788	0.009995371	-0.172491638	-1.12700322	0.494663866	yes
Sdf2l1	-0.7125632	-1.638712993	0.001197558	-0.225890331	-1.16949876	0.230314308	yes
Icam1	-0.695441702	-1.619380154	0.036296529	0.071169342	1.050567852	0.818374953	yes
Zbtb40	-0.692013546	-1.615536724	0.004988962	-0.223734319	-1.167752326	0.301358995	yes
Megf10	-0.687489041	-1.610478099	0.002438207	-0.135481232	-1.09845916	0.480378179	yes
5730559C18Rik	-0.680590814	-1.602796	0.012049682	-0.096494491	-1.069172393	0.694180148	yes
Bank1	-0.665442935	-1.586055148	0.034048215	-0.031589799	-1.022137865	0.913913539	yes
Blnk	-0.621441449	-1.538411496	0.001816217	-0.259482513	-1.197049253	0.139912738	yes
Flt1	-0.618475612	-1.535252138	0.001013797	-0.179506796	-1.13249666	0.252896379	yes
Mdga1	-0.613171634	-1.529618242	0.000390838	-0.215802229	-1.161349518	0.137278693	yes
Zfp217	-0.601524832	-1.517319424	0.023623135	-0.066979951	-1.04752157	0.784617844	yes
Gm10658	-0.594932553	-1.510401972	0.039531825	0.051323298	1.036214946	0.84935564	yes
Cep76	-0.593053956	-1.50843649	0.002601643	-0.213133425	-1.159203154	0.220174983	yes
Pik3c2b	-0.54461455	-1.458630585	0.001551663	-0.071850314	-1.051063851	0.623783195	yes
Pon2	-0.526513682	-1.440444108	0.00376161	-0.199825957	-1.148559787	0.210148174	yes

D630045J12Rik	-0.512322708	-1.426344733	0.001554162	-0.185838017	-1.137477507	0.180286708	yes
Cachd1	-0.50261879	-1.416782984	0.028866374	0.00989935	1.006885302	0.962898999	yes
Mcm4	-0.502247956	-1.416418858	0.004990877	0.009805862	1.006820057	0.950306878	yes
Mme	-0.495187168	-1.409503606	0.023869479	-0.071106281	-1.050521931	0.725246115	yes
Col4a2	-0.491861306	-1.406258002	0.000251513	-0.200113138	-1.148788441	0.076299863	yes
Ankdd1b	-0.488133143	-1.40262869	0.042542254	0.233007841	1.175282716	0.309037763	yes
Itga6	-0.47346961	-1.388444596	0.008037582	-0.134450754	-1.09767484	0.400965847	yes
Pvalb	-0.472882842	-1.387880008	0.002406593	-0.098013615	-1.070298799	0.467733645	yes
Fgfr2	-0.471051537	-1.386119401	0.005561295	-0.108230062	-1.077905021	0.469322135	yes
Lrrc14b	-0.449231523	-1.365312805	0.001434953	-0.160260058	-1.117488557	0.190751133	yes
Kif13b	-0.447583197	-1.363753781	0.005435071	-0.09871277	-1.07081761	0.490094632	yes
Pvrl1	-0.441625852	-1.358134021	0.005632311	-0.134700586	-1.097864941	0.342100876	yes
Eng	-0.439292183	-1.355938912	0.00322736	-0.140365411	-1.102184246	0.28676104	yes
Nefh	-0.432832568	-1.349881316	0.00406597	-0.157870688	-1.11563932	0.238215214	yes
Sgpp2	-0.429772127	-1.347020799	0.010221349	-0.080183507	-1.057152499	0.595559697	yes
Lrp8	-0.422080573	-1.33985843	0.002808045	-0.16031999	-1.11753498	0.197110281	yes
Mpp3	-0.41321226	-1.331647521	0.002423887	-0.101882288	-1.073172721	0.390113287	yes
Eya1	-0.412097784	-1.330619226	0.026328452	-0.029864965	-1.020916565	0.861733112	yes
Itpkb	-0.407566847	-1.32644683	0.005934935	-0.005763634	-1.004003037	0.964901032	yes
Olig2	-0.39747201	-1.317197803	0.01914607	-0.007266062	-1.005049155	0.96252776	yes
Phka1	-0.384075152	-1.305022927	0.019876556	-0.001229789	-1.000852788	0.993490133	yes
Wdfy1	-0.377366915	-1.298968922	0.014050186	0.031364848	1.021978501	0.820340509	yes
Plxnd1	-0.375328069	-1.29713449	0.001687297	-0.090525929	-1.064758265	0.37885803	yes
Sh3pxd2b	-0.374704875	-1.296574294	0.004497927	-0.112910975	-1.08140803	0.335883681	yes
Shc3	-0.374682965	-1.296554603	0.018953276	-0.054809858	-1.038722194	0.705094353	yes
Pygm	-0.372616069	-1.294698407	0.013256463	-0.036035553	-1.025292504	0.791635367	yes
Kcnc3	-0.363510499	-1.28655265	0.000312396	-0.12129519	-1.087710925	0.148305352	yes
Gng5	-0.361987264	-1.285194992	0.011775216	-0.030952041	-1.021686118	0.811554467	yes
Gm10336	-0.359581479	-1.283053634	0.034388676	0.02615247	1.018292811	0.868769026	yes
Prkca	-0.358920398	-1.28246584	0.001142973	-0.076868435	-1.054726128	0.411779363	yes
Anxa11	-0.358318557	-1.281930952	0.005117079	-0.082824644	-1.059089597	0.465945096	yes
Usp31	-0.352440018	-1.276718105	0.002361915	-0.11250307	-1.081102319	0.267962685	yes
Arhgap31	-0.349363548	-1.273998472	0.022589004	-0.042695889	-1.030036806	0.760559349	yes
Fat3	-0.342910528	-1.26831274	0.00259487	-0.093012665	-1.066595144	0.349805484	yes
Rasd2	-0.339658024	-1.265456595	0.001699513	-0.063075324	-1.044690306	0.496334266	yes
Cabp1	-0.339528877	-1.265343319	0.001334549	-0.084137263	-1.060053636	0.352715456	yes
Igfn1	-0.338949857	-1.26483558	0.020937428	0.028052029	1.019634455	0.835168393	yes
Klhl29	-0.33696479	-1.263096435	0.002917143	-0.072449708	-1.051500626	0.463231174	yes
Hivep2	-0.333360343	-1.259944638	0.003547895	-0.103968357	-1.0747256	0.304119826	yes
Unc79	-0.332246007	-1.258971834	0.002635943	-0.059570886	-1.042155737	0.534265285	yes
Manf	-0.330194326	-1.257182701	0.004945523	-0.114754816	-1.082791011	0.275587658	yes
Arhgef40	-0.329495554	-1.25657393	0.017650485	0.028537461	1.019977594	0.822099031	yes

Hus1	-0.325440702	-1.25304715	0.033519125	-0.002415707	-1.001675843	0.986465117	yes
Cacng2	-0.316839195	-1.245598571	0.006571596	-0.05230909	-1.036923233	0.614327804	yes
Plec	-0.314430032	-1.243520276	0.006252312	-0.087739846	-1.062704025	0.394003456	yes
Sipa1l1	-0.309205976	-1.239025583	0.002746367	-0.109739078	-1.079033068	0.228901603	yes
Phtf1	-0.307609167	-1.237654958	0.004699608	-0.041389437	-1.029104464	0.665735121	yes
Ncor2	-0.305762593	-1.236071839	0.003811518	-0.092750878	-1.066401621	0.321788682	yes
Zdhhc14	-0.303429075	-1.234074143	0.024045384	0.026691814	1.018673566	0.829486044	yes
Pknox1	-0.302824315	-1.233556944	0.031127875	0.071989962	1.051165595	0.582718287	yes
Ssh3	-0.299508416	-1.230724985	0.017202735	-0.058708172	-1.041532727	0.610323493	yes
Gpc5	-0.299057896	-1.230340718	0.02532466	-0.02442196	-1.017072103	0.843136197	yes
Ppp1r16b	-0.297742682	-1.229219605	0.00500573	-0.096434684	-1.069128071	0.309251755	yes
Hip1	-0.292252375	-1.224550588	0.013810956	-0.049441273	-1.034864064	0.647062134	yes
Kcnip2	-0.290653066	-1.223193857	0.008456357	-0.028499432	-1.019950708	0.772929308	yes
Cdh22	-0.290233216	-1.222837937	0.012296802	-0.008923849	-1.006204711	0.932125846	yes
Plcl1	-0.28992928	-1.222580346	0.021610006	-0.034883829	-1.024474326	0.763840707	yes
Nwd1	-0.289666042	-1.222357291	0.026560005	-0.020388472	-1.014232543	0.865221916	yes
Fam84a	-0.286695574	-1.219843081	0.003182388	-0.080938794	-1.05770609	0.34385935	yes
Pou3f2	-0.286393192	-1.219587435	0.008011587	-0.063898709	-1.045286709	0.510169899	yes
Zfpm1	-0.281449746	-1.215415627	0.008390224	-0.002989005	-1.002073968	0.975005244	yes
9430015G10Rik	-0.275310566	-1.21025459	0.034367852	-0.021621638	-1.015099846	0.858392453	yes
Rasa3	-0.272425624	-1.207836875	0.011800756	-0.001894411	-1.001313968	0.984522082	yes
Ankrd63	-0.272392551	-1.207809187	2.50E-02	-0.032387494	-1.022703182	0.773000435	yes
Osgin2	-0.265105373	-1.201723819	0.031854393	0.006179362	1.004292394	0.957048944	yes
Tspan12	-0.264281658	-1.201037884	0.038887308	-0.008339814	-1.005797459	0.944373159	yes
Nlrp3	-1.047799073	-2.067373525	0.029386382	-0.243796955	-1.184104949	0.586189788	yes
Runx1	-0.962826635	-1.949125027	0.045881779	-0.184031752	-1.136054268	0.685002675	yes
Slc25a13	-0.932712313	-1.908861346	0.011607286	-0.369467965	-1.291876327	0.276710338	yes
Rad54b	-0.899913044	-1.865953512	0.044426019	-0.29338489	-1.225512237	0.487836686	yes
Vav3	-0.885497038	-1.847400979	0.014147796	-0.374059314	-1.295994247	0.257940288	yes
E330020D12Rik	-0.88051123	-1.841027568	0.0239304	-0.310767189	-1.24036712	0.392447187	yes
1810009A15Rik	-0.873724999	-1.832387973	0.025562828	-0.132315557	-1.096051476	0.714705415	yes
Jph2	-0.847085718	-1.798863501	0.029994343	-0.115977895	-1.083709362	0.749028912	yes
Gm20219	-0.83022059	-1.777957194	0.030640497	-0.306298494	-1.236531073	0.395394507	yes
Kif4	-0.8019697	-1.743479862	0.02366318	-0.19772656	-1.146889629	0.54702616	yes
Ska3	-0.797046387	-1.737540236	0.010542148	-0.29705702	-1.228635539	0.297576503	yes
Irf7	-0.792319934	-1.731857147	0.014048279	-0.185763473	-1.137418735	0.528197637	yes
Sbk3	-0.790364973	-1.729511939	0.033340227	-0.227535078	-1.170832809	0.512922805	yes
Tmem210	-0.787544115	-1.72613358	0.046708368	-0.156582301	-1.114643453	0.674426843	yes
Psg23	-0.782478374	-1.720083229	0.04905449	-0.217822288	-1.162976777	0.562071549	yes
Greb1	-0.779837537	-1.716937517	0.025588759	-0.263028176	-1.199994818	0.419451595	yes
Nusap1	-0.769628605	-1.70483085	0.027132285	-0.135146601	-1.098204404	0.675594657	yes
Pqlc3	-0.764887515	-1.699237506	0.013092076	-0.361213715	-1.284506076	0.20690738	yes

Bag3	-0.735106185	-1.664519977	0.021113483	-0.265758453	-1.202267939	0.367654299	yes
Gm14827	-0.718577232	-1.645558405	0.033866254	-0.359184597	-1.282700717	0.25950183	yes
Tbc1d2	-0.715712589	-1.642294194	0.004309248	-0.276327662	-1.211108117	0.219031832	yes
9530052E02Rik	-0.712079531	-1.638163699	0.021767178	-0.280777238	-1.214849196	0.331977762	yes
Fam60a	-0.707841183	-1.633358166	0.044528824	-0.37566773	-1.297439917	0.264747995	yes
Bfsp2	-0.702266408	-1.627058821	0.022109161	-0.190454596	-1.14112323	0.501291378	yes
Adgrg6	-0.695270914	-1.619188461	0.004730527	-0.349191877	-1.273846884	0.1199498	yes
Stc1	-0.684270947	-1.606889749	0.045118099	-0.23013501	-1.17294471	0.475988276	yes
Stac3	-0.674504946	-1.596049002	0.020218184	-0.142789556	-1.104037791	0.593489182	yes
Gpr63	-0.672974186	-1.594356425	0.041749596	-0.374635875	-1.296512284	0.235948939	yes
Tbc1d4	-0.672240957	-1.593546322	0.025545245	-0.307330759	-1.237416142	0.274127106	yes
Kif23	-0.6628973	-1.583259022	0.045656592	-0.088323105	-1.063133746	0.776813239	yes
Tmem181a	-0.661178017	-1.58137335	0.009551363	-0.358867979	-1.282419243	0.116171901	yes
AA986860	-0.659096016	-1.579092863	0.026011598	-0.287043545	-1.220137337	0.301943045	yes
Polq	-0.652755596	-1.572168223	0.014914022	-0.27533629	-1.21027617	0.267759938	yes
Slc39a2	-0.652184003	-1.571545457	0.031269055	-0.332825486	-1.25947762	0.243625043	yes
Pcdhgb2	-0.625694361	-1.542953262	0.00634785	-0.204812568	-1.152536602	0.320790032	yes
Acer2	-0.624022189	-1.54116592	0.01185421	-0.226111121	-1.169677753	0.319978941	yes
Tmem86b	-0.621875455	-1.538874366	0.019028895	-0.177010786	-1.130539019	0.469505351	yes
Col11a1	-0.620833668	-1.537763528	0.027739773	-0.134497768	-1.097710611	0.607706079	yes
Sh3bp1	-0.615882477	-1.532495117	0.002352303	-0.256940338	-1.194941788	0.15276646	yes
Erbp3	-0.613277525	-1.529730517	0.043871868	-0.237235392	-1.178731715	0.407251532	yes
Grk4	-0.610388577	-1.526670349	0.038984154	-0.299127325	-1.230399929	0.281778796	yes
Egfl8	-0.603976263	-1.519899849	0.049330002	-0.110937903	-1.079930076	0.701600953	yes
Prkg2	-0.603619458	-1.519523996	0.027147838	-0.218616864	-1.163617472	0.38380082	yes
Abcc9	-0.602315309	-1.518151017	0.020122158	-0.123833213	-1.089626135	0.602445532	yes
Cfp	-0.601741723	-1.517547551	0.005807347	-0.314083702	-1.243221796	0.117055081	yes
Lonrf3	-0.59635383	-1.511890683	0.031641834	-0.117783158	-1.085066271	0.640028886	yes
Paqr5	-0.592379246	-1.5077312	0.032745351	-0.246193765	-1.186073788	0.346488356	yes
Onecut2	-0.57790406	-1.492679116	0.043966449	-0.348186751	-1.272959704	0.206657171	yes
Card10	-0.576520023	-1.491247814	0.019246901	-0.333476104	-1.260045739	0.152263598	yes
Lrrc1	-0.573649204	-1.48828333	0.03658407	-0.220351834	-1.165017668	0.394553849	yes
Cdh24	-0.564351914	-1.47872309	0.012655415	-0.294359652	-1.226340539	0.163038053	yes
Tlr13	-0.560647609	-1.474931148	0.046309957	-0.068361874	-1.048525447	0.795944629	yes
Il1r1	-0.557730482	-1.471951853	0.025787968	-0.252644071	-1.19138861	0.282787813	yes
Serpib8	-0.546889443	-1.46093242	0.013367054	-0.288977298	-1.221773876	0.161797578	yes
Kcng4	-0.529281097	-1.443209857	0.029128692	-0.285097312	-1.21849245	0.215674584	yes
Arc	-0.528653267	-1.44258194	0.016827728	-0.367560342	-1.290169255	0.074820018	yes
Pp2d1	-0.526558301	-1.440488657	0.021647341	-0.206375909	-1.153786196	0.333210803	yes
Aldh1a1	-0.525452676	-1.439385146	0.00348305	-0.20580927	-1.153333119	0.199891931	yes
Rrp1b	-0.525023672	-1.438957191	0.024749017	-0.252686381	-1.19142355	0.249756636	yes
Rmi2	-0.524496811	-1.43843179	0.029910406	-0.203921264	-1.151824779	0.368666126	yes

Rasd1	-0.523735197	-1.437672628	0.035719482	-0.226886741	-1.170306763	0.335932259	yes
Cyp26b1	-0.5216991	-1.435645049	0.014333716	-0.150926652	-1.110282385	0.439452017	yes
Pnpla3	-0.51813419	-1.43210194	0.006235893	-0.295133774	-1.226998746	0.092555317	yes
Oxtr	-0.515255245	-1.429246983	0.014696241	-0.203259247	-1.151296356	0.297632831	yes
Dio2	-0.513612889	-1.427620862	0.018960726	-0.178114379	-1.131404159	0.357730314	yes
Fndc3b	-0.50915008	-1.423211506	0.003546092	-0.25438757	-1.192829274	0.108095882	yes
Nos3	-0.507491319	-1.421576088	0.009888233	-0.219356351	-1.164214064	0.224984749	yes
Cxcr2	-0.499019361	-1.413252609	0.046195312	-0.054604206	-1.038574138	0.816343178	yes
Aoc2	-0.494047459	-1.408390556	0.039556152	-0.142276716	-1.103645404	0.528436224	yes
Al414108	-0.492167734	-1.406556723	0.007838142	-0.259262243	-1.196866502	0.122211875	yes
Cys1	-0.488191103	-1.402685042	0.03977813	-0.342945054	-1.268343093	0.135538708	yes
F730043M19Rik	-0.487825309	-1.402329437	0.049371881	-0.262231204	-1.199332102	0.27029382	yes
Osbp3	-0.48775825	-1.402264256	0.005169208	-0.224242454	-1.168163696	0.153243332	yes
Faap100	-0.485641367	-1.400208206	0.008842863	-0.16468611	-1.12092217	0.328412183	yes
Col15a1	-0.483857289	-1.398477739	0.04720866	-0.195662542	-1.145249983	0.39809728	yes
Mirg	-0.480644249	-1.395366641	0.026100276	-0.320434832	-1.248706855	0.121127995	yes
Pfkfb3	-0.479187658	-1.393958545	0.005624211	-0.246018805	-1.185929957	0.117370618	yes
Cobll1	-0.476941586	-1.391790038	0.034793246	-0.108337273	-1.077985127	0.608091951	yes
Homer1	-0.473185673	-1.388171364	0.042254061	-0.258998879	-1.196648034	0.229776257	yes
Gfod1	-0.472958182	-1.387952487	0.003218064	-0.247013518	-1.186747917	0.085278348	yes
Luzp1	-0.466341908	-1.381601839	0.004902437	-0.253617857	-1.192193041	0.091329827	yes
Egr3	-0.464719573	-1.380049077	0.037571932	-0.259170442	-1.196790345	0.210891439	yes
Abcc4	-0.463927951	-1.379292038	0.02049145	-0.246770333	-1.186547893	0.190890867	yes
Ovca2	-0.462464798	-1.377893895	0.024718715	-0.085249525	-1.060871212	0.652926695	yes
Snrnp48	-0.460171847	-1.375705676	0.029287564	-0.153767051	-1.112470477	0.436069075	yes
Fbxo32	-0.45823554	-1.373860517	0.018039647	-0.244433596	-1.184627593	0.179315068	yes
Gm8234	-0.45707467	-1.372755479	0.049536504	-0.139242684	-1.101326843	0.527178325	yes
Cep95	-0.454419757	-1.370231595	0.024893015	-0.134567869	-1.097763951	0.474982787	yes
Adam19	-0.451760467	-1.367708202	0.005827501	-0.18316918	-1.135375236	0.214651993	yes
Trpm3	-0.448572295	-1.364689078	0.028452191	-0.134789597	-1.097932679	0.475554267	yes
Rasgrp3	-0.448257532	-1.364391367	0.034512858	-0.219765721	-1.164544461	0.273395841	yes
Slnf5	-0.447778039	-1.363937975	0.02429174	-0.140212156	-1.102067169	0.44825298	yes
D930015E06Rik	-0.445503744	-1.361789528	0.010537125	-0.24326018	-1.183664468	0.134058177	yes
Robo4	-0.443224204	-1.359639522	0.037303206	-0.172284453	-1.126841384	0.391080454	yes
Lsm11	-0.442514756	-1.358971081	0.009246422	-0.173004847	-1.1274042	0.259749051	yes
Fmn1	-0.432218014	-1.34930642	0.006043282	-0.203532713	-1.151514608	0.150937899	yes
Zswim6	-0.429098009	-1.346391533	0.020406205	-0.221191493	-1.165695914	0.200674129	yes
Gmip	-0.427672334	-1.345061682	0.018608852	-0.251174361	-1.190175529	0.144070332	yes
Scrt2	-0.4264494	-1.343921992	0.027287818	-0.239450155	-1.180542643	0.191999397	yes
Per2	-0.425678206	-1.34320379	0.008319344	-0.227168498	-1.170535345	0.125680889	yes
Mtm1	-0.425280414	-1.342833481	0.047142067	-0.179056847	-1.132143512	0.379238656	yes
Pde7b	-0.425230662	-1.342787174	0.027325773	-0.05749169	-1.040654875	0.745714631	yes

Plekha2	-0.423841824	-1.341495136	0.009787461	-0.206858725	-1.154172391	0.172592595	yes
Cntn2	-0.419626977	-1.337581666	0.008738805	-0.195753556	-1.145322235	0.17761572	yes
Sfi1	-0.418512016	-1.336548339	0.032450608	-0.283708426	-1.217319969	0.129192964	yes
Fmn1	-0.418391564	-1.336436754	0.04419802	-0.351689393	-1.276054009	0.084489147	yes
Ccdc134	-0.415562024	-1.333818185	0.041504212	-0.311156457	-1.240701842	0.11670463	yes
Steap2	-0.413238888	-1.3316721	0.019682673	-0.241427812	-1.182162049	0.150056847	yes
Gm11549	-0.412866455	-1.331328371	0.022690073	-0.234573842	-1.176559141	0.168245504	yes
Pisd-ps2	-0.411678089	-1.330232191	0.020885835	-0.309306351	-1.239111791	0.071722113	yes
lqck	-0.411230755	-1.329819793	0.028081395	-0.111251113	-1.080164555	0.522640652	yes
Cfap69	-0.409918275	-1.32861055	0.007742406	-0.172618942	-1.127102672	0.219225738	yes
Hspa5	-0.402897728	-1.322160874	0.006596357	-0.158064001	-1.11578882	0.233543156	yes
Htr7	-0.40125434	-1.320655645	0.029014205	-0.049942471	-1.035223643	0.769565652	yes
Fat1	-0.401194045	-1.320600452	0.029435205	-0.102179543	-1.073393862	0.544131776	yes
3300002P13Rik	-0.399434475	-1.318990776	0.044676475	-0.181167927	-1.133801378	0.335541327	yes
Kdm7a	-0.396334885	-1.316160003	0.026398669	-0.251890691	-1.190766625	0.135681814	yes
lqcg	-0.39303162	-1.313149906	0.046468603	-0.084136082	-1.060052768	0.650210201	yes
Apln	-0.392348856	-1.312528597	0.013684515	-0.120100871	-1.086810848	0.408155816	yes
Kmt2a	-0.391805953	-1.31203477	0.014623877	-0.193634666	-1.143641332	0.188644509	yes
Runx2	-0.391573829	-1.311823686	0.01955424	-0.250976211	-1.190012074	0.116184738	yes
Spred1	-0.391257327	-1.311535926	0.00704886	-0.169531178	-1.124692942	0.195125535	yes
Ago3	-0.389601804	-1.310031775	0.020653648	-0.138818287	-1.101002914	0.373034283	yes
Ccdc117	-0.38892196	-1.309414591	0.031859963	-0.222493662	-1.16674854	0.196574028	yes
Mdn1	-0.386309743	-1.307045843	0.022059608	-0.168368342	-1.123786787	0.278913942	yes
Myh9	-0.384446309	-1.305358708	0.003635753	-0.190480066	-1.141143376	0.110517864	yes
Star	-0.382792786	-1.303863448	0.049777807	-0.089288743	-1.063845571	0.627795558	yes
Pop1	-0.38265986	-1.303743319	0.043884972	-0.055585279	-1.039280637	0.755130546	yes
Kdr	-0.382527163	-1.303623408	0.021264747	-0.154931866	-1.113369036	0.31727077	yes
Irs2	-0.379863288	-1.301218544	0.010211112	-0.109055058	-1.078521591	0.415328102	yes
Mir124a-1hg	-0.378747022	-1.300212133	0.03113707	-0.27471661	-1.209756432	0.102240451	yes
Ccdc88c	-0.378710219	-1.300178965	0.008083811	-0.186968956	-1.138369533	0.155842916	yes
Trip11	-0.378617074	-1.300095025	0.013427853	-0.146200456	-1.106651107	0.299730104	yes
Rnft1	-0.373901945	-1.295852888	0.02013993	-0.124495901	-1.09012676	0.40385519	yes
Cdr2	-0.373700538	-1.295671994	0.013051031	-0.152124006	-1.111204237	0.27336219	yes
Nipbl	-0.373228107	-1.295247776	0.034985409	-0.106694969	-1.076758692	0.51377503	yes
Igf1r	-0.370966828	-1.293219197	0.028587988	-0.159088018	-1.116581082	0.311729821	yes
Mxd3	-0.369103561	-1.291550058	0.029634277	-0.155918	-1.114130324	0.328867583	yes
Nav2	-0.367958916	-1.290525739	0.005777077	-0.199968863	-1.148673563	0.102916326	yes
Etv4	-0.367582167	-1.290188772	0.023354342	-0.159125119	-1.116609797	0.294680434	yes
Zfp141	-0.365932272	-1.28871413	0.045042661	-0.177320114	-1.130781444	0.308153247	yes
Clgn	-0.365552112	-1.28837459	0.040597044	-0.107251025	-1.077173786	0.523256173	yes
Chuk	-0.365225552	-1.288082994	0.025729946	-0.243291417	-1.183690097	0.119965901	yes
Maml3	-0.36306015	-1.286151105	0.041135571	-0.157863257	-1.115633574	0.349168926	yes

Bcor	-0.361667884	-1.28491051	0.012439271	-0.208515355	-1.155498474	0.124384709	yes
Fam53b	-0.360877829	-1.284207054	0.023314407	-0.272105803	-1.207569147	0.076337112	yes
Egln3	-0.360768035	-1.284109326	0.042695638	-0.210780139	-1.157313834	0.217048896	yes
Lyst	-0.359671958	-1.283134104	0.008481039	-0.122172099	-1.088372266	0.323239631	yes
Kmt2c	-0.359620193	-1.283088065	0.01899435	-0.187315407	-1.138642936	0.189504686	yes
Pecam1	-0.356656744	-1.28045517	0.009647174	-0.101087768	-1.072581866	0.418361007	yes
P4ha1	-0.355534978	-1.27945994	0.046157548	-0.271965268	-1.207451523	0.115446297	yes
Zfp397	-0.355385584	-1.279327457	0.031613663	-0.201158758	-1.149621348	0.199149583	yes
Ccdc141	-0.354322484	-1.278385088	0.036907666	-0.270165421	-1.205946095	0.102019914	yes
Eml5	-0.352449783	-1.276726746	0.007783031	-0.197074309	-1.146371231	0.107827299	yes
Nme7	-0.352067261	-1.276388275	0.035773952	-0.145603216	-1.106193076	0.350293238	yes
Dusp4	-0.352029341	-1.276354727	0.033669544	-0.172169816	-1.126751848	0.273195213	yes
Lrrk2	-0.351729497	-1.276089482	0.022443757	-0.173997243	-1.128179981	0.226472676	yes
Raver2	-0.349836541	-1.274416226	0.029097363	-0.183110807	-1.135329298	0.228232873	yes
Chfr	-0.348185554	-1.272958648	0.011800234	-0.188368923	-1.139474724	0.144465178	yes
Hipk3	-0.343689056	-1.26899735	0.015893774	-0.099991701	-1.071767297	0.440741159	yes
Sos1	-0.343652328	-1.268965044	0.01338424	-0.175733456	-1.129538508	0.173864385	yes
Trim59	-0.342611263	-1.268049675	0.047341745	-0.110069319	-1.079280093	0.500538867	yes
Nktr	-0.341441093	-1.267021576	0.021868194	-0.182613209	-1.134937781	0.18997411	yes
Sbk1	-0.339970526	-1.265730735	0.003781226	-0.192042042	-1.142379537	0.074542101	yes
Zfp937	-0.339665478	-1.265463133	0.029554594	-0.095877529	-1.068715264	0.510415563	yes
Lamc2	-0.339324287	-1.265163892	0.049457077	-0.123553206	-1.089414675	0.45081178	yes
Ptchd2	-0.337533534	-1.263594475	0.008616637	-0.106951286	-1.076950011	0.358304497	yes
Mast4	-0.337068413	-1.263187161	0.025048634	-0.20714585	-1.154402116	0.147014652	yes
Lipa	-0.336527163	-1.262713345	0.02196005	-0.066829043	-1.047412003	0.621908781	yes
Fam166a	-0.336352597	-1.262560566	0.017442881	-0.119037515	-1.086010096	0.363034143	yes
Sirt1	-0.334590785	-1.261019675	0.039371522	-0.059753732	-1.042287827	0.694435213	yes
Slc4a7	-0.334005729	-1.260508397	0.038785121	-0.177075536	-1.130589761	0.249573803	yes
Arl15	-0.332792275	-1.259448626	0.003766414	-0.146516429	-1.106893507	0.156460172	yes
Numb	-0.332733222	-1.259397075	0.006063197	-0.153891035	-1.112566086	0.164114089	yes
Pcgf6	-0.332633117	-1.259309692	0.047836178	-0.128527804	-1.0931776	0.420419366	yes
Jak2	-0.331543858	-1.25835925	0.01010447	-0.121684359	-1.088004376	0.301438464	yes
Chd9	-0.331284948	-1.258133442	0.005200408	-0.139890125	-1.101821199	0.192101456	yes
Zc3h11a	-0.328784597	-1.255954845	0.016268127	-0.156881861	-1.114874921	0.216454899	yes
Gatm	-0.328723365	-1.25590154	0.040884821	-0.131476908	-1.095414519	0.383255527	yes
Sgsm1	-0.328686555	-1.255869497	0.013646842	-0.147313993	-1.1075056	0.230132623	yes
Vamp1	-0.327923665	-1.255205574	0.012736802	-0.146725786	-1.107054146	0.226826343	yes
Otub2	-0.327694438	-1.255006154	0.014552209	-0.134542692	-1.097744794	0.277987035	yes
Slco1c1	-0.327513733	-1.254848967	0.018843688	-0.074784975	-1.05320405	0.557781422	yes
Rps6ka3	-0.32541973	-1.253028936	0.00300388	-0.143064156	-1.104247951	0.145148889	yes
Ascc2	-0.324645578	-1.252356739	0.049033279	-0.169539398	-1.12469935	0.282902078	yes
Abca7	-0.32375286	-1.251582039	0.004970194	-0.160670923	-1.117806852	0.126600908	yes

Sipa1l3	-0.323041221	-1.250964822	0.01774172	-0.106627973	-1.07670869	0.395685723	yes
Zmynd8	-0.320502772	-1.248765662	0.00517239	-0.207763179	-1.15489619	0.052532464	yes
Jade2	-0.31939881	-1.247810461	0.010346773	-0.191179421	-1.141696685	0.101498755	yes
Bdp1	-0.318924855	-1.247400597	0.013880995	-0.132468347	-1.096167561	0.269017254	yes
Map3k2	-0.3182591	-1.246825097	0.044764575	-0.117740168	-1.085033938	0.431160658	yes
Zc3h3	-0.318251053	-1.246818142	0.017555274	-0.143011411	-1.104207581	0.252296228	yes
Cdk13	-0.317813002	-1.246439624	0.011812711	-0.147721301	-1.10781832	0.206155588	yes
Epb4.1	-0.317750647	-1.246385753	0.030223943	-0.221815497	-1.166200217	0.116708631	yes
Zfhx2	-0.317717493	-1.24635711	0.012392247	-0.167397436	-1.123030754	0.157439321	yes
Dnajc3	-0.317183586	-1.245895949	0.027664531	-0.140594259	-1.102359094	0.297049854	yes
Ccnd1	-0.316469883	-1.245279755	0.009228839	-0.096773974	-1.069379536	0.380042036	yes
Slc7a6	-0.315504194	-1.244446487	0.014422042	-0.112931846	-1.081423675	0.341649105	yes
Tet3	-0.315396857	-1.244353903	0.038247917	-0.259130054	-1.196756842	0.081281456	yes
Stard8	-0.314992254	-1.244004974	0.024300026	-0.087634761	-1.062626621	0.499181943	yes
Gpr17	-0.314575405	-1.243645586	0.039632212	-0.104385488	-1.075036384	0.464424563	yes
Ssh2	-0.314443238	-1.243531659	0.02423383	-0.101346137	-1.07277397	0.433531389	yes
Utrn	-0.314352869	-1.243453769	0.010341508	-0.093822953	-1.067194364	0.399340401	yes
Mcf2l	-0.313773212	-1.242954264	0.017549388	-0.123787672	-1.08959174	0.309487095	yes
Kcnj10	-0.313107233	-1.242380622	0.024821234	-0.050543383	-1.035654924	0.692085556	yes
Bmp2k	-0.312628022	-1.241968017	0.039593709	-0.120109912	-1.086817659	0.402692476	yes
Myo9b	-0.31222846	-1.241624095	0.025491819	-0.151781943	-1.110940802	0.24748781	yes
Zfp462	-0.312027316	-1.241450997	0.019154537	-0.129394479	-1.093834506	0.296644802	yes
Krit1	-0.311806757	-1.241261219	0.022053429	-0.177118877	-1.130623726	0.16908821	yes
Col4a1	-0.311161291	-1.240705999	0.044998376	-0.203385161	-1.151396843	0.172987516	yes
Vwa1	-0.310978027	-1.240548404	0.02131665	-0.107726024	-1.077528497	0.39060697	yes
Slc24a5	-0.309824035	-1.239556502	0.040486031	-0.254785678	-1.193158478	0.085548777	yes
Kcna1	-0.309671619	-1.239425555	0.008138963	-0.17221886	-1.126790152	0.112853575	yes
Vcam1	-0.309585413	-1.239351497	0.047992802	-0.04443941	-1.031282375	0.761958956	yes
Sfpq	-0.309376841	-1.239172335	0.01283162	-0.150121073	-1.109662593	0.192310333	yes
Plcx2	-0.308741473	-1.23862672	0.049815119	-0.168574037	-1.123947024	0.259872752	yes
Pde7a	-0.308277525	-1.23822846	0.011602581	-0.129469984	-1.093891754	0.249834978	yes
Zbtb44	-0.307553182	-1.237606931	0.047025244	-0.04571619	-1.03219546	0.753076659	yes
Rnf165	-0.307284394	-1.237376374	0.009313379	-0.146999562	-1.107264248	0.177460777	yes
D930016D06Rik	-0.306666144	-1.236846225	0.043539052	-0.114260669	-1.082420201	0.426754791	yes
Usp35	-0.305969135	-1.236248813	0.014432184	-0.137457114	-1.099964615	0.236424434	yes
Grin2c	-0.305739417	-1.236051982	0.026151417	-0.118727104	-1.085776454	0.354667889	yes
Ikzf5	-0.305281802	-1.235659975	0.023603161	-0.156759911	-1.114780685	0.21788796	yes
Ppp1r3c	-0.303516841	-1.234149221	0.045552277	-0.097426941	-1.069863649	0.494781579	yes
Rfx7	-0.302902349	-1.233623667	0.026016389	-0.04160016	-1.029254788	0.740780573	yes
Gm17066	-0.302799552	-1.233535771	0.042444385	-0.152423007	-1.11143456	0.283858955	yes
Itpr1	-0.302604024	-1.233368601	0.007639801	-0.118984825	-1.085970433	0.248962123	yes
Slco2b1	-0.302525274	-1.233301279	0.021370385	-0.082961231	-1.059189871	0.495105201	yes



Mapk11	-0.302286966	-1.233097576	0.007057894	-0.166589135	-1.122401728	0.108793834	yes
Wipf3	-0.301839833	-1.232715463	0.017840882	-0.098981753	-1.071017277	0.398581606	yes
Coro6	-0.301615728	-1.23252399	0.039191564	-0.223425575	-1.167502448	0.115888045	yes
Tacc1	-0.300894578	-1.231908051	0.00412747	-0.128497347	-1.093154523	0.173689619	yes
Lingo3	-0.299995541	-1.231140608	0.018898574	-0.104610717	-1.075204228	0.376895963	yes
Glcci1	-0.299152359	-1.230421279	0.014410809	-0.184879985	-1.136722408	0.109744399	yes
Fam126b	-0.29881915	-1.23013713	0.025974516	-0.152149379	-1.111223781	0.227683395	yes
Rgs5	-0.298502248	-1.229866948	0.016135734	-0.161192714	-1.118211211	0.166453973	yes
Hook3	-0.297282048	-1.228827193	0.036849518	-0.105465179	-1.075841226	0.427971827	yes
Sfswap	-0.296926868	-1.228524703	0.014881912	-0.123325967	-1.089243095	0.274711488	yes
Sik2	-0.296082028	-1.227805491	0.032076134	-0.185035687	-1.136845094	0.162108622	yes
Vegfa	-0.295321563	-1.227158469	0.01581272	-0.142668058	-1.103944817	0.211085116	yes
Suclg2	-0.294223259	-1.226224605	0.04395959	-0.020302046	-1.014171787	0.882132154	yes
Dnaja4	-0.29385071	-1.225907997	0.019143433	-0.185078982	-1.136879211	0.120673969	yes
Wee1	-0.293155722	-1.225317583	0.03056573	-0.101746042	-1.073071376	0.423165403	yes
Dimt1	-0.293140562	-1.225304708	0.037399799	-0.163982652	-1.120375742	0.222846322	yes
Dnajib1	-0.292641276	-1.224880729	0.011865206	-0.150589117	-1.110022651	0.164209271	yes
Akap17b	-0.292041301	-1.224371443	0.038172401	-0.104368358	-1.07502362	0.431918183	yes
Golm1	-0.291645987	-1.224035998	0.016980616	-0.085087908	-1.060752375	0.4492953	yes
Fstl4	-0.291012881	-1.223498965	0.047279252	-0.077444688	-1.0551475	0.575869963	yes
Osbpl6	-0.290234644	-1.222839148	0.012075638	-0.170932188	-1.125785669	0.115575759	yes
Ahsa2	-0.289986845	-1.222629129	0.016137149	-0.121753126	-1.088056238	0.276399223	yes
Apbb2	-0.289017817	-1.221808191	0.022689568	-0.123690386	-1.089518268	0.297373975	yes
Ndufaf4	-0.288876222	-1.22168828	0.033022523	-0.131301479	-1.095281327	0.305340118	yes
Xbp1	-0.288854411	-1.221669811	0.00632261	-0.121351936	-1.087753709	0.206679106	yes
Srrm2	-0.288604302	-1.221458038	0.01027349	-0.098733547	-1.070833031	0.335722116	yes
Daam2	-0.287367986	-1.22041176	0.04634826	-0.056520901	-1.039954854	0.67480723	yes
lpmk	-0.286612476	-1.219772822	0.007380409	-0.109752118	-1.079042821	0.258583438	yes
Akap13	-0.286389208	-1.219584068	0.03107377	-0.150002052	-1.10957105	0.233291677	yes
F420014N23Rik	-0.286031762	-1.219281937	0.046293702	-0.121343982	-1.087747712	0.373680772	yes
Slc25a42	-0.285747804	-1.219041976	0.029690536	-0.131731355	-1.095607734	0.288139107	yes
Tra2a	-0.285627105	-1.218939992	0.046166866	-0.125740558	-1.091067651	0.353636643	yes
Ltbp3	-0.285476818	-1.218813021	0.027274692	-0.078024638	-1.055571744	0.516887327	yes
Med12l	-0.285212183	-1.218589473	0.034866784	-0.061635692	-1.043648353	0.625076636	yes
Mat2a	-0.284344091	-1.217856449	0.017075778	-0.18551096	-1.137219671	0.101625326	yes
Cntnap1	-0.284292847	-1.217813193	0.009497783	-0.123318127	-1.089237176	0.220517434	yes
Ick	-0.283401836	-1.217061302	0.02221283	-0.050767185	-1.035815595	0.656914238	yes
Eif5a2	-0.28223429	-1.216076755	0.037490259	-0.176570028	-1.130193681	0.174624324	yes
Atp2b2	-0.281902962	-1.215797504	0.013691591	-0.112991996	-1.081468763	0.284147774	yes
Efcab14	-0.281471931	-1.215434317	0.031609132	-0.073142199	-1.052005465	0.54962277	yes
Ralgs2	-0.28102771	-1.21506013	0.025567429	-0.107691958	-1.077503054	0.36030792	yes
Syne1	-0.280852672	-1.214912719	0.00821196	-0.116138224	-1.083829803	0.231383008	yes

Ptpn1	-0.280499631	-1.214615454	0.006740767	-0.107055685	-1.077027947	0.253725561	yes
Dpf2	-0.280062954	-1.214247869	0.013493603	-0.146143849	-1.106607686	0.167453561	yes
Tnks	-0.279424087	-1.213710284	0.009996784	-0.116413052	-1.084036288	0.242246721	yes
Rgs20	-0.279106832	-1.213443413	0.014472544	-0.068594376	-1.048694438	0.510941764	yes
Setd8	-0.278407535	-1.21285538	0.019728335	-0.136790421	-1.09945642	0.222020303	yes
9330159F19Rik	-0.277159848	-1.211806919	0.033756964	-0.103649195	-1.074487869	0.396944656	yes
Sorl1	-0.276953851	-1.211633902	0.043954523	-0.133214335	-1.096734514	0.305971002	yes
Asap2	-0.276931443	-1.211615083	0.026623569	-0.060684702	-1.042960631	0.600108998	yes
Ptpn3	-0.276692652	-1.211414556	0.026452132	-0.131714317	-1.095594795	0.261936394	yes
Fkbp5	-0.276231772	-1.211027622	0.036220386	-0.119096893	-1.086054794	0.339620218	yes
Rbm12	-0.27605884	-1.210882468	0.048479024	-0.1282443	-1.092962801	0.336374293	yes
Dmxl1	-0.275651045	-1.210540247	0.027458621	-0.138157802	-1.100498975	0.241748069	yes
Csmd2	-0.275086092	-1.210066297	0.021119261	-0.152801973	-1.11172655	0.174969253	yes
Stim2	-0.274029346	-1.209180271	0.0447101	-0.162819295	-1.11947266	0.213284831	yes
Adgrf5	-0.271943864	-1.207433609	0.040969896	-0.075647527	-1.053833924	0.545613472	yes
Dcp1a	-0.271673497	-1.207207352	0.035712944	-0.128101871	-1.092854905	0.296182867	yes
Phrf1	-0.270876598	-1.206540713	0.017129424	-0.099608954	-1.071482995	0.343521049	yes
Uggt1	-0.270640525	-1.206343298	0.023763682	-0.113175957	-1.081606673	0.312275152	yes
Bcl11b	-0.270416802	-1.206156242	0.024979555	-0.225220447	-1.168955854	0.0561514	yes
Ccdc88a	-0.270230423	-1.206000431	0.037541437	-0.082787154	-1.059062076	0.49653241	yes
Elac2	-0.270097771	-1.205889548	0.017936559	-0.060152972	-1.042576301	0.56601093	yes
Lynx1	-0.269247936	-1.205179415	0.047505264	-0.145765909	-1.106317828	0.260169361	yes
Srrm1	-0.269054845	-1.205018124	0.010301243	-0.100394833	-1.072066823	0.295239183	yes
Bmi1	-0.268380849	-1.204455297	0.008989875	-0.093917166	-1.067264058	0.314901909	yes
2700029M09Rik	-0.265915132	-1.202398515	0.020043508	-0.124180166	-1.08988821	0.246098942	yes
Mfhas1	-0.265815503	-1.202315483	0.021443575	-0.115058757	-1.083019153	0.286958513	yes
Adgra2	-0.265533863	-1.202080792	0.047147	-0.129597917	-1.093988761	0.310042825	yes
Pde4a	-0.265495701	-1.202048995	0.005209986	-0.121432122	-1.087814169	0.15964539	yes
Sox5	-0.265455206	-1.202015255	0.024488479	-0.100362251	-1.072042611	0.362562705	yes
Zfp385b	-0.265337215	-1.201916952	0.039765931	-0.11752453	-1.084871771	0.336846065	yes
Ttbk2	-0.265045663	-1.201674083	0.013702431	-0.083816001	-1.059817607	0.395253067	yes
Abi3	-0.265044939	-1.20167348	0.031149606	-0.132272257	-1.096018581	0.256218953	yes
Plekha3	-0.264943971	-1.201589383	0.011271291	-0.138366638	-1.100658289	0.155005648	yes
Trove2	-0.264814073	-1.201481199	0.038886858	-0.12003674	-1.086762538	0.3228028	yes
Fubp1	-0.263875541	-1.20069984	0.024517595	-0.159046782	-1.116549167	0.154197705	yes
Kcnab3	-0.263840631	-1.200670787	0.031189812	-0.102522222	-1.073648852	0.373066443	yes
Ubr2	-0.263430508	-1.200329514	0.012723652	-0.118117884	-1.085318051	0.227479479	yes
Ccdc6	-0.263346555	-1.200259667	0.034817855	-0.177219112	-1.130702281	0.140559252	yes
Ints10	-0.26319886	-1.200136797	0.013379165	-0.099561014	-1.071447391	0.309549781	yes
Gabra2	-0.73113798	-1.659947922	0.000165951	-0.399788164	-1.319314177	0.015270262	no
Gm3636	-1.527102718	-2.88206469	0.047699908	-0.67836752	-1.600327881	0.353133607	no
Rxfp2	-1.084176686	-2.120165207	0.006213568	-0.481011341	-1.395721736	0.18248157	no

Plekhg4	-1.023446817	-2.032769758	0.005517209	-0.487334137	-1.401852089	0.147354962	no
Robo3	-1.002073512	-2.002876565	0.004396831	-0.527512602	-1.441441815	0.086284802	no
Npc1l1	-0.942629411	-1.922028077	0.0086858	-0.423658655	-1.341324827	0.198876044	no
Xirp2	-0.927229125	-1.901620188	0.021105038	-0.480034481	-1.394777002	0.204397167	no
Adam33	-0.906193596	-1.874094363	0.042789843	-0.453444996	-1.369306108	0.285752494	no
Flt3	-0.874450806	-1.833310063	0.005510419	-0.437095108	-1.353875529	0.129405159	no
Scn4b	-0.858324121	-1.81293113	0.034629076	-0.417026384	-1.335172721	0.247650331	no
Moap1	-0.836460071	-1.785663295	0.045623323	-0.458639594	-1.374245346	0.252467828	no
Tmem170	-0.832102272	-1.780277665	0.021502565	-0.380928932	-1.302180041	0.261314661	no
Tanc1	-0.729566189	-1.658140422	0.002275916	-0.456133654	-1.371860375	0.036513023	no
Dok3	-0.674452688	-1.59599119	0.007365405	-0.402322124	-1.321633466	0.086304559	no
5730507C01Rik	-0.667226039	-1.58801665	0.019842442	-0.37974723	-1.301113871	0.160788151	no
Banp	-0.665869436	-1.5865241	0.012898133	-0.392234714	-1.312424757	0.110740829	no
Tmem181b-ps	-0.812906234	-1.756746755	0.000386121	-0.365353185	-1.288196953	0.048236757	no
Inf2	-0.566895812	-1.481332816	0.0000958	-0.278718466	-1.213116804	0.021925699	no
Prss23	-0.569272201	-1.483774859	0.000721364	-0.302303226	-1.233111474	0.042196894	no
Cbfa2t3	-0.54070776	-1.454685985	0.002553356	-0.3266252	-1.254076364	0.044913305	no
Gse1	-0.475364832	-1.39026975	0.000674159	-0.258070881	-1.19587855	0.036714885	no

**Suppl. Table 6 List of genes down-regulated in Shank3-deficient mice and recovered by UNC0642 treatment [Het+SAL\_vs\_WT (fold change > 1.2 & P < 0.05) and Het+UNC\_vs\_WT (-1.3 < fold change < 1.3 & P > 0.05)]**

Gene Symbol	logFC (SAL_vs_WT)	Fold change (SAL_vs_WT)	P.Value (SAL_vs_WT)	logFC (UNC_vs_WT)	Fold change (UNC_vs_WT)	P.Value (UNC_vs_WT)	Restored
Fdft1	0.267010659	1.203311916	0.008881474	0.075251262	1.053544507	0.414847947	yes
Ric8	0.270509286	1.206233565	0.010698844	0.0605254	1.042845475	0.528291388	yes
Phf13	0.271448635	1.207019208	0.024602701	0.036810948	1.025843709	0.741406122	yes
Wdr19	0.279204938	1.213525932	0.026421647	-0.001819773	-1.001262166	0.987505578	yes
Gpr89	0.286172119	1.219400565	0.032662567	0.018834509	1.013140677	0.879812793	yes
Ppapdc1b	0.289644249	1.222338826	0.015051431	0.032802552	1.022997452	0.762318828	yes
Fbxw9	0.289709977	1.222394516	0.018918709	0.032382818	1.022699867	0.774635494	yes
2610001J05Rik	0.292826824	1.225038274	0.010456966	0.054697373	1.03864121	0.596503418	yes
Arl4a	0.310871463	1.240456774	0.005817242	0.099967562	1.071749365	0.322982113	yes
Dusp1	0.311729219	1.241194509	0.004799451	0.075197731	1.053505416	0.442900519	yes
Elp6	0.313547912	1.242760172	0.03437204	0.024097729	1.016843553	0.861392209	yes
Slc35f5	0.314281822	1.243392535	0.014110315	0.05690545	1.040232091	0.625571661	yes
Cd200	0.315194319	1.244179223	0.004222974	0.078500049	1.055919644	0.4202155	yes
Usp16	0.316310618	1.245142291	0.036739738	-0.009514718	-1.006616895	0.946049056	yes
Ntng1	0.318867098	1.24735066	0.044813032	-0.042435858	-1.029851168	0.776103335	yes
Leprot	0.319203409	1.247641467	0.00731817	0.079214722	1.056442848	0.458342689	yes
Dpysl5	0.32220963	1.250243955	0.007325461	0.09525238	1.068252268	0.378784637	yes
Fra10ac1	0.325138553	1.252784747	0.025838075	-0.001341321	-1.000930165	0.992055466	yes
Ddx3y	0.325603989	1.253188981	0.003845087	0.082344472	1.058737159	0.40718299	yes
Txn1	0.32616835	1.253679306	0.004057415	0.080697538	1.057529228	0.420657406	yes
Ndn	0.330624773	1.257557854	0.003166093	0.10007383	1.071828312	0.310844206	yes
Bbs9	0.33704102	1.263163177	0.020381765	0.056533025	1.039963594	0.67230212	yes
Atraid	0.340229177	1.26595768	0.002413122	0.134269829	1.097537192	0.176155528	yes
Taf6l	0.340403676	1.266110811	0.027967728	0.032532046	1.022805658	0.820596952	yes
Wbp5	0.341109449	1.26673035	0.003142542	0.117538151	1.084882014	0.250340478	yes
Gap43	0.344691204	1.269879148	0.005091387	0.100761541	1.072339358	0.356760829	yes
Cep83os	0.350514036	1.275014838	0.004518219	0.081232776	1.057921643	0.456872993	yes
Noa1	0.353128316	1.277327362	0.012013202	0.053019824	1.037434192	0.677064618	yes
Mrpl57	0.358880962	1.282430784	0.008673912	0.090539963	1.064768623	0.462866076	yes
Celf6	0.360576289	1.283938669	0.003825584	0.104025858	1.074768436	0.345582315	yes
Coa7	0.367250392	1.289892103	0.010489452	0.014458386	1.010072176	0.910823897	yes
Izumo4	0.383402613	1.304414708	0.005250518	0.043562963	1.030656054	0.719364806	yes
Fxyd6	0.38569266	1.306486901	0.003898136	0.140356316	1.102177298	0.235652321	yes
Bmp3	0.38640318	1.307130498	0.002413442	0.149460063	1.109154287	0.184438577	yes
Gm10677	0.391481951	1.311740145	0.00487362	0.123734943	1.089551917	0.318888935	yes
Xrcc6	0.397519114	1.31724081	0.02125123	-0.006346009	-1.004408407	0.968055019	yes
Pstpip2	0.398141315	1.317809027	0.023729177	0.054574863	1.038553014	0.736912149	yes
Snrpd1	0.403756186	1.322947844	0.004027271	0.068274416	1.048461885	0.579623985	yes

Btd	0.406328406	1.325308668	0.014528657	0.0274845	1.019233428	0.855630302	yes
Tshz2	0.409130306	1.327885089	0.00179239	0.153877297	1.112555492	0.180242522	yes
Rccd1	0.409454649	1.328183655	0.04010269	-0.001873805	-1.001299667	0.991982401	yes
Crhbp	0.413666831	1.332067168	0.00105613	0.176959516	1.130498844	0.108384147	yes
Klf5	0.416325613	1.334524335	0.024888494	-0.041418058	-1.02912488	0.808998612	yes
Htr2c	0.42410697	1.341741706	0.001538124	0.18150264	1.134064456	0.123586236	yes
Dars2	0.427110945	1.344538387	0.004143206	0.142478977	1.103800143	0.282835228	yes
Glra2	0.429039128	1.346336584	0.007216279	0.076320915	1.054325923	0.59268809	yes
Tusc1	0.432002607	1.349104972	0.038603785	-0.039627216	-1.027848203	0.839101626	yes
Cdk5rap3	0.434315915	1.351269948	0.000952036	0.190375503	1.141060671	0.096812305	yes
Gm9866	0.435625218	1.352496835	0.002372716	0.094889462	1.067983577	0.445342222	yes
Ccdc53	0.439627314	1.356253926	0.021457984	0.066312846	1.047037305	0.706276886	yes
Cntnap4	0.454226076	1.370047655	0.001085613	0.036217937	1.025422129	0.756359799	yes
Nov	0.461867167	1.377323227	0.000634608	0.205519496	1.153101489	0.077344404	yes
Zkscan4	0.469553978	1.384681315	0.034570138	0.022996129	1.016067417	0.911494577	yes
Dhrs7b	0.478561176	1.393353359	0.001195538	0.131394063	1.095351618	0.298406739	yes
Cort	0.496265567	1.410557587	0.017580427	-0.017564948	-1.012249512	0.926686327	yes
Tmem169	0.497638529	1.411900604	0.000669336	0.116621715	1.084193088	0.341022013	yes
Tmem117	0.504953063	1.419077187	0.024583229	0.058496719	1.041380082	0.777886905	yes
Cd24a	0.505623294	1.419736598	0.010650729	0.0967748	1.069380148	0.588686725	yes
Sema3f	0.51354144	1.427550161	0.008797098	0.14607281	1.106553197	0.409923034	yes
Zfand4	0.533092355	1.447027515	0.026404812	0.045714618	1.032194335	0.83684469	yes
Fancl	0.534031978	1.447970267	0.008827883	0.09433671	1.06757447	0.606684878	yes
AA414768	0.543200626	1.457201743	0.01499948	0.100749667	1.072330532	0.621005449	yes
Bex4	0.556464684	1.470660952	0.00406571	0.163021825	1.119629826	0.342384949	yes
Gprin3	0.558098296	1.472327174	0.017392731	0.074610733	1.053076857	0.728122615	yes
A730017C20Rik	0.562652661	1.476982427	0.000430213	0.189933496	1.140711131	0.155432224	yes
Trhr	0.608935292	1.525133246	0.006022511	0.12004773	1.086770816	0.542802952	yes
Epha8	0.616573587	1.533229421	0.011455437	0.156668794	1.11471028	0.479640877	yes
Fam26e	0.625080634	1.542297024	0.008614503	0.138999343	1.101141097	0.516338867	yes
Rwdd2b	0.627369612	1.544745973	0.008062908	0.098395445	1.070582106	0.640825732	yes
Rsph9	0.651867298	1.571200504	0.001529282	0.267048297	1.20334331	0.139026173	yes
Cbln1	0.660845538	1.581008953	0.000728386	0.164911256	1.121097114	0.316029025	yes
Mtrf1	0.665212215	1.585801521	0.006881654	0.199225187	1.148081601	0.368217493	yes
Ramp3	0.670362205	1.591472475	0.001240058	0.202602379	1.150772283	0.244724526	yes
Lrrc6	0.671994376	1.593273981	0.002253388	0.170823987	1.125701239	0.37152541	yes
Adam18	0.773368299	1.709255774	0.013890496	0.022982083	1.016057524	0.935760099	yes
3010026O09Rik	0.820439694	1.765944122	0.000753096	0.268707371	1.20472793	0.194650362	yes
A930005H10Rik	0.82376712	1.770021789	0.000696262	0.026149501	1.018290716	0.896401412	yes
Ucma	0.831025294	1.778949176	0.022887966	-0.018138426	-1.012651967	0.956960315	yes
Efhc2	0.832542664	1.780821189	0.019455861	0.046981089	1.033100845	0.885558756	yes
1700003M02Rik	0.890505593	1.853825684	0.010527085	-0.02629718	-1.018394957	0.933082394	yes

Myh3	1.024674345	2.034500091	0.001711059	0.185441649	1.137165038	0.506623247	yes
Gm35612	1.088533208	2.126577168	0.011678383	0.169789096	1.124894028	0.663827497	yes
Gm11978	1.507810176	2.843780624	0.002202035	0.271600421	1.207146206	0.521933085	yes
Gnb4	0.263550135	1.200429048	0.041158987	0.101196478	1.072662691	0.407046172	yes
Rraga	0.264039266	1.200836111	0.039627033	0.098329244	1.070532981	0.415356523	yes
Marc2	0.264311814	1.201062989	0.039133477	0.222906287	1.167082289	0.076420571	yes
Wnt7b	0.264510515	1.201228421	0.018948833	0.146977838	1.107247575	0.16687102	yes
Iscu	0.264637738	1.201334356	0.02366523	0.066304359	1.047031146	0.540629729	yes
Sstr1	0.265357425	1.201933789	0.010470638	0.091417733	1.065416651	0.333916274	yes
Ccdc71	0.265884081	1.202372636	0.030141049	0.099572958	1.071456261	0.386858929	yes
Pnma3	0.266884536	1.203206725	0.036303802	0.124396052	1.090051315	0.303291694	yes
Gpr61	0.267503248	1.203722842	0.042247758	0.109430904	1.078802601	0.380561745	yes
Gpr85	0.268427119	1.204493927	0.022528036	0.123878095	1.089660034	0.261774765	yes
Slc25a11	0.269315505	1.205235861	0.038838074	0.139049391	1.101179297	0.261394598	yes
Zfp330	0.269716926	1.205571257	0.024564236	0.113385842	1.081764038	0.313092641	yes
Lcorl	0.270001593	1.205809159	0.048740462	0.087718288	1.062688145	0.498791642	yes
Coq7	0.27021611	1.205988466	0.04477379	0.047592284	1.033538609	0.70683798	yes
Carkd	0.271810631	1.207322107	0.026839285	0.14709708	1.107339095	0.206282038	yes
Sumo3	0.272064301	1.20753441	0.016408714	0.11728064	1.084688387	0.265656796	yes
Tceal1	0.272831486	1.208176714	0.039244582	0.091916093	1.065784749	0.461058032	yes
Cnrip1	0.273032398	1.208344978	0.024400342	0.099625038	1.071494941	0.378132176	yes
Ap2m1	0.273092064	1.208394953	0.037746017	0.117851446	1.085117632	0.341233127	yes
Rpl22l1	0.273297968	1.20856743	0.012159457	0.080732486	1.057554847	0.417082917	yes
Grb10	0.273633016	1.208848138	0.021508202	0.211158353	1.157617273	0.067100266	yes
Zdhhc16	0.276057203	1.210881094	0.01998788	0.105403166	1.075794983	0.339400425	yes
Pls3	0.276118604	1.210932631	0.020340525	0.071570794	1.050860228	0.513604245	yes
Prpf31	0.276966518	1.21164454	0.047584031	0.20317394	1.151228282	0.135151094	yes
Zc4h2	0.277061721	1.211724499	0.034924297	0.087647851	1.062636263	0.477169338	yes
Tm7sf2	0.277282796	1.211910195	0.044854333	0.066876851	1.047446713	0.607372221	yes
Ncald	0.278576764	1.212997658	0.043221315	0.088039473	1.062924756	0.495140334	yes
Efnb3	0.280297742	1.214445495	0.040311936	0.097244645	1.069728472	0.448477632	yes
Eif6	0.281428263	1.215397529	0.024651163	0.169819919	1.12491806	0.154480366	yes
Snca	0.281556542	1.215505601	0.029993207	0.104561519	1.075167563	0.387703856	yes
Pigp	0.283060362	1.216773267	0.036468696	0.151448961	1.110684421	0.240199442	yes
Wibg	0.283528233	1.217167935	0.037727022	0.061973529	1.043892774	0.627771807	yes
Zscan18	0.283617721	1.217243436	0.022115192	0.168269703	1.123709954	0.152737453	yes
Prss12	0.283951301	1.21752492	0.03091357	0.14491299	1.105663968	0.244968193	yes
Rabac1	0.284640904	1.218107031	0.033953686	0.144209406	1.105124881	0.255523253	yes
Nelfe	0.285043419	1.218446933	0.031475353	0.144968772	1.10570672	0.248615312	yes
Lrrc24	0.285422954	1.218767517	0.016083432	0.117502603	1.084855283	0.285276002	yes
Coasy	0.285902082	1.219172344	0.032314421	0.106059114	1.076284224	0.398108606	yes
Orc6	0.286584655	1.2197493	0.041645352	0.07852304	1.055936471	0.553080408	yes

Tmem29	0.287685488	1.220680372	0.040240709	0.075114899	1.053444931	0.568702562	yes
Pex11b	0.288882967	1.221693993	0.043089004	0.081403395	1.058046765	0.544002865	yes
Smyd3	0.289017949	1.221808302	0.045528948	0.157619135	1.115444811	0.25396318	yes
Ngfrap1	0.291434871	1.223856892	0.02201971	0.141154365	1.102787153	0.235960877	yes
Tmem199	0.291672652	1.224058621	0.017819757	0.064940281	1.046041639	0.565649743	yes
1700037H04Rik	0.292733522	1.22495905	0.02871613	0.176134727	1.129852721	0.167288875	yes
Isoc1	0.294852275	1.226759357	0.046351861	0.094515071	1.067706462	0.499334131	yes
2210015D19Rik	0.295156475	1.227018053	0.043460649	0.079979521	1.057003037	0.56128734	yes
Acat2	0.296328536	1.2280153	0.015697478	0.154557122	1.113079873	0.178508669	yes
Slc35b2	0.297976287	1.22941866	0.021059097	0.166394914	1.122250636	0.172961223	yes
Lhpp	0.299420286	1.230649805	0.023620672	0.083835112	1.059831646	0.49458779	yes
Nfkbib	0.300079142	1.231211952	0.045065518	0.058597989	1.041453185	0.677302295	yes
Sf3b6	0.300334062	1.231429523	0.019928229	0.091948717	1.065808849	0.44109676	yes
Rnasel	0.300856673	1.231875685	0.028128454	0.119444712	1.086316663	0.352874323	yes
Ahr	0.300923198	1.231932489	0.049560122	0.019315466	1.013478488	0.893390951	yes
Trappc2l	0.301467239	1.23239714	0.025237459	0.190941281	1.141508246	0.137965156	yes
Klf15	0.302299484	1.233108276	0.038005986	0.182732659	1.135031754	0.190944718	yes
Zcchc12	0.304506761	1.234996336	0.008394114	0.167792874	1.123338615	0.117875461	yes
Psmc9	0.305462274	1.235814558	0.01842273	0.097213883	1.069705663	0.416867794	yes
Ift81	0.305519596	1.235863661	0.0101765	0.09963543	1.071502659	0.357442707	yes
Supt4a	0.30614265	1.236397507	0.019023619	0.0740817	1.052690767	0.53768795	yes
Tuba1a	0.306256309	1.236494917	0.022989111	0.09462387	1.067786985	0.445894597	yes
Cdh13	0.306540833	1.236738799	0.028207395	0.040326457	1.028346497	0.753914255	yes
Sdr39u1	0.30679258	1.236954625	0.018752989	0.139792288	1.101746481	0.251310251	yes
Stmn4	0.30762419	1.237667846	0.009560701	0.147503034	1.107650729	0.177520844	yes
Tmem9	0.307871898	1.23788037	0.026260011	0.140928031	1.102614157	0.277790856	yes
Lingo2	0.308156239	1.238124369	0.020616932	0.122277635	1.088451885	0.324099442	yes
Psen2	0.308818061	1.238692476	0.033695175	0.102159135	1.073378678	0.45412608	yes
Apoa1bp	0.30890012	1.238762934	0.046207102	0.168999961	1.124278893	0.25357445	yes
Pithd1	0.310380407	1.240034627	0.017474634	0.093500679	1.066955998	0.435545	yes
Ydjc	0.311321897	1.240844126	0.032946162	0.161940064	1.118790621	0.242861041	yes
Ube2s	0.312388229	1.241761604	0.017879722	0.10174634	1.073071599	0.402750532	yes
Pet100	0.312778835	1.242097854	0.037520364	0.033692723	1.023628856	0.810397095	yes
Wdpcp	0.313253914	1.242506943	0.043109239	0.084896824	1.060611887	0.560488326	yes
Lrrcc1	0.313944484	1.243101832	0.019527003	0.16537131	1.121454673	0.19113717	yes
Tab1	0.314012431	1.243160381	0.011947981	0.147307722	1.107500785	0.203016939	yes
Cntn6	0.315381632	1.244340772	0.042629328	0.157776694	1.115566637	0.287348912	yes
Chid1	0.315392193	1.244349881	0.023565004	0.109050333	1.078518059	0.398921474	yes
Snx8	0.31632719	1.245156594	0.038047408	0.130868671	1.094952792	0.364127976	yes
Thtpa	0.317432684	1.246111085	0.020205776	0.090213234	1.064527511	0.47513497	yes
Yif1a	0.317488442	1.246159246	0.038863344	0.041177322	1.028953169	0.774521281	yes
1110004F10Rik	0.317632583	1.246283758	0.006864883	0.124426141	1.090074049	0.243172905	yes

Dolk	0.318784303	1.247279077	0.021817578	0.084432471	1.060270569	0.511428831	yes
Glt8d2	0.318860432	1.247344896	0.036940654	0.178079905	1.131377124	0.221652091	yes
Lrrc61	0.318959899	1.247430898	0.048252476	0.174180632	1.1283234	0.259856737	yes
Cdkl1	0.320202717	1.248505968	0.03621484	0.052051039	1.036737777	0.715493483	yes
Tceal6	0.322529808	1.250521454	0.027083608	0.129475224	1.093895728	0.342567841	yes
Tceal8	0.322741617	1.250705062	0.007357533	0.163287295	1.119835868	0.140935758	yes
Cdc26	0.323057727	1.250979135	0.033219852	0.107819105	1.07759802	0.448822662	yes
Omg	0.323490334	1.25135431	0.014267681	0.123297291	1.089221444	0.308782168	yes
Snrnp25	0.324022673	1.251816132	0.036074598	0.108835041	1.078357124	0.454017717	yes
C030006K11Rik	0.324080852	1.251866614	0.047456149	0.029037469	1.020331159	0.850090951	yes
Fabp3	0.32478696	1.252479474	0.021395037	0.162119214	1.118929558	0.219478668	yes
Tceal5	0.326028895	1.253558127	0.015647789	0.144112127	1.105050367	0.249193679	yes
Dpysl3	0.3272343	1.254605942	0.013466104	0.16819806	1.123654153	0.172037918	yes
Plcd3	0.32932505	1.256425431	0.038101594	0.150083487	1.109633684	0.318910785	yes
Tmem86a	0.330547106	1.257490156	0.02056093	0.153220022	1.112048741	0.251681099	yes
Fam185a	0.330659704	1.257588303	0.02134511	0.104982944	1.075481676	0.430642063	yes
Itpka	0.331108703	1.257979753	0.019626819	0.177165476	1.130660245	0.181599711	yes
Thsd4	0.331334288	1.258176471	0.045373396	0.217609433	1.162805204	0.173594801	yes
Cisd3	0.333822463	1.260348285	0.033773643	0.156958563	1.114934195	0.291793546	yes
Rab33a	0.333960772	1.260469118	0.037028742	0.202599982	1.150770371	0.186362141	yes
Tubb2a	0.334350004	1.260809232	0.022562622	0.131514944	1.0954434	0.331226586	yes
Acot9	0.335577081	1.261882064	0.025617539	0.056823416	1.040172943	0.683021756	yes
Sfxn4	0.337767348	1.263799279	0.027361682	0.109758167	1.079047345	0.442457467	yes
Rbp4	0.341184795	1.266796507	0.012545763	0.108988951	1.078472172	0.383499029	yes
Ddt	0.344025639	1.269293443	0.015493989	0.148497442	1.108414464	0.260296598	yes
Fbll1	0.34768045	1.272513049	0.008587012	0.162879493	1.119519372	0.180703185	yes
Ofd1	0.350006941	1.274566759	0.038149864	0.063997277	1.045358127	0.685453556	yes
Emc9	0.350355514	1.274874748	0.013023368	0.15565331	1.113925934	0.233375632	yes
Ndufb4	0.35117386	1.275598105	0.014640987	0.130903094	1.094978918	0.321356566	yes
Slc22a8	0.353714567	1.27784652	0.02665934	0.24174458	1.182421641	0.115064156	yes
Cxx1a	0.354365417	1.278423131	0.034692249	0.177611048	1.1310095	0.264916275	yes
Dnajc30	0.354414466	1.278466596	0.020167095	0.170281871	1.125278318	0.232428385	yes
Arrdc1	0.360578023	1.283940211	0.048683134	0.231881367	1.174365399	0.189286762	yes
St6gal2	0.361370697	1.284645853	0.030600525	0.221258307	1.165749901	0.166256417	yes
Hint2	0.361712984	1.284950678	0.011271138	0.122949091	1.088958588	0.345989565	yes
Mrgpre	0.361719085	1.284956112	0.019688356	0.084544402	1.060352833	0.554038003	yes
Zfp575	0.361760765	1.284993235	0.04040521	0.100439973	1.072100367	0.545104721	yes
6430573F11Rik	0.362835511	1.285950857	0.043956423	0.126014904	1.09127515	0.459214371	yes
Cryl1	0.364265075	1.287225735	0.027592675	0.136414893	1.099170273	0.378305326	yes
A930017M01Rik	0.364967298	1.287852437	0.040155726	0.153055455	1.111921897	0.363511426	yes
Kiss1r	0.368191708	1.290733994	0.042992685	0.147396246	1.107568744	0.392492734	yes
Znhit2	0.369674069	1.292060897	0.011876477	0.150927139	1.110282759	0.264564369	yes



Tpst2	0.369933126	1.292292927	0.017967808	0.173722102	1.127964843	0.233916484	yes
Pcsk5	0.370129819	1.292469127	0.017607208	0.158161501	1.11586423	0.275658045	yes
Tmem192	0.371518344	1.293713665	0.022860889	0.06192383	1.043856813	0.68096125	yes
Syt5	0.372466576	1.294564257	0.004761653	0.143568798	1.104634275	0.222920134	yes
Tmem141	0.372509649	1.294602908	0.012936821	0.189553334	1.140410584	0.174666569	yes
Sdr42e1	0.374031849	1.295969575	0.017252787	0.175242671	1.12915432	0.23201729	yes
Tctex1d2	0.374647361	1.296522606	0.034926573	0.106790169	1.076829747	0.521228585	yes
Mzt2	0.375178493	1.297000012	0.017977727	0.15026847	1.10977597	0.3076166	yes
Gpr62	0.376644112	1.298318291	0.016394801	0.164763613	1.120982389	0.258850218	yes
Pnck	0.378254592	1.299768412	0.002511966	0.161912887	1.118769545	0.146223146	yes
Pcdhb20	0.379279302	1.300691933	0.01493473	0.168929928	1.124224319	0.243036192	yes
Sdhaf1	0.379597751	1.300979069	0.047989385	0.154372673	1.112937575	0.397308244	yes
Fxyd1	0.379875232	1.301229317	0.036882253	0.318250743	1.246817874	0.074608929	yes
Lgals1	0.380974255	1.302220951	0.024679474	0.16702263	1.122739033	0.293895752	yes
Epm2a	0.38147294	1.302671157	0.016706851	0.087055151	1.062199791	0.551440295	yes
Tuba1b	0.384704961	1.305592759	0.035637656	0.175651577	1.129474404	0.300407551	yes
Jsrp1	0.385359804	1.306185505	0.049814877	0.251384235	1.190348682	0.185661105	yes
Sh2d3c	0.385672055	1.306468241	0.016301049	0.191788477	1.142178772	0.200366144	yes
Fabp5	0.391657196	1.311899493	0.040052868	0.241361432	1.182107658	0.181345542	yes
B230217O12Rik	0.393110278	1.313221503	0.027010502	0.122887879	1.088912386	0.458512921	yes
Ccdc65	0.395027003	1.314967373	0.031526345	0.194723821	1.144505044	0.263042417	yes
Usb1	0.395642239	1.315528258	0.033175184	0.040468496	1.028447747	0.814916929	yes
Bmyc	0.398844214	1.318451237	0.022083918	0.169049532	1.124317524	0.295102282	yes
Zeb2os	0.399640111	1.319178793	0.03842395	0.191901397	1.142268174	0.295330263	yes
A830009L08Rik	0.399645023	1.319183284	0.048704858	0.22810392	1.171294548	0.241410218	yes
Man1a	0.403162717	1.322403747	0.008306464	0.240626672	1.181505768	0.090495864	yes
Rpl14	0.404074743	1.323239992	0.021749619	0.215570903	1.161163319	0.185827392	yes
Rft1	0.404769875	1.323877721	0.019736914	0.237229039	1.178726525	0.149048629	yes
Gpr135	0.405787359	1.324811737	0.027235464	0.147992971	1.108026949	0.389360086	yes
Amigo2	0.409098824	1.327856113	0.03811678	0.160404879	1.117600738	0.388460808	yes
Polm	0.411248946	1.32983656	0.049940865	0.226173718	1.169728505	0.261082404	yes
Tmem138	0.412491723	1.330982611	0.021045582	0.209492867	1.156281659	0.212910069	yes
Spag6	0.41390457	1.332286696	0.030292018	0.139744918	1.101710306	0.434793306	yes
Trem2	0.416523572	1.334707464	0.016579946	0.126215865	1.091427171	0.430323281	yes
Nsmce1	0.417148451	1.335285695	0.006684383	0.145277509	1.105943366	0.295444338	yes
Alg14	0.417811376	1.335899406	0.014766853	0.175698953	1.129511495	0.268352324	yes
Dbp	0.418429977	1.336472337	0.003527761	0.257098318	1.195072645	0.051629534	yes
Fan1	0.418675721	1.336700007	0.040924377	0.209429311	1.156230722	0.282999154	yes
Nrep	0.418891979	1.336900392	0.005899857	0.186519473	1.138014921	0.173706052	yes
Vwc2l	0.420293322	1.338199603	0.016828404	0.253263539	1.19190028	0.127899375	yes
Scd3	0.422691494	1.340425925	0.04992302	0.139720694	1.101691808	0.493935692	yes
Grp	0.423968827	1.341613235	0.006957316	0.214813898	1.160554198	0.13721239	yes

Cpxm2	0.429492049	1.34675932	0.041326223	0.175850901	1.129630464	0.37777651	yes
Ccdc94	0.430006167	1.347239336	0.02106906	0.148051837	1.108072161	0.392390858	yes
Gm1821	0.433584996	1.350585521	0.031614605	0.164430836	1.120723849	0.373651098	yes
Lor	0.43568648	1.352554268	0.020221196	0.160386243	1.117586302	0.357563203	yes
Hist1h1c	0.438324145	1.355029391	0.014745222	0.165330017	1.121422575	0.318905399	yes
Nppc	0.438514065	1.355207783	0.039973535	0.186851487	1.138276848	0.355568455	yes
Tagln	0.441928848	1.358419287	0.040834039	0.129543378	1.093947405	0.524172588	yes
Rnf8	0.44329052	1.359702022	0.048308697	0.165175873	1.121302763	0.43793366	yes
2810029C07Rik	0.445595822	1.361876445	0.015245744	0.210196215	1.156845511	0.219070695	yes
Nipsnap3b	0.447893109	1.364046767	0.024598497	0.066762546	1.047363726	0.716893185	yes
Cutc	0.450502271	1.366515923	0.037869869	0.257834652	1.195682752	0.214042978	yes
Pcsk2os2	0.451116633	1.367097969	0.009654837	0.234520527	1.176515663	0.146349486	yes
Bola1	0.452212306	1.368136623	0.040804483	0.202029559	1.150315462	0.335576396	yes
Dtwd1	0.454156001	1.36998111	0.016966346	0.111488054	1.080341971	0.523238769	yes
Bex2	0.456252741	1.371973619	0.004723326	0.183183428	1.135386449	0.198509266	yes
Pla2g4e	0.457409468	1.373074084	0.03034853	0.241716769	1.182398848	0.22791585	yes
Htr1a	0.462248114	1.37768696	0.00491152	0.176804706	1.13037754	0.231496096	yes
Pcdha12	0.463958231	1.379320987	0.046867814	0.115737983	1.083529162	0.598671919	yes
Tnfaip811	0.464934388	1.380254579	0.005267613	0.164638178	1.12088493	0.271180413	yes
Gm6297	0.465196805	1.380505662	0.046762294	0.196834873	1.14618099	0.376028306	yes
Crym	0.467085008	1.382313654	0.009927818	0.146384741	1.106792476	0.358820543	yes
Mzf1	0.473143412	1.3881307	0.014899462	0.218765886	1.163737673	0.226105378	yes
Armcx6	0.473273131	1.388255519	0.049061846	0.1174337	1.084803471	0.60493541	yes
Cntnap3	0.474228427	1.389175071	0.01886717	0.176593829	1.130212326	0.346029795	yes
Smim18	0.4744996	1.38943621	0.039257355	0.213538524	1.159528696	0.327997695	yes
Tacc3	0.47740724	1.392239334	0.027079982	0.179912156	1.132814907	0.373584108	yes
Fbn1	0.478823929	1.393607148	0.045663754	0.371940412	1.294092203	0.111393922	yes
Acta2	0.48249799	1.397160722	0.042334059	0.231786596	1.174288257	0.3042926	yes
6430584L05Rik	0.483675993	1.398302011	0.028914897	0.06696584	1.047511324	0.744432448	yes
Marcks1	0.484271552	1.398879363	0.01197469	0.319824487	1.248178691	0.074411223	yes
Aloxe3	0.484887188	1.399476429	0.043112322	0.291201623	1.223659041	0.206062899	yes
Srd5a1	0.486868608	1.401399812	0.005635845	0.170673085	1.1255835	0.280460584	yes
B230216N24Rik	0.487576446	1.402087558	0.012750874	0.242709971	1.183213133	0.182670953	yes
Ethe1	0.487911955	1.402413661	0.015641047	0.213521957	1.159515381	0.254783287	yes
Chchd5	0.488341442	1.402831219	0.029630062	0.078469685	1.055897421	0.706766407	yes
Zfp810	0.488947023	1.40342019	0.009283662	0.338622254	1.264548397	0.057681083	yes
Amdhd2	0.489251347	1.403716261	0.008958851	0.270589988	1.206301041	0.120171121	yes
Slc37a1	0.489748145	1.40419972	0.024917508	0.15081029	1.110192837	0.45793664	yes
Ifitm7	0.490679384	1.405106403	0.015321965	0.145002864	1.105732848	0.426749616	yes
Galns	0.491296567	1.405707635	0.014685836	0.294128402	1.226143984	0.121590267	yes
Cirbp	0.496226764	1.41051965	0.020215138	0.34139324	1.266979551	0.090723335	yes
Ap1s3	0.500755799	1.414954635	0.039440388	0.224065665	1.168020557	0.331188133	yes

Angpt1	0.500917834	1.415113563	0.037514153	0.227454481	1.170767401	0.317332262	yes
3830408C21Rik	0.507120216	1.421210464	0.034918012	0.054987608	1.03885018	0.806167168	yes
Slc16a10	0.512325107	1.426347104	0.031068193	0.072952213	1.051866937	0.74123207	yes
Chac1	0.513163649	1.427176385	0.041495003	0.214392516	1.160215273	0.368066825	yes
Pced1b	0.516303207	1.430285553	0.031257547	0.22263304	1.166861265	0.324503746	yes
Kcnj8	0.519506123	1.433464447	0.030278895	0.260077518	1.197543049	0.252045493	yes
Hdhd3	0.523390493	1.437329164	0.024864978	0.211438032	1.157841708	0.332923803	yes
S100a11	0.53050102	1.444430731	0.024027867	0.148381644	1.108325501	0.496469684	yes
Tipin	0.532262961	1.44619587	0.014625106	0.238773719	1.179989252	0.238130295	yes
1700018L02Rik	0.535808751	1.449754635	0.019563469	0.311684441	1.241155985	0.151275015	yes
Ciart	0.537009796	1.45096206	0.00668036	0.297882644	1.229338862	0.103968372	yes
Exo5	0.539461531	1.453429941	0.015442234	0.169004448	1.12428239	0.409304378	yes
Zcchc16	0.54156698	1.455552605	0.048524358	0.077822007	1.055423496	0.763240399	yes
4930413G21Rik	0.55203259	1.466149876	0.024600575	0.27414072	1.209273622	0.23479071	yes
Lyplal1	0.555948863	1.470135226	0.013648586	0.212307014	1.158539324	0.306728919	yes
C8g	0.558640557	1.472880676	0.044375431	0.2273712	1.17069982	0.388271695	yes
Nudt8	0.564084367	1.478448886	0.010532417	0.159675058	1.117035517	0.425502929	yes
Col5a2	0.566596287	1.481025301	0.017385327	0.125292675	1.090728983	0.566524251	yes
E130317F20Rik	0.570390242	1.484925181	0.04606483	0.234175845	1.176234608	0.388213964	yes
Phf7	0.580094632	1.494947305	0.047960266	0.171785872	1.126452025	0.535468672	yes
Ninl	0.580401814	1.495265647	0.007691886	0.253097743	1.191763314	0.202332579	yes
Wdr5b	0.580508988	1.49537673	0.024115937	0.27073143	1.206419314	0.26312295	yes
Naglu	0.584404376	1.499419818	0.013400583	0.262407103	1.199478337	0.230358695	yes
Bex1	0.586893457	1.502009	0.007351644	0.27972527	1.213963689	0.153273046	yes
Eln	0.586975995	1.502094933	0.030201657	0.265609407	1.202143738	0.294160861	yes
Opn3	0.589462325	1.504685864	0.007773431	0.197866372	1.147000779	0.323611423	yes
Bbc3	0.596149205	1.511676259	0.023002662	0.266359024	1.202768529	0.277964638	yes
Aldh1a3	0.599416338	1.515103487	0.009608633	0.189625729	1.140467812	0.367269651	yes
1600029O15Rik	0.605462251	1.521466166	0.032964136	0.121768611	1.088067916	0.645677222	yes
Neurl2	0.606635115	1.52270357	0.021254308	0.272811577	1.208160041	0.268467399	yes
Usp43	0.610614474	1.526909413	0.011866136	0.278128685	1.212620977	0.215278577	yes
Cited4	0.613115014	1.529558212	0.009596487	0.358260168	1.281879071	0.105572144	yes
4732491K20Rik	0.614864103	1.531413737	0.034725936	0.327314551	1.254675731	0.237609594	yes
Sfrp2	0.615321221	1.531899042	0.046073147	0.26858555	1.204626206	0.359833471	yes
Slc7a3	0.625240102	1.542467511	0.00518401	0.23111204	1.173739328	0.247226413	yes
Casp7	0.625608758	1.542861713	0.024350438	0.192160982	1.142473722	0.457015545	yes
1700101111Rik	0.628479727	1.54593507	0.035822681	0.30691547	1.237059995	0.271646007	yes
Scarf2	0.637063537	1.55516056	0.026805299	0.354322208	1.278384843	0.1944742	yes
Sema3b	0.642036841	1.56053081	0.030903984	0.290364399	1.222949134	0.301031657	yes
Aldh1a2	0.653730802	1.573231308	0.009012251	0.372408119	1.294511802	0.110203751	yes
Gm10790	0.664285162	1.584782837	0.038918827	0.043988538	1.030960128	0.883643211	yes
Slc41a3	0.665801288	1.586449159	0.004291507	0.27056853	1.2062831	0.196618847	yes

Acot6	0.675250989	1.596874561	0.020719216	0.205491043	1.153078748	0.447111836	yes
Pcdhb8	0.67840829	1.600373106	0.042873844	0.249186534	1.188536768	0.431580556	yes
Adrb3	0.684282106	1.606902178	0.008048613	0.322588881	1.250572659	0.173929524	yes
Adcy10	0.687950741	1.610993576	0.043118875	0.050163889	1.035382536	0.874940697	yes
Pycard	0.704594417	1.629686448	0.039533552	0.151642167	1.110833173	0.636592196	yes
Slc16a5	0.721824392	1.649266333	0.023866814	0.170503372	1.125451098	0.564436227	yes
Rdh5	0.734884455	1.664264174	0.040690378	0.366578056	1.289291118	0.283682522	yes
Msx1os	0.747170493	1.678497622	0.013082758	0.314989132	1.244002282	0.257460936	yes
Cfap61	0.778785876	1.715686401	0.047132076	0.054027888	1.038159339	0.883436519	yes
Ccdc110	0.786421703	1.724791177	0.043139258	0.210359121	1.156976147	0.565611795	yes
Bambi-ps1	0.822342557	1.768274875	0.018080063	0.186267753	1.137816378	0.560045037	yes
Nlrp6	0.846503501	1.798137694	0.030284874	0.303782361	1.23437638	0.407002952	yes
Aox3	0.866688597	1.823472695	0.018641078	0.325222261	1.252857439	0.340814088	yes
Map2k3os	0.875709907	1.834910769	0.031916994	0.219734504	1.164519263	0.564250405	yes
Llgl2	0.893571197	1.857769094	0.031710733	0.325718447	1.253288408	0.404324637	yes
Ahrr	0.939548044	1.917927311	0.031190151	0.136515138	1.099246652	0.736377699	yes
1700001G11Rik	1.066738244	2.094692169	0.03633697	0.372684465	1.294759788	0.436725228	yes
Ctcf1	1.187112402	2.276965452	0.028565106	0.292567283	1.224817909	0.562141328	yes
Acr	1.188498616	2.279154327	0.003831537	0.385357533	1.306183449	0.29095321	no
Birc3	0.561081394	1.475374692	0.047155825	0.397268648	1.317012144	0.147662336	no
Gjb2	0.631146972	1.548795828	0.029978548	0.45294754	1.368834038	0.104472358	no
Cd74	0.655892016	1.575589836	0.024118258	0.44823706	1.364372006	0.108396377	no
Serping1	0.660311197	1.580423493	0.011428913	0.487178733	1.401701092	0.051429514	no
Mxra8	0.681466337	1.603768977	0.013722427	0.422058823	1.33983823	0.106248487	no
Dcn	0.703289541	1.628213111	0.003896096	0.40425799	1.323408077	0.07003554	no
Bche	0.706507736	1.631849192	0.017108122	0.594331037	1.509772357	0.039706175	no
Capg	0.746574872	1.677804793	0.045450029	0.485797938	1.400360174	0.177543266	no
Eya2	0.760451621	1.694020837	0.047452029	0.44223553	1.358708085	0.230190699	no
Slc13a4	0.789523691	1.728503699	0.012971215	0.555693256	1.46987478	0.064312892	no
Mgp	0.824429133	1.77083419	0.001280112	0.504902183	1.419027141	0.028955869	no
Ccl28	0.84889528	1.801121218	0.02599385	0.573954399	1.488598202	0.115682178	no
Clec3b	0.855205727	1.809016701	0.012695166	0.38173393	1.302906838	0.229314649	no
Gm10638	0.924283545	1.897741573	0.020735681	0.448134452	1.364274973	0.232137086	no
Ahcy	0.958889107	1.943812559	0.022884657	0.432052637	1.349151758	0.242555413	no
3110070M22Rik	1.009315092	2.012955239	0.028370525	0.829218738	1.776722954	0.065349671	no
Arr3	1.021889351	2.030576459	0.025020023	0.385414203	1.306234758	0.36571008	no
Sec14l3	1.027818719	2.038939148	0.010030297	0.449418243	1.365489521	0.22091792	no
Gm16712	1.037354941	2.052461189	0.039864677	0.597741965	1.513346097	0.215778938	no
Wnt6	1.046855374	2.066021652	0.048298394	0.776371838	1.712817971	0.132332156	no
Gpr39	0.47275211	1.387754249	0.001352075	0.281796273	1.215707598	0.033879742	no
4933409K07Rik	1.073513243	2.104552126	0.017341885	0.420002738	1.337930094	0.315490912	no
H2-Eb1	1.081988389	2.116951752	0.008752855	0.598542772	1.514186354	0.118810305	no

Ptgrf	1.127460536	2.18473839	0.036349898	0.675803229	1.597485935	0.190037416	no
O610039K10Rik	1.180220145	2.266113537	0.020074753	0.457676457	1.373328212	0.309351287	no
Lypd1	0.502876008	1.417035604	0.000583743	0.271327238	1.206917647	0.034063982	no
Ctxn3	1.273132165	2.416857085	0.012565211	0.512949925	1.426964976	0.275101833	no
Rbm3os	1.292612975	2.449713402	0.04197174	0.721545931	1.648948032	0.223000289	no
Hmga2	1.334281226	2.521498253	0.019830027	0.663397048	1.583807556	0.2110564	no
Gm15421	1.376167759	2.595779358	0.007660707	0.594318	1.509758714	0.207497377	no
Gm9833	1.415295781	2.667144115	0.03749291	0.876381628	1.835765305	0.17467039	no
Rpl31-ps12	2.577914247	5.970758623	0.048347921	1.218204299	2.326569524	0.295333793	no

**Suppl. Table 7. Detailed information about donors**

umbn	GUID	RIN	BrainWeight	DISORDER	CDEATHOFF	AGE years	AGE days	sex	race	HIV	HBSAG	PMINTERVAL	HISTORYREC
-3228	NDAR_INVGN971WMY		1420	Control	Internal Bleeding	11	294	Male	Caucasian	(no test results)	(no test results)	20	The decedent was an eleven year old Caucasian male whose cause of death was attributable to internal bleeding. Neuropathology Diagnosis: Brain petechiae and hematoma, recent. The brain weight is 1420 grams.
1714	NDAR_INVNV958VDC		1400	Control	Cardiac Arrhythmia	12	164	Male	African American	Negative	Negative	22	Individual was found by his mother unresponsive on the floor of the upstairs bedroom. Victim transported to hospital where he was pronounced dead. Individual had high cholesterol. Hospital x-rays revealed that the victim had an enlarged heart.
4332	NDAR_INVTR103GCU	7.4		Control	Pseudomonas Brochopneumonia	5	241	Male	African American	(no test results)	(no test results)	18	Donor was a five-year-old African-American boy with a past medical history significant for Philadelphia (bcr-abl) positive ALL. He had CNS, hematological and testicular relapse and was treated with reinduction, consolidation therapy, testicular and CNS radiation. He developed Pseudomonas bronchopneumonia and passed away in the hospital. NEUROPATHOLOGY FINAL DIAGNOSIS: Normal brain and spinal cord.
4334	NDAR_INVKL967BB5	7.1	1450	ASD - Autism	Acute Hemorrhagic Tracheobronchitis	11	17	Male	Hispanic	(no test results)	(no test results)	27	Donor was an 11 year old male with a history of Autism who was found unresponsive by his parents. He had a fever and cold symptoms and was treated at the hospital 5 days prior to death. Donor also had a history of Epilepsy. NEUROPATHOLOGY IMPRESSION: Brain edema, acute, mild. Otherwise normal brain. ADI-R was performed. Section A=36, Section B verbal=9, Section B nonverbal=9, Section C=6 & Section D=4.
4787	NDAR_INVXT992PRB	6.9	1470	Control	Asthma	12	318	Male	African American	Negative	Negative	15	Donor was a 12 year old African American male with a history of asthma and peanut and apple allergies. His current medications included Singulair, Albuteral, Prednisone and Claritin.
5112			1430	Control	Occlusive Pulmonary Thromboembolism	16	190	Male	Caucasian	Negative	Negative	27	abnormal blood clots.
5144	NDARBM537WBK	7.7	1311	ASD - Autism	Cancer, Complications of	7	55	Male	Caucasian	(no test results)	(no test results)	3	Donor died at 7 years of age. He had the clinical diagnosis of Autism (NOS) and suffered Rhabdomyosarcoma. FINAL NEUROPATHOLOGIC DIAGNOSIS Normal brain (clinical diagnosis of Autism). ADI-R was performed. Section A=28, Section B verbal=20, Section B nonverbal=12, Section C=3 & Section D=3.
5278	NDARYH540PL4	6.9	1417	ASD - Autism	Drowning associated with seizure disorder	15	324	Female	Caucasian	Negative	Negative	13	Donor was a 15 year old girl who drowned in the bathtub. Donor had a history of autism and generalized epilepsy. Current medications included Depakote, Keppra, Vitamin B6 and Prozac. Donor received special services in school and speech therapy. Family history is positive for a second cousin with autism and great uncle with mental illness. FINAL NEUROPATHOLOGICAL DIAGNOSIS No significant neuropathological changes, see comment. ADI-R was performed. Section A=22, Section B verbal=21, Section B nonverbal=11, Section C=5 & Section D=5.
5308	NDAR_INVGG735JVA	6	1310	ASD - Autism	Skull fractures	4	182	Male	Caucasian	(no test results)	(no test results)	21	Donor died from blunt force head injuries resulting as a pedestrian struck by a car. Donor had the diagnosis of autism and reportedly ran after cars. Head injuries sustained at the accident included external facial abrasions, a depressed left temporal fracture, fractures of bilateral temporal lobes and petrous ridges and sell turcica. FINAL NEUROPATHOLOGIC DIAGNOSIS 1. Blunt force head injuries: a) Multifocal subarachnoid hemorrhage. b) Intermediate contusions, cerebral white matter tracts and brainstem 2. Possible microdysgenesis, temporal lobe (clinical diagnosis of Autism) ADI-R was performed. Section A=17, Section B verbal=14, Section B nonverbal=14, Section C=4 & Section D=3.
5334	NDAR_INVJJ928MHF	2.4		Control	Hanging / Suicide	12	249	Male	Hispanic	Negative	(no test results)	15	Donor was a 12 year old male who hung himself with a belt. Donor did not have history of depression. Donor did not use any drugs or alcohol.
5387	NDAR_INVZH674MR7	7.5		Control	Drowning	12	297	Male	Caucasian	(no test results)	(no test results)	13	Donor was a 12-year-old male who drowned in his swimming pool. FINAL NEUROPATHOLOGIC DIAGNOSIS: Brain with no significant gross or microscopic findings (non-neurologic control).
5403	NDARCD583TG7	5.5	1777	ASD - Autism	Cardiac Arrhythmia	16	266	Male	Caucasian	Negative	Negative	35	The donor had extensive psychological testing which can be found in the medical records indicating his developmental delays. He also had extensive GI evaluations. FINAL NEUROPATHOLOGICAL DIAGNOSIS: No significant changes. Brain weight: 1777g. ADI-R was performed. Section A=30, Section B verbal=n/a, Section B nonverbal=14, Section C=5 & Section D=5. Phenotyping by NIH.
5408	NDAR_INVAP772ER7	7.6	1320	Control	Drowning	6	309	Male	African American	Negative	Negative	16	Donor drown in a swimming pool while at a family party. Donor did not take any medication, had no allergies and no medical history. Autopsy report findings: 6 y.o. African American male died of drowning. Pathologic Diagnoses: I. Drowning A. Pulmonary congestion and edema B. Body found submerged in swimming pool C. No evidence of trauma.
5454	NDAR_INVBG420UL2	4.8	1390	ASD - Autism	Toxic Megacolon	11	62	Male	Caucasian	Negative	Negative	20	Diagnosis based on medical records and ADOS. ADI-R not available. Based upon review of a psycho-educational assessment which included the Autism Diagnostic Observation Schedule, the donor meets criteria for a diagnosis of autism. Findings from autopsy report/medical examiners report: Donor was found unresponsive at home following a two day history of vomiting, diarrhea, and fevers up to 104 degrees. Donor was being treated at home with Children's Motrin, which helped decrease the fever. At autopsy, there was significant distension and dusky-dark discoloration of the external surfaces of the small and large bowels, indicating ischemia (insignificant blood flow) of the tissue. Neuropathology Report: Unremarkable pediatric brain by gross and microscopic examination. Toxicology analyses were negative for drugs and alcohol.

5531	NDAR_INVJR095LBJ	6.3	1641	Pending	Staphylococcus Aureus Pneumonia	15	136	Male	Caucasian	(no test results)	(no test results)	32	<p>We were unable to complete the ADIR with the family. Medical &amp; school records confirm Autism.</p> <p>Medical Examiners Opinion: This is a 15-year-old white adolescent male died of staphylococcus aureus sepsis with myocarditis and necrotizing pneumonia. Per report the decedent had a history of autism and had been experiencing fever in the days preceding death. Olanzapine toxicity and autism were significant contributory conditions. Autopsy demonstrated an overwhelming acute infection that impacted the lungs and the heart and also affected all his other organs making it difficult for his liver and kidneys to clear the olanzapine from his system. Microbiology studies demonstrated the organism growing from his lungs and cerebrospinal fluid to be methicillin-resistant. Staphylococcus aureus also known as MRSA, with the source most likely one of the many excoriations on his body. It is also possible that his autism made detection of the infection difficult. The manner of death is NATURAL. The deceased had not been consuming alcoholic beverages prior to death.</p> <p>Final Neuropathologic Diagnosis: I. History of Autism II. Focal acute changes suggestive of minor head trauma (see comment)</p> <p>Comment: The small acute contusion and the small collection of subarachnoid blood at the right occipital pole are consistent with minor head trauma around the time of death (e.g. fall).</p>
5566	NDAR_INVEN957VTL	8.3	1505	ASD - Autism	Seizure Disorder, Complications	12	89	Male	African American	Negative	Negative	22	<p>The donor's Vineland Adaptive Behavior Scale at aged 9 were: Communication 53, daily living skills 73, socialization 59, adaptive behavior 62. The Guilliam Autism Rating Scale-2nd Ed (GARS-2) is consistent with a high likelihood of autism. Mother reports donor has history of seizures, non-verbal, and autism. Has had frequent seizures with most recent incident happening one week prior to death. He has a twin brother with a milder form of ASD. Three older children are normal. Mother's cousin has two children with ASD. Pathologic Diagnoses concludes that subject died due to a seizure disorder complicated by cardiac conduction system abnormalities. Subject obtained seizure disorder due to a fall in 2006. Medical Examiners Opinion: This 12 year old African American male died of SEIZURE DISORDER COMPLICATED BY CARDIAC CONDUCTION SYSTEM ABNORMALITIES. Microscopic examination of the conduction system of the heart shows a possible accessory conduction pathway as well as focal scarring (fibrosis). Either of these findings has the potential to contribute to a cardiac arrhythmia. The manner of death is ACCIDENT. Medical records and ADI-R were reviewed. ADI-R was performed. Section A=27, Section B verbal=n/a, Section B nonverbal=17, Section C=5 &amp; Section D=4. Phenotyping by NIH.</p>
5566	NDAR_INVHN549AL2		1150	Control	Hypertrophic Cardiomyopathy	15	303	Female	African American			23	<p>Pathologic Diagnosis: Cardiomegaly, 520 g (normal 266g, upper limit 410g). Left ventricular hypertrophy with asymmetrical septal enlargement. Myofiber disarray in left ventricular free wall and septum.</p> <p>Negative for ethanol and drugs.</p>
5841		6.5	1450	ASD - Autism	Suicide, Hanging	12	187	Male	Caucasian	(no test results)	(no test results)	15	<p>ASD confirmed by medical records and ADI-R. More information to be entered. New case. Subject has a hx of Asperger syndrome and mild autism. No hx of falls, trauma, drugs, ETOH, or seizures.</p> <p>Final NP Findings: Microscopic Description- no acute or traumatic lesions are identified. -unremarkable brain Autopsy Pathologic Diagnoses: I. Hanging a. ligature furrow partially encircling neck b. scene investigation Toxicology Report of Findings: Subject tested negative for Ethanol and drugs.</p>
5879		6.9	1580	Control	Asphyxia By Hanging	15	11	Male	African American	(no test results)	(no test results)	18	<p>Decedent was reportedly very upset when he was not allowed to play football at his school due to a sports related injury. He wrote a 2 page suicide note and sent a text to a friend advising him what he was going to do. The NOK found him hanging from a basketball hoop bracket by a belt. Decedent had no known prior suicidal ideations or attempts.</p> <p>Autopsy Findings: The 15-year-old subject died of asphyxia by hanging, based on the investigation and autopsy findings, the manner of death is classified as suicide.</p> <p>Toxicology Report of Findings: Decedent tested negative for Ethanol and other drugs.</p> <p>Neuropath report findings: No acute or traumatic lesions are identified. All sections were stained for Tau immunohistochemistry and were negative. Unremarkable brain.</p>
5978		6.7	1633		Smoke Inhalation	11	158	Male	Caucasian	Negative	Negative	21	<p>The ADI-R was conducted with the donor's grandmother. According to the results of the ADI-R diagnostic algorithm, the donor's impairments in social interaction, communication, and repetitive/stereotyped behaviors and interests are consistent with a diagnosis of autism. A: Qualitative Abnormalities in Reciprocal Social Interaction=13, B: Qualitative Abnormalities in Communication: Verbal= 15, Nonverbal= NA, C: Restricted, Repetitive, and Stereotyped Patterns of Behavior= 9 and D: Abnormality of Development Evident at or before 36 months=3. Subject was involved in a house fire, intubated in field by EMS, then taken to ER. Pt was pulseless, CPR performed 20+ min in the ER, Pt died shortly after. Subject has a hx of Autism, craniial reconstruction-soft spot closed @ age 7, flu shot 6 mo ago prior to death, and poor vision. Subject tested negative for HIV 1 Ab test, HIV 2 Ab test, RPR Syphilis Test, HCV Ab test, HBc Ab test, and HBs Ag test.</p> <p>Final Neuropathologic Diagnosis: unremarkable brain.</p>

**Supplemental Table 8. Primers used for PCR**

	Gene ID	Forward sequence	Reverse sequence
<i>Mus musculus</i>	<i>Ehmt1</i>	CATAGCAAAGCAGACACAA	ACTTTCCAAGGTTTCCTTTC
	<i>Ehmt2</i>	GCTCCACCTGTCTACATCAT	GCAGATGTTTTCCCTCATTGT
	<i>Kmt1b</i>	TTCACAGTGGATGCAGCTCG	TGCTTCTCCAGAACCTTTCATT
	<i>Kmt1a</i>	AACATGCAAGTGGACCCCG	GGTATTTTCGGCAAGCCGTT
	<i>Setdb1</i>	ACCCGTCCTAATATGGGTGCT	AGCTTTCAGTGTGCTGCTGCT
	<i>Ezh1</i>	AAAGTCAACACTTCCCGCTG	CATACAGAGCCTTTGCTCCCA
	<i>Ezh2</i>	ACTGCTTCCTACATCCCTTCC	GTGCTGGGTCTGCTACTGTT
	<i>Ash1l</i>	GGGCACGAGAAGGATGATGA	TCATGGGTACCTCCCTGTCC
	<i>Kmt2C</i>	TGTGAACAAGGGTTCCTGAG	GGGAGACAGTGCACATCCAA
	<i>Setd5</i>	GCGTATCACCCTGACCCAA	ATCCAGCGCTTCTTACAGGA
	<i>Chd8</i>	GACCGAGGAGCAGGTTCAA	TACGGGTGATTGCAGCACTT
	<i>Ank2</i>	ATACCATCCTCATCGAATGC	CTAGACTCGTTTTCTTTGGA
	<i>Syngap1</i>	TTATCAAGCCAGTACACAGC	GGCACAGCTCACAGTAATAT
	<i>Cttnbp2</i>	CGATGTTTCTGACGACTTTG	AAATGTCCCATCTTCCAGAC
	<i>Cttn</i>	GATAGGATGGACAGATCAGC	AGAGTAGTCTTTCTGGGAGG
	<i>Arc</i>	GAGGCTCAGCAATATCAGTC	GGACAGCCAATATTCTTCAG
	<i>Grin1</i>	CATCGGACTTCAGCTAATCA	GTCCCCATCCTCATTGAATT
	<i>Grin2a</i>	GGCTACAGAGACTTCATCAG	ATCCAGAAGAAATCGTAGCC
	<i>Grin2b</i>	TTAACAACCTCCGTACCTGTG	TGGAACCTCTTGCTCACTCAG
	<i>Gria1</i>	GCCTTAATCGAGTTCTGCTA	GAATGGATTGCATGGACTTG
	<i>Gria2</i>	AGCCTATGAGATCTGGATGT	GAGAGAGATCTTGGCGAAAT
	<i>Shank3</i>	GATCTGCCATCCCTACAAC	AGCTAAGGGTGAGCTAGGAT
	<i>Camk2b</i>	CAGATGGAGTCAAGCCCAG	TTGTGTTGGTGCTGTCCGAA
	<i>Cyfp1</i>	CACTTACTGAACTGATGGCTGC	CTGATAGAGCAGCGAGGACG
	<i>Camk2a</i>	CAGCATCCCAGCCCTAGTTC	GAGAAGGCTCCCTTTCCAG
	<i>Homer1</i>	AACACAAAGAAGAAGTGGGT	ATTGCCTTTGAGCCATCTAA
	<i>Gapdh</i>	GACAACCTCCCTCAAGATTGTCAG	ATGGCATGGACTGTGGTCATGAG
	<i>Acan</i>	CCGTTGCAGACATTGACGAG	AGGTTCCCTCTGTAGCTCGG
	<i>Lrrc26</i>	CGAGGCGGGTTTGCTGAATA	TCAGTTTCTGAGGCTGGACGC
	<i>Zfx3</i>	GCCTGGGGTGGGTAAGTTC	ATCGGACCTGGCACACAAAG
	<i>Adgrl4</i>	TCCCGCTTCTAGTGGGTTTC	CCACACCATTGTGCACTTCG
	<i>Gabra2</i>	CAGCAAGAAGTGTGTTGGAGT	ACTACACTCTTCCCGTCCCA
<i>Homo sapiens</i>	<i>EHMT1</i>	GGACGGAATTGACCCCACT	AATATTAGCGCCCGCCTGAA
	<i>EHMT2</i>	CTGACAACGAGGAGAACATCTG	AACAGCACGCAGTCATGGTA
	<i>KMT1B</i>	AGGCGCGAGGAGCTTGG	ACGGGCACTTCAAGTTTTGC
	<i>KMT1A</i>	TGGAGTACGTGGGAGAGATCA	TGTGGCAAAGAAAGCGATGC
	<i>SETDB1</i>	TATCGAGGCTCTACACGGCT	TGCTCCTCACAGCACCATA
	<i>EZH1</i>	TTCCTGGTCCCCTCTCCAAC	AGGGATCATCTCTTCTTACCA
	<i>KMT2C</i>	ACTCCCTGGTCTCTGTTGGT	AGGAGATCGTCTTTTCTCTGTCC
	<i>SETD5</i>	TGGGGATAGCAGTGAACAG	TCCCTCTCGAAATGCCTTGA
<i>GAPDH</i>	GACAACAGCCTCAAGATCATCAG	ATGGCATGGACTGTGGTCATGAG	