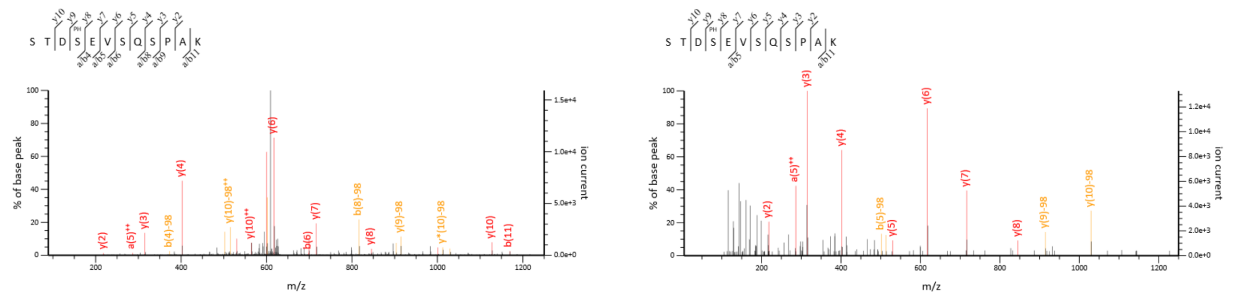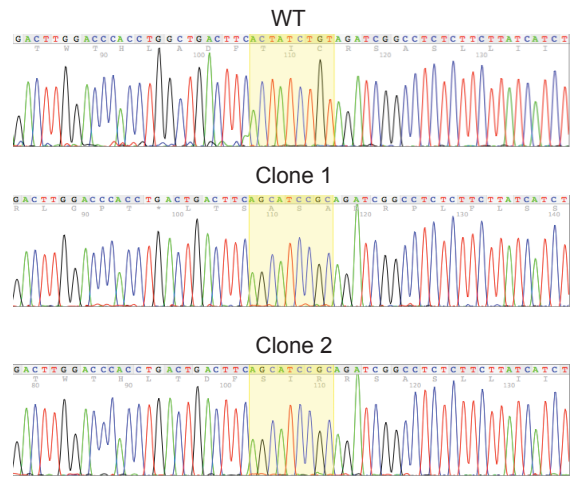**Sarkar et al.**

SUPPLEMENTAL INFORMATION

SUPPLEMENTARY FIGURE 1
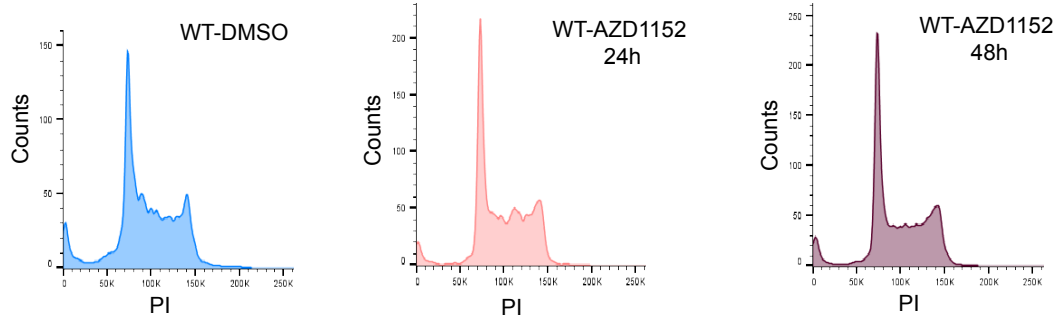
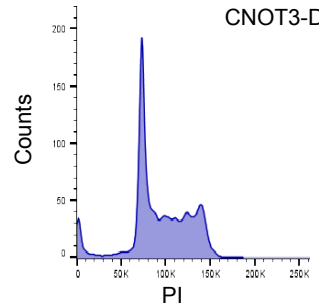**a**

b

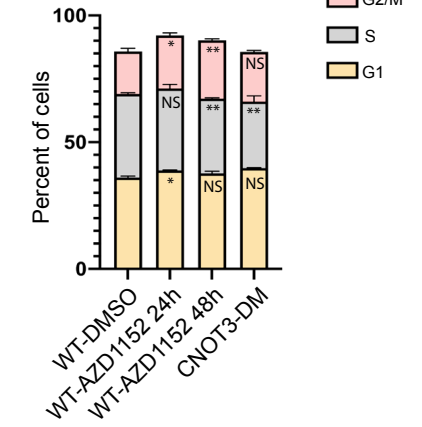

Cnot3 Exon 10
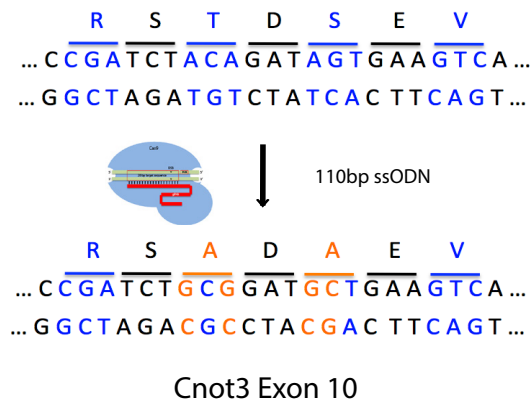
c

d

e

Supplementary Figure 1: Identification of Aurora B phosphorylation sites in the CNOT3 protein

a. MS/MS fragmentation spectrum generated by ion trap collision-induced dissociation (CID) of doubly charged precursor ion with m/z 658.27 identifying CNOT3 tryptic peptide 291-302 (STDSEVSQSPAK). The spectrum presented two fragments which were as follows: Left panel: query number 2609 with assigned b- and y-ions; MASCOT score: 54; expectation value: 1.8×10^{-5}; neutral loss of H_3PO_4 (-97.98 Da) from precursor ion detected at m/z 609.49; localisation probability for phosphorylation of Ser291: 3.0%, Thr292: 3.0%, Ser294 is 93.9%. Right panel: query number 2608 with assigned b- and y-ions; MASCOT score: 53; expectation value: 3.6×10^{-5}; localisation probability for phosphorylation of Ser291: 25.6%, Thr292: 25.6%, Ser294: 48.4%.

b. Left panel: Schematic representation showing use of CRISPR/Cas9 targeting of *Cnot3* in exon 10 to mutate Threonine 292 and Serine 294 to alanine, using the guide RNA described in Methods and a 110 bp single-stranded donor oligonucleotides (ssODN) carrying the mutations. Right panel: Sequence images showing the wild-type (WT) sequence and the mutated sequences obtained from two CRISPR generated clones.

c. FACS analysis of the cell cycle profiles of ESCs incubated for 24 and 48 hours with the Aurora B inhibitor AZD1152 or with vehicle (DMSO) and stained with propidium iodide (PI).

d. FACS analysis of the cell cycle profile of *Cnot3*-DM ESCs.

e. Histograms showing the percentage of cells measured at different phases of the cell cycle in (**c**) and (**d**). Mean ± SEM; P values (with respect to WT-DMSO) calculated by unpaired *t*-test, ns = non-significant, *n*=3.

Supplementary Figure 2: Differentiation of *Cnot3*-DM ESCs into the three germ layers
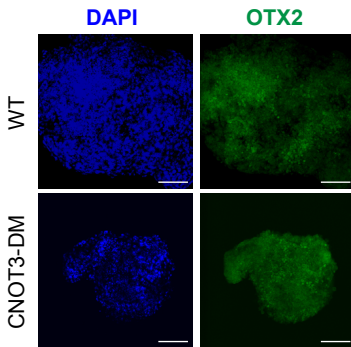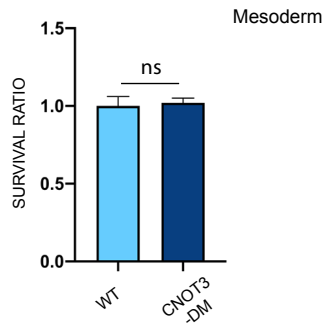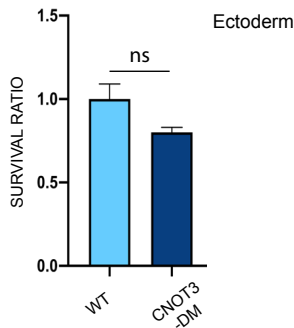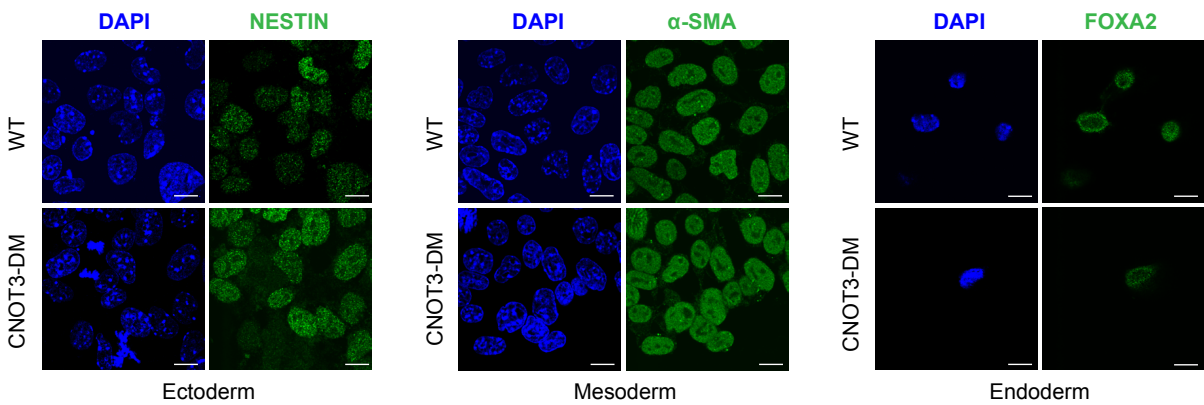
a. Representative confocal images of 8-day embryoid bodies (EBs) derived from wild-type (WT) and *Cnot3*-DM ESCs and subjected to immunostaining for the ectodermal marker OTX2 (green). Nuclei were counterstained with DAPI; scale bar: 100 μm.

b. Top panels: Representative confocal images of differentiation of WT and *Cnot3*-DM

ESCs into ectoderm (3 days; immunostained for Nestin (*green*)), Activin A induced

mesoderm (3 days; immunostained for α-SMA (*green*)) and FGF2+retinoic acid induced

endoderm (3 days; immunostained for FOXA2 (*green*). Nuclei were counterstained with

DAPI; scale bar: 12 μm. (See Methods). Bottom panels: Graphs represent the ratio of

suriving *Cnot3*-DM cells versus WT cells after 3 days of differentiation into each lineage.

Cell survival was measured using WST-1 reagent (see Methods). Mean ± SEM; (P values

calculated by unpaired *t*-test, ***P<0.001. ns = non-significant, *n*=3).

a

8 days mesendoderm differentiation

b

c

8 days mesendoderm differentiation

d

8 days mesendoderm differentiation

Supplementary Figure 3: CNOT3-T292/S294 phosphorylation promotes survival of differentiating mesendodermal cells.

a. Crystal violet staining showing the efficiency of BMP4+FGF2 induced mesendoderm (ME) differentiation of wild-type (WT) ESCs and two additional clones of *Cnot3*-DM ESCs after 4 days of differentiation.

6

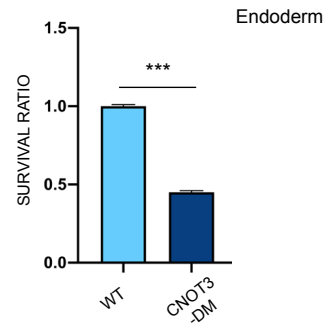**b.** Cell cycle analysis of ME cells obtained by inducing differentiation of WT and *Cnot3*-DM ESCs with BMP4 + FGF2 for 4 days. Histograms represent the percentage of cells at different phases of the cell cycle. Mean ± SEM; P values calculated by unpaired *t*-test, ns = non-significant, *n*=3.

c. and d. Representative immunofluorescence analysis images of ME cells by inducing 8 differentiation of WT and *Cnot3*-DM ESCs with BMP4 + FGF2 for 8 days (left panel: scale bar: 100 μm). Staining was for the mesodermal marker Brachury (*red*) and endodermal marker FOXA2 (green) (**c**) or GATA4 (green) (**d**) in Merged images show dual staining of the mesendodermal cells. Immunofluorescence was also performed for the mesodermal marker α-SMA (**c**: right panel; scale bar: 60 μm). Nuclei were counterstained with DAPI.

SUPPLEMENTARY FIGURE 4

a

P adj< 0.05

Legend: WT, CNOT3-DM, NON SIG

y-axis: $-\log_{10}$ P VALUE

x-axis: $-\log_{2}$ FOLD CHANGE

b

y-axis: PC2 : 22.69 % VARIANCE

x-axis: PC1 : 40.13 % VARIANCE

Legend: WT, CNOT3-DM

c

ENRICHED GENE ONTOLOGY TERMS (UPREGULATED)

- Epithelium development
- Mesenchymal cell development
- Embryonic placenta development
- Negative regulation of Wnt signaling pathway
- Apoptotic process involved in morphogenesis
- Regulation of programmed cell death

x-axis: $-\log_{10}$ P VALUE

d

ENRICHED GENE ONTOLOGY TERMS (DOWNREGULATED)

- Cell adhesion
- Developmental processes
- Signal transducer activity
- Molecular transducer activity
- Signaling receptor activity
- Cell surface receptor signaling pathway
- Growth factor binding
- Regulation of cell proliferation
- Positive regulation of kinase activity
- Multicellular organism development
- Regulation of MAPK cascade

x-axis: $-\log_{10}$ P VALUE

e

MYC_TARGETS_V1
MYC_TARGETS_V2
INTERFERON_ALPHA_RESPONSE
OXIDATIVE_PHOSPHORYLATION
MTORC1_SIGNALING
DNA_REPAIR
INTERFERON_GAMMA_RESPONSE
FATTY_ACID_METABOLISM
WNT_BETA_CATENIN_SIGNALING
GLYCOLYSIS
E2F_TARGETS
UV_RESPONSE_UP
ADIPOGENESIS
REACTIVE_OXIGEN_SPECIES_PATHWAY
XENOBIOTIC_METABOLISM
EPITHELIAL_MESENCHYMAL_TRANSITION
ALLOGRAFT_REJECTION
APOPTOSIS
HEDGEHOG_SIGNALING
UNFOLDED_PROTEIN_RESPONSE
NOTCH_SIGNALING
CHOLESTEROL_HOMEOSTASIS
IL6_JAK_STAT3_SIGNALING
MITOTIC_SPINDLE
APICAL_JUNCTION
P53_PATHWAY
MYOGENESIS
UV_RESPONSE_DN
COAGULATION
ESTROGEN_RESPONSE_EARLY
PROTEIN_SECRETION
TNFA_SIGNALING_VIA_NFKB
IL2_STAT5_SIGNALING
HEME_METABOLISM
G2M_CHECKPOINT
ESTROGEN_RESPONSE_LATE
HYPOXIA
SPERMATOGENESIS
APICAL_SURFACE
KRAS_SIGNALING_DN

FDR.q.val: 0.20, 0.15, 0.10, 0.05, 0.00

no.genes.in.Core: 25, 50, 75

x-axis: NES

8

Supplementary Figure 4: Transcriptome profiling by RNA sequencing in differentiating wild-type and *Cnot3*-DM mesendoderm cells.

a. and b. RNA-seq analysis was used to compare gene expression patterns of ME cells obtained by differentiating wild-type (WT) and *Cnot3*-DM ESCs for 4 days with BMP4 + FGF2, we performed RNA sequencing (RNA-seq) a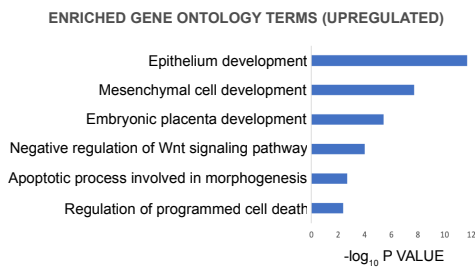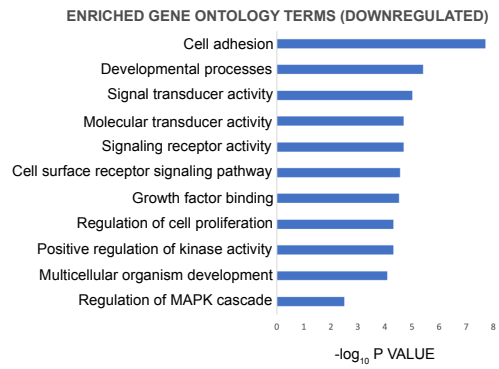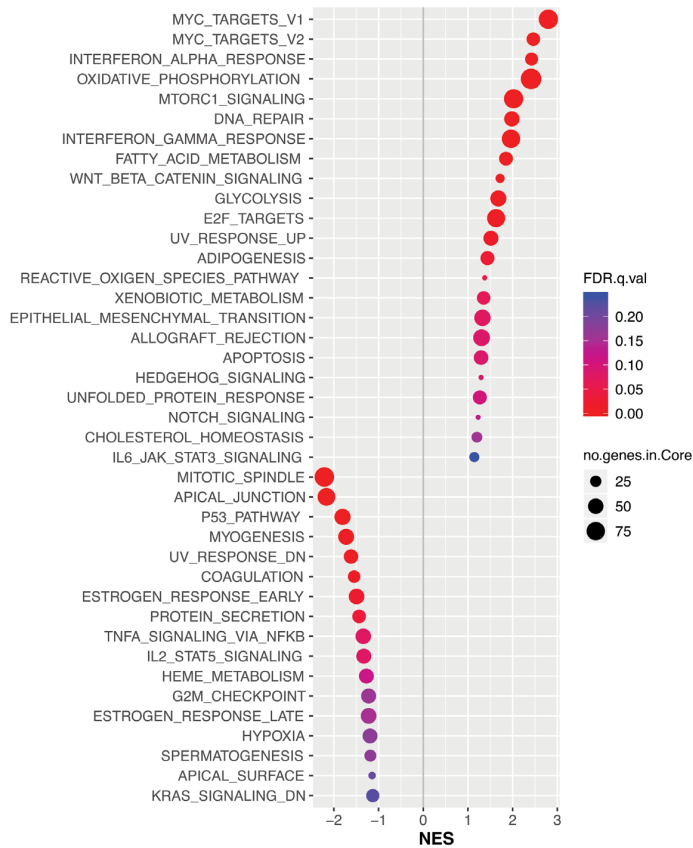nalysis on the wild-type and *Cnot3*-DM cells after 4 days of mesendoderm differentiation. **a.** Volcano plot of RNA-Seq transcriptome data showing differentially expressed genes after 4 days of BMP4 + FGF2 induced mesendoderm differentiation of WT and *Cnot3*-DM ESCs. Fold change ratio >1.5; adjusted P value <0.05. Three biological replicates for each were analyzed.

b. Principal component plot of the RNA-seq data showing PC1 and PC2 and the percent variance obtained for each. This reveals separate clustering of the genes that are differentially expressed between the WT and *Cnot3*-DM-derived 4-day differentiated mesendodermal cells.

c. and **d.** Selected gene ontology (GO) profiles obtained out using the GOSeq Bioconductor package and showing upregulated genes (**c**) and downregulated genes (**d**), which are involved in signalling pathways that have key roles in developmental processes. Adjusted P value <0.05. **e.** GSEA analysis showing Hallmark gene sets that were significantly altered in the differentiated cells. See also Supplementary Tables 2A and S2B for the differentially regulated genes. The GO and GSEA analysis both showed that expression of genes involved in cell death and apoptosis was upregulated (**c** and **e**). The negative regulator of Wnt signalling *Axin2*, and *TGFβ*, which is part of the apoptosis program, were also elevated. Additionally, the GO analysis revealed downregulation of gene expression programs that are involved in cell adhesion and developmental processes (**d**). The changes included downregulation of signalling molecules such as

Wnt6. Bcl2, a key cell survival factor downstream of ERK signalling was also downregulated.

SUPPLEMENTARY FIGURE 5

Undifferentiated ES cells
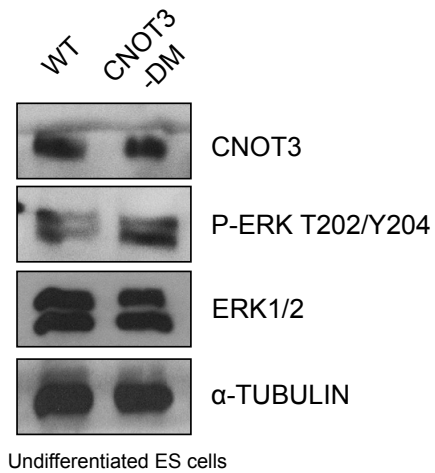
Supplementary Figure 5: The CNOT3-T292A/S294A double mutation does not affect ERK phosphorylation in undifferentiated ESCs.

Immunoblotting analysis of the indicated proteins from cell extracts prepared from undifferentiated wild-type (WT) and *Cnot3*-DM ESCs. α-Tubulin was used as a loading control.

SUPPLEMENTARY FIGURE 6

a
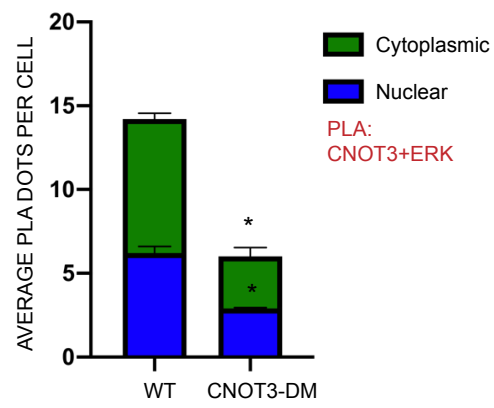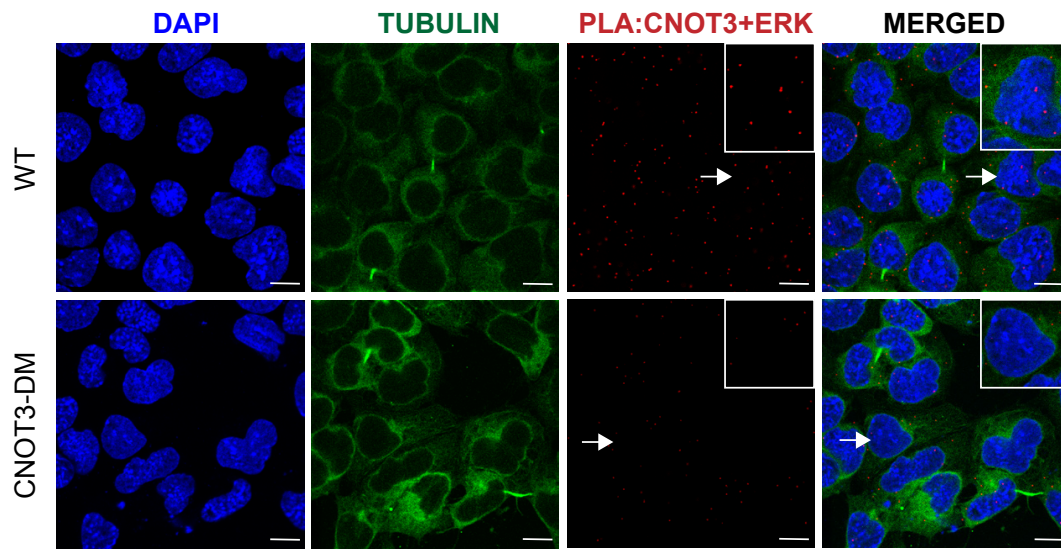
b
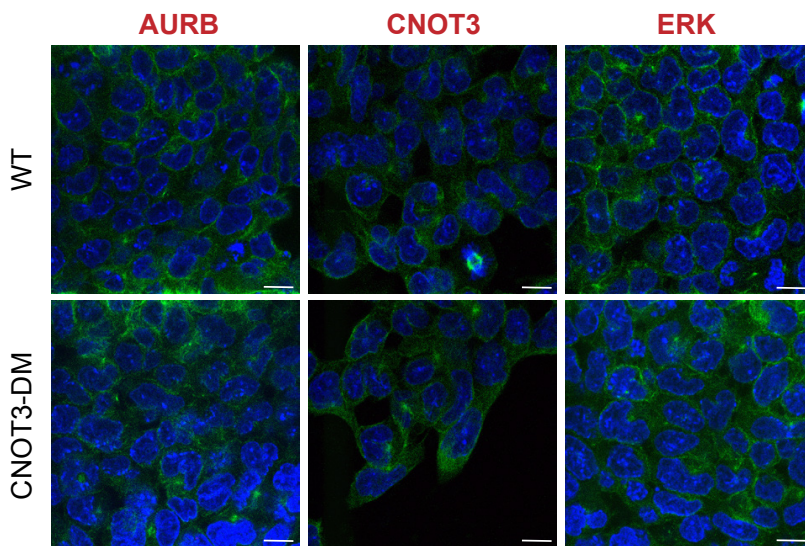
Supplementary Figure 6: Phosphorylation of CNOT3-T292/S294 alters interaction of CNOT3 with ERK in mesendodermal cells.

a. PLA detection of endogenous interaction between CNOT3 and ERK using a second pair of antibodies (results from the first antibody pair are shown in Figure 7b). Wild-type (WT) and *Cnot3*-DM ESCs were induced to differentiate into mesendodermal cells by incubation for 4 days with BMP4 + FGF2. Positive PLA signals are visible as red dots. Nuclei were counterstained with DAPI and staining for Tubulin was used to mark the cell cytoplasm. Boxed areas represent an enlarged cell indicated by the arrows; scale bar: 10 μm. PLA dots were quantified from randomly chosen fields from at least 50 cells for each biological replicate. Histogram represents average interactions per cell (dots per cell) as well as the nuclear and cytoplasmic distribution. Error bars represent the Mean ± SEM; *n*=2. (P values calculated by unpaired *t*-test, *P<0.05).

b. Negative control single PLAs conducted with anti-Aurora B only, anti-CNOT3 only or anti-ERK only.

Supplementary Table 1

List of primers used for qPCR

Oct-4	F-5′-CCAATCAGCTTGGGCTAGAG-3′ R-5′-CTGGGAAAGGTGTCCCTGTA-3′
Nanog	F-5′-TACCTCAGCCTCCAGCAGAT-3′ R-5′-GCAATGGATGCTGGGATACT-3′
Sox2	F-5'-CACAACTCGGAGATCAGCAA-3' R-5'-CTCCGGGAAGCGTGTACTTA-3'
Sox1	F-5'-CCTCGGATCTCTGGTCAAGT-3' R-5'-TACAGAGCCGGCAGTCATAC-3'
Fgf5	F-5′-TCTGGATCTCCTTTGCGTTT-3′ R-5′-GGGCTTCGAAAGCACATTTA-3′
Cdx2	F-5′-TGGTGTACACAGACCATCAGC-3′ R-5′-CCTTGGCTCTGCGGTTCT-3′
Tead4	F-5′-ATCCTGACGGAGGAAGGCA-3′ R-5'-GCTTGATATGGCGTGCGAT-3'
Brachury	F-5′-CAGCTGTCGGGGAGCCTGG-3′ R-5′-TGCTGCCTGTGAGTCATAAC-3′
Mixl1	F-5′-AGTTGCTGGAGCTCGTCTTC-3′ R-5′-TTCTGGAACCACACCTGGAT-3′
Gata4	F-5′-TTCCTCTCCCAGGAACATCAA-3′ R-5′-GCTGCACAACTGGGCTCTACTT-3′
Gata6	F-5′-ACAGCCCACTTCTGTGTTCCC-3′ R-5′-GTGGGTTGGTCACGTGGTACAG-3′
Sox17	F-5'- TTCTGTACACTTTAATGAGGCTGTTC-3' R-5′-TTGTGGGAAGTGGGATCAAG-3′
Pdgfr	F-5′-CTGGTGCCTGCCTCCTATGAC-3′ R-5′-CACGATCGTTTCTCCTGCCTTAT-3′
Cxcr4	F-5′-GAGGCCAAGGAAACTGCTG-3′ R-5′-GCGGTCACAGATGTACCTGTC-3′
Mln51 b	F-5'- ATGACGATGAGGATCGGAAAAAC-3' R-5′-GTCCCCTTGGGTCGGACTTC-3′

Supplementary Table 2A

RNA sequencing: List of genes downregulated in 4-day differentiated mesendoderm cells from *Cnot3*-DM ESCs compared with differentiated wild-type ESCs

EnsemblID	baseMean	log2FoldChange	lfcSE	stat	pvalue	padj	mgi_symbol	entrezgene	chromosome_name
ENSMUSG00000053838	2482.309155	-1.157018261	0.103489383	-11.1800672	5.11E-29	6.73E-25	Nudcd3	209586	11
ENSMUSG00000026131	11067.97424	-0.717944873	0.087807241	-8.176374302	2.93E-16	1.93E-12	Dst	13518	1
ENSMUSG00000051397	1268.069576	-1.345991691	0.168254931	-7.999716172	1.25E-15	5.48E-12	Tacstd2	56753	6
ENSMUSG00000035632	1369.952484	-0.754342986	0.112259751	-6.71962106	1.82E-11	4.80E-08	Cnot3	232791	7
ENSMUSG00000027070	15994.48014	-1.023105892	0.156506894	-6.537129877	6.27E-11	1.38E-07	Lrp2	14725	2
ENSMUSG00000027820	1497.443593	-0.672144989	0.108720951	-6.18229498	6.32E-10	1.04E-06	Mme	17380	3
ENSMUSG00000020758	551.3270647	-1.428458406	0.239727538	-5.958674649	2.54E-09	3.72E-06	Itgb4	192897	11
ENSMUSG00000021061	2236.735648	-0.987576917	0.167470576	-5.897017489	3.70E-09	4.43E-06	Spnb1	20741	12
ENSMUSG00000021182	1135.227706	-0.889362926	0.151228429	-5.880924183	4.08E-09	4.48E-06	Ccdc88c	68339	12
ENSMUSG00000033227	256.1050069	-1.666444604	0.288426601	-5.777707739	7.57E-09	7.13E-06	Wnt6	22420	1
ENSMUSG00000058550	274.3457105	-1.267724031	0.220558365	-5.747793938	9.04E-09	7.94E-06	Dppa4	73693	16
ENSMUSG00000068876	3552.371463	-0.646409155	0.114422211	-5.649332837	1.61E-08	1.33E-05	Cgn	70737	3
ENSMUSG00000032890	417.2103962	-1.026493014	0.189289181	-5.422882633	5.86E-08	3.86E-05	Rims3	242662	4
ENSMUSG00000055737	1081.672873	-0.86646144	0.160855145	-5.386594496	7.18E-08	4.51E-05	Ghr	14600	15
ENSMUSG00000024558	729.6436579	-1.062973842	0.198571592	-5.353101275	8.65E-08	4.95E-05	Mapk4	225724	18
ENSMUSG00000030849	1051.836366	-0.702726847	0.131273988	-5.353130918	8.64E-08	4.95E-05	Fgfr2	14183	7
ENSMUSG00000028444	385.1652111	-1.268432175	0.238459807	-5.31927033	1.04E-07	5.72E-05	Cntfr	12804	4
ENSMUSG00000005533	1909.520508	-0.669193516	0.126381111	-5.295043783	1.19E-07	6.03E-05	Igf1r	16001	7
ENSMUSG00000038677	1295.940121	-0.615258047	0.117193208	-5.249946303	1.52E-07	7.16E-05	Scube3	268935	17
ENSMUSG00000020023	934.8247378	-0.858819039	0.16566568	-5.184049203	2.17E-07	9.54E-05	Tmcc3	319880	10
ENSMUSG00000020340	3443.521921	-0.708241996	0.13697307	-5.170666006	2.33E-07	9.92E-05	Cyfip2	76884	11
ENSMUSG00000031351	853.1260034	-0.633014664	0.125310002	-5.051589292	4.38E-07	0.000164957	Zfp185	22673	X
ENSMUSG00000037995	2416.855513	-0.81685748	0.161987049	-5.042733249	4.59E-07	0.000167981	Igsf9	93842	1
ENSMUSG00000026994	880.0719507	-0.688305772	0.138261049	-4.978305742	6.41E-07	0.000216722	Galnt3	14425	2
ENSMUSG00000032087	171.7952503	-1.303279121	0.26299458	-4.955536049	7.21E-07	0.000237576	Dscaml1	114873	9
ENSMUSG00000040728	2156.225132	-0.686425559	0.13865033	-4.950767593	7.39E-07	0.000237576	Esrp1	207920	4
ENSMUSG00000033060	1011.747453	-0.823982468	0.169364573	-4.865140647	1.14E-06	0.000331632	Lmo7	380928	14
ENSMUSG00000025278	28303.41362	-0.638489462	0.133540385	-4.781246229	1.74E-06	0.00043043	Flnb	286940	14
ENSMUSG00000060012	870.7055147	-0.769856835	0.161255018	-4.774157383	1.80E-06	0.000432352	Kif13b	16554	14
ENSMUSG00000019124	167.3783846	-1.12622219	0.236238816	-4.767303728	1.87E-06	0.000433672	Scrn1	69938	6
ENSMUSG00000031555	2010.162034	-0.606640014	0.127915057	-4.742522346	2.11E-06	0.000455953	Adam9	11502	8
ENSMUSG00000052105	2114.618465	-0.719708416	0.151746754	-4.742825767	2.11E-06	0.000455953	1110012J17Rik	68617	17
ENSMUSG00000063531	1705.081337	-0.773504067	0.16296105	-4.746557937	2.07E-06	0.000455953	Sema3e	20349	5
ENSMUSG00000069806	565.4159924	-1.23287421	0.259591515	-4.749285471	2.04E-06	0.000455953	Cacng7	81904	7
ENSMUSG00000027356	327.6499736	-0.936006175	0.199234238	-4.698018697	2.63E-06	0.000549455	Fermt1	241639	2
ENSMUSG00000069045	965.6469682	-0.666732297	0.141907633	-4.698354022	2.62E-06	0.000549455	Ddx3y	26900	Y
ENSMUSG00000034640	1466.172569	-0.771791175	0.16472797	-4.685246667	2.80E-06	0.000575717	Tiparp	99929	3
ENSMUSG00000020689	438.1493335	-1.047575528	0.228873833	-4.577087352	4.71E-06	0.000927296	Itgb3	16416	11
ENSMUSG00000031714	2662.888399	-0.620949226	0.13615889	-4.560475093	5.10E-06	0.000989012	Gab1	14388	8
ENSMUSG00000038576	971.8499366	-0.734149212	0.161145912	-4.55580414	5.22E-06	0.000996593	Susd4	96935	1
ENSMUSG00000027500	2474.568492	-0.760402758	0.167625832	-4.536310117	5.72E-06	0.001047699	Stmn2	20257	3
ENSMUSG00000014602	6347.665822	-0.672046889	0.14830823	-4.531420058	5.86E-06	0.001050004	Kif1a	16560	1
ENSMUSG00000022197	536.7161592	-1.135428358	0.250790471	-4.527398318	5.97E-06	0.001050004	Pdzd2	68070	15
ENSMUSG00000021838	950.7388304	-0.72783968	0.163150473	-4.461155797	8.15E-06	0.001249039	Samd4	74480	14
ENSMUSG00000038894	2713.782975	-0.593575131	0.133334927	-4.451760275	8.52E-06	0.001275312	Irs2	384783	8
ENSMUSG00000026475	506.5810476	-0.857809037	0.194251907	-4.415961979	1.01E-05	0.001440329	Rgs16	19734	1
ENSMUSG00000024087	196.6400177	-1.057919511	0.240086239	-4.406414617	1.05E-05	0.001473241	Cyp1b1	13078	17
ENSMUSG00000063450	780.7824145	-0.80544092	0.183333086	-4.393320029	1.12E-05	0.001516477	Syne2	319565	12
ENSMUSG00000018849	2406.894801	-0.618289545	0.140949816	-4.386593493	1.15E-05	0.001548159	Wwc1	211652	11
ENSMUSG00000003134	545.792238	-0.806564009	0.184049905	-4.382311474	1.17E-05	0.001562962	Tbc1d8	54610	1
ENSMUSG00000030987	1489.503023	-0.617613927	0.141300326	-4.37093066	1.24E-05	0.001614492	Stim1	20866	7
ENSMUSG00000002799	1009.798485	-0.902324792	0.206897161	-4.361223659	1.29E-05	0.001631089	Jag2	16450	12
ENSMUSG00000019894	563.8510355	-0.996412523	0.228527023	-4.360151859	1.30E-05	0.001631089	Slc6a15	103098	10
ENSMUSG00000025964	615.9340152	-1.14029745	0.261821774	-4.355243006	1.33E-05	0.001652338	Adam23	23792	1
ENSMUSG00000035969	1103.178194	-0.840883566	0.195231645	-4.307106897	1.65E-05	0.001999564	Rusc2	100213	4
ENSMUSG00000043388	249.7067451	-0.859913321	0.19982516	-4.303328567	1.68E-05	0.002015495	Tmem130	243339	5
ENSMUSG00000054452	1401.893304	-0.66899182	0.156862142	-4.264839248	2.00E-05	0.002353579	Aes	14797	10
ENSMUSG00000047986	679.8603921	-0.723217059	0.169864064	-4.257622479	2.07E-05	0.002409321	Palm3	74337	8
ENSMUSG00000061554	695.1761078	-0.607316475	0.143730516	-4.225382958	2.39E-05	0.002686472	Gm9853	NA	8
ENSMUSG00000028337	359.330846	-1.021700227	0.242006778	-4.221783523	2.42E-05	0.00270661	Coro2a	107684	4
ENSMUSG00000051375	967.1463979	-0.712646204	0.1707267	-4.174193053	2.99E-05	0.003244822	Pcdh1	75599	18
ENSMUSG00000024462	674.5916187	-0.645406109	0.155782016	-4.143007814	3.43E-05	0.003556548	Gabbr1	54393	17
ENSMUSG00000024998	175.4173074	-1.039560284	0.252840762	-4.111521713	3.93E-05	0.003863474	Plce1	74055	19
ENSMUSG00000043857	226.4472698	-0.965228876	0.234854161	-4.109907492	3.96E-05	0.003863474	Mgat5b	268510	11
ENSMUSG00000037860	103.9223025	-1.767514188	0.430391727	-4.106756883	4.01E-05	0.00388773	Aim2	383619	1
ENSMUSG00000063972	2760.551781	-0.669917041	0.163954442	-4.08599506	4.39E-05	0.004160549	Nr6a1	14536	2
ENSMUSG00000019851	2176.298047	-0.58876614	0.144669479	-4.069732905	4.71E-05	0.004398601	Perp	64058	10
ENSMUSG00000020467	533.7515637	-0.642716971	0.159622143	-4.026490065	5.66E-05	0.005040704	Efemp1	216616	11
ENSMUSG00000027171	736.1395379	-0.878354678	0.218510077	-4.019744497	5.83E-05	0.005099059	Prrg4	228413	2
ENSMUSG00000028412	2407.111743	-0.666148379	0.165826744	-4.01713476	5.89E-05	0.005099059	Slc44a1	100434	4
ENSMUSG00000018166	2057.274688	-0.775810034	0.19395593	-3.999929433	6.34E-05	0.005285231	Erbb3	13867	10
ENSMUSG00000034275	259.8939048	-0.829067627	0.208882964	-3.969053348	7.22E-05	0.005869355	Igsf9b	235086	9
ENSMUSG00000032735	60.9293543	-1.713530065	0.433696632	-3.950987713	7.78E-05	0.006154372	Ablim3	319713	18
ENSMUSG00000059713	536.6261686	-0.779744854	0.197399062	-3.950094027	7.81E-05	0.006154372	Rcan3	53902	4
ENSMUSG00000056608	853.0200053	-0.687715046	0.174606548	-3.938655539	8.19E-05	0.006314131	Chd9	109151	8

ENSMUSG00000032363	306.8802662	-0.755066597	0.192708221	-3.91818571	8.92E-05	0.006774951	Adamts7	108153	9
ENSMUSG00000044279	992.0536055	-0.643750759	0.164325804	-3.917526916	8.95E-05	0.006774951	Crb3	224912	17
ENSMUSG00000024544	132.3469829	-1.071625592	0.273919661	-3.9121894	9.15E-05	0.006847782	D18Ertd653e	52662	18
ENSMUSG00000064043	561.5700864	-0.700442376	0.181080778	-3.868121086	0.000109677	0.007854437	Trerf1	224829	17
ENSMUSG00000046329	665.4264395	-0.749739986	0.194180655	-3.86104366	0.000112904	0.007916315	Slc25a23	66972	17
ENSMUSG00000033826	496.3531197	-0.812364539	0.213298814	-3.808575045	0.00013977	0.009294436	Dnahc8	13417	17
ENSMUSG00000042078	365.0013455	-0.829522031	0.21870893	-3.792812811	0.00014895	0.009621176	Svop	68666	5
ENSMUSG00000030790	158.2585987	-1.098491611	0.290360693	-3.783196696	0.000154827	0.009855821	Adm	11535	7
ENSMUSG00000017009	1374.71206	-0.757035729	0.200182926	-3.781719761	0.000155749	0.009866826	Sdc4	20971	2
ENSMUSG00000046447	233.812982	-0.817692999	0.216319928	-3.780016972	0.000156818	0.009887016	Camk2n1	66259	4
ENSMUSG00000001870	437.9258165	-0.708633541	0.187694492	-3.775462632	0.000159711	0.010021483	Ltbp1	268977	17
ENSMUSG00000027931	249.2730371	-0.872746922	0.231814228	-3.764854863	0.000166646	0.010407073	Npr1	18160	3
ENSMUSG00000049281	180.3654356	-1.239350705	0.330300893	-3.752186962	0.000175299	0.010766033	Scn3b	235281	9
ENSMUSG00000022206	87.22724761	-1.829579116	0.488230497	-3.747367536	0.0001787	0.010801522	Npr3	18162	15
ENSMUSG00000038453	147.8639665	-1.148541121	0.306461568	-3.74774928	0.000178428	0.010801522	Srcin1	56013	11
ENSMUSG00000027330	569.172035	-0.792611094	0.213164755	-3.718302753	0.000200566	0.011847737	Cdc25b	12531	2
ENSMUSG00000002228	227.0677094	-0.961737216	0.26041732	-3.693061638	0.00022157	0.012494774	Ppm1j	71887	3
ENSMUSG00000017737	547.2662676	-0.916496152	0.248191273	-3.692700964	0.000221885	0.012494774	Mmp9	17395	2
ENSMUSG00000027536	485.6112117	-0.631446152	0.171056774	-3.691441958	0.000222986	0.012503363	Chmp4c	66371	3
ENSMUSG00000040274	390.2504138	-0.657073286	0.178068502	-3.690002891	0.000224252	0.012521026	Cdk6	12571	5
ENSMUSG00000051455	134.9582589	-0.940910356	0.255694969	-3.679815676	0.000233403	0.012922462	Gm1564	268491	11
ENSMUSG00000056602	274.0242929	-0.706148426	0.193266208	-3.653760442	0.000258427	0.013956139	Fry	320365	5
ENSMUSG00000034593	1834.62353	-0.599763067	0.164417084	-3.647814761	0.00026448	0.014052644	Myo5a	17918	9
ENSMUSG00000053559	264.8760246	-0.87769918	0.240919945	-3.643115479	0.000269358	0.014254335	Smagp	207818	15
ENSMUSG00000000308	435.7158043	-0.883801225	0.243203177	-3.634000316	0.000279007	0.014649934	Ckmt1	12716	7
ENSMUSG00000039137	591.311762	-0.657287931	0.181182373	-3.62776974	0.00028588	0.014889491	Whrn	73750	4
ENSMUSG00000032878	148.4474587	-0.935040212	0.259084382	-3.609018055	0.000307358	0.015820544	Ccdc85a	216613	11
ENSMUSG00000019796	766.1803887	-0.632285722	0.175370027	-3.605437782	0.000311627	0.015915934	Lrp11	237253	10
ENSMUSG00000021457	209.2378261	-1.05299028	0.291994231	-3.606202339	0.000310711	0.015915934	Syk	20963	13
ENSMUSG00000044976	247.7723701	-0.948932459	0.263811167	-3.597013992	0.000321891	0.016313692	Wdr72	546144	9
ENSMUSG00000039601	211.7875114	-1.092139341	0.304249505	-3.589617479	0.000331164	0.016592176	Rcan2	53901	17
ENSMUSG00000026880	461.2632667	-0.82873851	0.232524446	-3.564091966	0.000365118	0.017368805	Stom	13830	2
ENSMUSG00000040488	837.778164	-0.809664275	0.227465039	-3.559510859	0.000371546	0.017592759	Ltbp4	108075	7
ENSMUSG00000020020	143.9897749	-1.125683025	0.316725345	-3.554129925	0.000379232	0.017669951	Usp44	327799	10
ENSMUSG00000042195	1106.085107	-0.682537728	0.192144199	-3.552216165	0.000382001	0.017724035	Slc35f2	72022	9
ENSMUSG00000029426	805.7365456	-0.599074078	0.168825938	-3.548471796	0.000387473	0.017914871	Scarb2	12492	5
ENSMUSG00000027381	1222.559113	-0.642446121	0.182407785	-3.522032357	0.000428252	0.019325599	Bcl2l11	12125	2
ENSMUSG00000034855	346.3556108	-0.747186606	0.212318964	-3.519170368	0.000432899	0.019374865	Cxcl10	15945	5
ENSMUSG00000023232	140.1410526	-1.017096121	0.29118083	-3.493005091	0.000477617	0.02077084	Serinc2	230779	4
ENSMUSG00000021822	460.072347	-0.682484879	0.196795947	-3.467982393	0.000524382	0.022434341	Plau	18792	14
ENSMUSG00000040669	3905.628905	-0.596426091	0.173603367	-3.435567536	0.000591314	0.02427335	Phc1	13619	6
ENSMUSG00000029151	136.2532322	-1.286979216	0.37696161	-3.414085633	0.000646289	0.02540004	Slc30a3	22784	5
ENSMUSG00000046314	323.5852831	-0.597445954	0.175156452	-3.410927472	0.000647423	0.025542198	Stxbp6	217517	12
ENSMUSG00000028583	1106.222368	-0.618995315	0.181737601	-3.40598374	0.000659261	0.025701429	Pdpn	14726	4
ENSMUSG00000015094	435.8115648	-0.601991886	0.177201287	-3.397220735	0.00068074	0.026382691	Npdc1	18146	2
ENSMUSG00000074796	515.7895946	-0.818326069	0.241660001	-3.386270239	0.000708496	0.026904463	Slc4a11	269356	2
ENSMUSG00000019864	523.1608831	-0.617201861	0.183421566	-3.36493616	0.000765614	0.027868762	Rtn4ip1	170728	10
ENSMUSG00000003282	371.9772629	-0.602278117	0.180142276	-3.343346889	0.000827744	0.029399399	Plag1	56711	4
ENSMUSG00000042659	910.8963245	-0.779017285	0.233357962	-3.338293149	0.000842948	0.029623913	Arrdc4	66412	7
ENSMUSG00000074923	140.1519969	-1.109560024	0.335239856	-3.309749439	0.000933794	0.031550273	Pak6	214230	2
ENSMUSG00000042978	766.2424091	-0.641193459	0.193772785	-3.308996454	0.00093631	0.031554373	Sbk1	104175	7
ENSMUSG00000020583	234.7205681	-1.025261674	0.312091576	-3.285130882	0.00101935	0.033247466	Matn3	17182	12
ENSMUSG00000048915	269.4119682	-0.606089225	0.184902421	-3.277886908	0.001045873	0.033861098	Efna5	13640	17
ENSMUSG00000057329	161.7421936	-0.92519922	0.282969476	-3.269607855	0.001076967	0.034528444	Bcl2	12043	1
ENSMUSG00000027238	219.8192346	-1.035001347	0.317780842	-3.256965845	0.0011261	0.03566975	Frmd5	228564	2
ENSMUSG00000040152	12933.2347	-0.914793522	0.281635764	-3.248144019	0.001161605	0.036206822	Thbs1	21825	2
ENSMUSG00000047793	181.0622527	-0.910896221	0.281189357	-3.239440609	0.001197644	0.036855036	Sned1	208777	1
ENSMUSG00000056476	523.7232778	-0.589617918	0.182059933	-3.238592408	0.001201211	0.036855036	Med12l	329650	3
ENSMUSG00000018554	312.8843707	-0.850302513	0.262692272	-3.236876771	0.001208456	0.03687614	Ybx2	53422	11
ENSMUSG00000024883	352.7993191	-0.708711081	0.219011592	-3.235952374	0.001212376	0.036894873	Rin1	225870	19
ENSMUSG00000039238	143.5878287	-0.98972657	0.307157331	-3.22221373	0.001272042	0.037836791	Zfp750	319530	11
ENSMUSG00000036225	257.6241029	-0.711846438	0.221128006	-3.219160021	0.001285667	0.038155938	Kctd1	106931	18
ENSMUSG00000031284	160.7919775	-0.889432342	0.277167235	-3.209009692	0.00133193	0.039175986	Pak3	18481	X
ENSMUSG00000032251	503.1594631	-0.668634313	0.208496249	-3.206936884	0.001341564	0.039238495	Irak1bp1	65099	9
ENSMUSG00000028789	608.8495129	-0.678086113	0.211735774	-3.202510843	0.001362352	0.039256702	Adc	242669	4
ENSMUSG00000015944	525.6287015	-0.751380015	0.234709847	-3.201314416	0.001368022	0.03927325	Gatsl2	80909	5
ENSMUSG00000029314	483.1082236	-0.632702441	0.197701589	-3.200290112	0.001372893	0.039327421	Agpat9	231510	5
ENSMUSG00000043415	431.8541099	-0.694380959	0.21709059	-3.198576961	0.001381077	0.039395078	Otud1	71198	2
ENSMUSG00000024302	112.2464352	-1.375191189	0.43247554	-3.179812639	0.001473703	0.041141917	Dtna	13527	18
ENSMUSG00000061451	96.30824115	-1.302076757	0.410152798	-3.174613857	0.00150036	0.041447056	Tmem151a	381199	19
ENSMUSG00000019256	537.2204281	-0.641109308	0.202945557	-3.159021159	0.001583	0.042832014	Ahr	11622	12
ENSMUSG00000041703	786.1848823	-0.692415194	0.219274804	-3.157750826	0.001589914	0.042924203	Zic5	65100	14
ENSMUSG00000026463	370.6140132	-0.825209385	0.261564195	-3.154901933	0.001605521	0.043175398	Atp2b4	381290	1
ENSMUSG00000037846	268.9204955	-0.85917001	0.273521703	-3.14114017	0.001682915	0.044529652	Rtkn2	170799	10
ENSMUSG00000069170	89.53057658	-1.195016711	0.381363337	-3.133538535	0.001727122	0.045038854	Gpr98	110789	13
ENSMUSG00000015312	3254.58288	-0.601931231	0.192217506	-3.131510981	0.001739093	0.045110288	Gadd45b	17873	10
ENSMUSG00000022101	95.66484114	-0.925418559	0.296748311	-3.118530161	0.001817555	0.046504713	Fgf17	14171	14
ENSMUSG00000034656	312.0232071	-0.629091519	0.202390855	-3.108300122	0.001881669	0.047774084	Cacna1a	12286	8
ENSMUSG00000032625	303.023047	-0.827390575	0.266676388	-3.102601557	0.001918277	0.048138771	Thsd7a	330267	6
ENSMUSG00000085328	1123.856096	-0.627964356	0.202432769	-3.10208845	0.001921605	0.048138771	Gm17131	NA	5

Supplementary Table 2B

RNA sequencing: List of genes upregulated in 4-day differentiated mesendoderm cells from *Cnot3*-DM ESCs compared with differentiated wild-type ESCs

EnsemblID	baseMean	log2FoldChange	lfcSE	stat	pvalue	padj	mgi_symbol	entrezgene	chromosome_name
ENSMUSG00000007097	283.3887789	1.449134136	0.200865927	7.214434828	5.42E-13	1.78E-09	Atp1a2	98660	1
ENSMUSG00000086266	242.2075032	1.826247063	0.285839193	6.389071569	1.67E-10	3.14E-07	Igf2as	NA	7
ENSMUSG00000063229	14267.07335	0.730361982	0.123370722	5.920059245	3.22E-09	4.24E-06	Ldha	16828	7
ENSMUSG00000052396	532.129582	0.972038727	0.167788707	5.793230945	6.90E-09	7.00E-06	Mogat2	233549	7
ENSMUSG00000040856	182.8880384	1.950298475	0.349569919	5.579137013	2.42E-08	1.81E-05	Dlk1	13386	12
ENSMUSG00000061723	77.28008179	2.8924795	0.545377262	5.303630539	1.14E-07	5.98E-05	Tnnt3	21957	7
ENSMUSG00000021403	239.9507425	1.621103129	0.310118623	5.227364661	1.72E-07	7.81E-05	Serpinb9b	20706	13
ENSMUSG00000007872	1876.535247	0.892355993	0.173750694	5.135841321	2.81E-07	0.000112158	Id3	15903	4
ENSMUSG00000048528	47.44919983	3.515357332	0.683742816	5.141344446	2.73E-07	0.000112158	Nkx1-2	20231	7
ENSMUSG00000042745	1672.038251	0.848185828	0.167880816	5.05230942	4.36E-07	0.000164957	Id1	15901	2
ENSMUSG00000035960	2107.286392	0.711616606	0.141882113	5.015548401	5.29E-07	0.000188333	Apex1	11792	14
ENSMUSG00000024565	171.6114202	1.974201467	0.396227498	4.982494844	6.28E-07	0.000216722	Sall3	20689	18
ENSMUSG00000024232	752.2929805	1.153132173	0.235330684	4.900050228	9.58E-07	0.000300599	Bambi	68010	18
ENSMUSG00000019846	341.7072104	1.067727329	0.218291102	4.891300293	1.00E-06	0.000306969	Lama4	16775	10
ENSMUSG00000030041	156.1775192	1.165738862	0.238972297	4.878133896	1.07E-06	0.000320723	D6Mm5e	110958	6
ENSMUSG00000011256	1238.676473	0.638469088	0.131298154	4.862742318	1.16E-06	0.000331632	Adam19	11492	11
ENSMUSG00000021613	31.82754114	2.978984914	0.614289898	4.849477297	1.24E-06	0.00034261	Hapln1	12950	13
ENSMUSG00000027009	59.42934805	2.673006928	0.551379214	4.847855818	1.25E-06	0.00034261	Itga4	16401	2
ENSMUSG00000039239	1388.027084	0.778529949	0.161102813	4.832503745	1.35E-06	0.000351685	Tgfb2	21808	1
ENSMUSG00000043342	60.05455736	2.405457026	0.497961359	4.830609811	1.36E-06	0.000351685	Hoxd9	15438	2
ENSMUSG00000042417	109.6058058	1.979187385	0.414164643	4.778745404	1.76E-06	0.00043043	Ccno	218630	13
ENSMUSG00000015053	126.4464755	1.563911628	0.328115223	4.766348894	1.88E-06	0.000433672	Gata2	14461	6
ENSMUSG00000020388	202.5452985	1.646249561	0.353130359	4.661874915	3.13E-06	0.000635216	Pdlim4	30794	11
ENSMUSG00000022464	7319.351693	0.695393563	0.153115136	4.541638275	5.58E-06	0.001047699	Slc38a4	69354	15
ENSMUSG00000030022	653.6365516	0.820953259	0.181391176	4.525872085	6.01E-06	0.001050004	Adamts9	101401	6
ENSMUSG00000032221	259.278792	1.200599853	0.265359727	4.524423759	6.06E-06	0.001050004	Mns1	17427	9
ENSMUSG00000051851	174.4324088	1.693380282	0.374948169	4.516304978	6.29E-06	0.001076886	Cxx1c	72865	X
ENSMUSG00000006386	51.51781704	1.952076191	0.434110779	4.496723617	6.90E-06	0.001165803	Tek	21687	4
ENSMUSG00000026728	6644.127629	0.876829377	0.195192869	4.492117883	7.05E-06	0.001176229	Vim	22352	2
ENSMUSG00000028766	230.0251879	1.408415984	0.313732949	4.489219218	7.15E-06	0.001177442	Alpl	11647	4
ENSMUSG00000036377	893.439453	0.98638567	0.21989239	4.485765384	7.27E-06	0.001181906	C530008M17Rik	320827	5
ENSMUSG00000033880	130.3966892	1.339929887	0.299409948	4.475235028	7.63E-06	0.001217489	Lgals3bp	19039	11
ENSMUSG00000019235	107.5336986	1.462818247	0.327422718	4.467674862	7.91E-06	0.001225839	Rps6kl1	238323	12
ENSMUSG00000085795	386.3765089	0.884719146	0.198607832	4.454603505	8.40E-06	0.001272995	Zfp703	353310	8
ENSMUSG00000039231	1360.553905	0.676627841	0.152485794	4.437317224	9.11E-06	0.001333615	Suv39h1	20937	X
ENSMUSG00000031073	146.312395	2.320222907	0.524376388	4.424728039	9.66E-06	0.001398266	Fgf15	14170	7
ENSMUSG00000061082	102.4369856	2.178612466	0.495416156	4.397540211	1.09E-05	0.00150279	Plac1	56096	X
ENSMUSG00000042436	67.17036567	1.876224146	0.428404791	4.379559205	1.19E-05	0.001567004	Mfap4	76293	11
ENSMUSG00000043445	518.6094127	0.677682134	0.155357573	4.362079821	1.29E-05	0.001631089	Pgp	67078	17
ENSMUSG00000025665	3751.887593	0.805315731	0.185737593	4.335771343	1.45E-05	0.001788745	Rps6ka6	67071	X
ENSMUSG00000070348	3039.659541	0.700859532	0.163380147	4.289747231	1.79E-05	0.002123475	Ccnd1	12443	7
ENSMUSG00000037664	1709.113048	0.736383655	0.173329578	4.248459278	2.15E-05	0.002487977	Cdkn1c	12577	7
ENSMUSG00000025969	1081.150516	0.921039795	0.217007418	4.244277936	2.19E-05	0.002512778	Nrp2	18187	1
ENSMUSG00000031891	20.72393859	3.045214588	0.7195039	4.232380935	2.31E-05	0.002626657	Hsd11b2	15484	8
ENSMUSG00000001657	19.15229534	3.781989211	0.906268359	4.173144936	3.00E-05	0.003244822	Hoxc8	15426	15
ENSMUSG00000027669	259.899371	1.046158548	0.250495145	4.176362572	2.96E-05	0.003244822	Gnb4	14696	3
ENSMUSG00000025776	117.1059428	1.575001062	0.377629575	4.170756667	3.04E-05	0.003247022	Crispld1	83691	1
ENSMUSG00000031074	96.12088287	2.14042192	0.513378556	4.169285789	3.06E-05	0.003247022	Fgf3	14174	7
ENSMUSG00000023484	217.609032	1.067365499	0.256237514	4.165531754	3.11E-05	0.003274513	Prph	19132	15
ENSMUSG00000029646	316.2348609	2.510042416	0.606294098	4.139975015	3.47E-05	0.00357574	Cdx2	12591	5
ENSMUSG00000031963	119.5038363	1.700607264	0.411889804	4.128791849	3.65E-05	0.003696395	Bmper	73230	9
ENSMUSG00000036523	439.6896435	0.957871636	0.233020854	4.110669148	3.95E-05	0.003863474	Greb1	268527	12
ENSMUSG00000028369	74.27939726	1.9939375	0.48661602	4.097558278	4.18E-05	0.003986817	Svep1	64817	4
ENSMUSG00000070407	298.6815831	1.351693942	0.333165015	4.057130495	4.97E-05	0.004581984	Hs3st3b1	54710	11
ENSMUSG00000005087	800.4529198	0.606755231	0.150575241	4.029581665	5.59E-05	0.005040704	Cd44	12505	2
ENSMUSG00000033350	96.85296273	1.666840896	0.414939591	4.017068823	5.89E-05	0.005099059	Chst2	54371	9
ENSMUSG00000052776	39.68508716	2.111008534	0.525655601	4.015953662	5.92E-05	0.005099059	Oas1a	246730	5
ENSMUSG00000031217	675.576237	0.839185623	0.209316302	4.009174705	6.09E-05	0.005213585	Efnb1	13641	X
ENSMUSG00000038507	328.3227396	1.150761133	0.287318155	4.005180722	6.20E-05	0.005252179	Parp12	243771	6
ENSMUSG00000031734	62.2475798	1.549274621	0.387329704	3.999885898	6.34E-05	0.005285231	Irx3	16373	8
ENSMUSG00000025105	43.95377984	1.930103703	0.485787627	3.973142981	7.09E-05	0.005841565	Bncl	12173	7
ENSMUSG00000040212	127.1896627	1.203376346	0.30317857	3.969199895	7.21E-05	0.005869355	Emp3	13732	7
ENSMUSG00000079197	2904.588691	0.642758069	0.162198453	3.962787905	7.41E-05	0.00598863	Psme2	19188	14
ENSMUSG00000057615	73.76704192	1.408899552	0.356770098	3.949040459	7.85E-05	0.006154372	Ldoc1	434784	X
ENSMUSG00000031486	816.9286127	1.566821883	0.397424434	3.942439745	8.07E-05	0.00625186	Gpr124	78560	8
ENSMUSG00000039316	391.4408762	1.075879857	0.27329916	3.936637998	8.26E-05	0.006330408	Rftn1	76438	17
ENSMUSG00000037169	1248.113109	0.724279625	0.185039421	3.914190948	9.07E-05	0.006830041	Mycn	18109	12
ENSMUSG00000031075	47.85274647	2.063109925	0.532534201	3.874136012	0.000107004	0.007747181	Ano1	101772	7
ENSMUSG00000026104	300.186188	0.986070243	0.255395368	3.860955862	0.000112944	0.007916315	Stat1	20846	1
ENSMUSG00000062393	504.1113151	1.008835461	0.261997839	3.85054879	0.000117853	0.008216693	Dgkk	331374	X
ENSMUSG00000054072	56.35084834	2.241177558	0.583478525	3.841062629	0.000122503	0.008363835	Iigp1	60440	18
ENSMUSG00000050335	399.0295382	0.671277109	0.175700922	3.82056679	0.000133145	0.008951307	Lgals3	16854	14
ENSMUSG00000025491	631.2739523	0.854121062	0.224268851	3.808469427	0.00013983	0.009294436	Ifitm1	68713	7
ENSMUSG00000033585	305.3477676	0.962534675	0.253009146	3.804347356	0.000142179	0.00932083	Ndn	17984	7
ENSMUSG00000029201	1059.029646	0.771055882	0.202983816	3.798607685	0.000145511	0.009492085	Ugdh	22235	5

ENSMUSG00000028005	186.1039764	1.230694363	0.324826933	3.788769458	0.000151395	0.009731396	Gucy1b3	54195	3
ENSMUSG00000055653	5240.324991	0.671074446	0.177285211	3.785281593	0.000153535	0.009820999	Gpc3	14734	X
ENSMUSG00000000142	609.1554334	0.944374794	0.251414288	3.756249494	0.000172479	0.010670199	Axin2	12006	11
ENSMUSG00000032014	74.76513024	1.282519972	0.343365203	3.735148346	0.000187605	0.011236661	Oaf	102644	9
ENSMUSG00000003348	716.4835036	0.616075637	0.16649816	3.700194855	0.000215434	0.012306699	Mob3a	208228	10
ENSMUSG00000024538	1170.442418	0.71215328	0.19248821	3.699724155	0.000215834	0.012306699	Ppic	19038	18
ENSMUSG00000050105	64.76296614	1.781500523	0.484483418	3.677113513	0.000235888	0.012946424	Grrp1	72690	4
ENSMUSG00000074749	190.5536996	0.78437374	0.213368423	3.676147238	0.000236783	0.012946424	Plk1s1	228730	2
ENSMUSG00000037347	139.9911112	1.270076496	0.346606631	3.66431678	0.000248	0.013448115	Chst7	60322	X
ENSMUSG00000024659	557.8192861	0.863236619	0.239754998	3.600494779	0.000317612	0.016158981	Anxa1	16952	19
ENSMUSG00000020734	43.90858602	1.771977086	0.493508198	3.590572945	0.000329952	0.016592176	Grin2c	14813	11
ENSMUSG00000026347	81.91222271	1.2919917	0.361841759	3.570598665	0.000356166	0.017254422	Tmem163	72160	1
ENSMUSG00000025723	84.57747378	1.292332265	0.362378426	3.566250558	0.000362125	0.01732571	Nmb	68039	7
ENSMUSG00000000690	22.8452417	2.976216251	0.83650917	3.557900329	0.000373831	0.017592759	Hoxb6	15414	11
ENSMUSG00000006200	128.0443345	1.383350252	0.388731125	3.558630024	0.000372794	0.017592759	Rhox6	19202	X
ENSMUSG00000000753	88.00235774	1.138397562	0.320319141	3.553947978	0.000379494	0.017669951	Serpinf1	20317	11
ENSMUSG00000048583	20924.62298	1.763778333	0.49791324	3.542340695	0.000396593	0.018217742	Igf2	16002	7
ENSMUSG00000019779	158.3636336	1.204358543	0.341072397	3.531093558	0.000413845	0.018804276	Frk	14302	10
ENSMUSG00000029826	572.1774945	0.752399816	0.213025695	3.531967421	0.00041248	0.018804276	Zc3hav1	78781	6
ENSMUSG00000027985	410.4341479	0.986836582	0.280186713	3.522067742	0.000428195	0.019325599	Lef1	16842	3
ENSMUSG00000030110	48.45422129	1.655839402	0.470415629	3.519949808	0.000431628	0.019374865	Ret	19713	6
ENSMUSG00000018819	97.32309034	1.148317815	0.327149214	3.51007359	0.000447983	0.01987565	Lsp1	16985	7
ENSMUSG00000027102	30.12658109	2.033848818	0.581120985	3.499871574	0.000465482	0.020445537	Hoxd8	15437	2
ENSMUSG00000039081	26.98815731	2.214462454	0.636521309	3.47900757	0.000503274	0.021743103	Zfp503	218820	14
ENSMUSG00000052957	321.0690726	0.867159787	0.249229297	3.479365378	0.000502603	0.021743103	Gas1	14451	13
ENSMUSG00000026124	93.10863363	1.807090798	0.520759212	3.470108176	0.000520249	0.022361798	Cfc1	12627	1
ENSMUSG00000055809	212.4537795	0.891800405	0.257023273	3.469726287	0.000520989	0.022361798	6030429G01Rik	436022	7
ENSMUSG00000044008	529.9701348	0.629857439	0.182336132	3.454375347	0.000551569	0.023146581	1110002B05Rik	104725	12
ENSMUSG00000042102	43.76501694	2.103421971	0.610299826	3.446538705	0.000567817	0.023528703	Dmgdh	74129	13
ENSMUSG00000027954	234.1608836	0.783754634	0.228435287	3.430970079	0.000601427	0.024535612	Efna1	13636	3
ENSMUSG00000026739	249.7036658	0.851366901	0.248433032	3.426947278	0.000610408	0.02474874	Bmi1	12151	2
ENSMUSG00000045333	333.6674446	0.908403874	0.265362393	3.423257766	0.000618754	0.024933694	Zfp423	94187	8
ENSMUSG00000028069	662.3822588	0.651516385	0.190449804	3.420934915	0.000624063	0.024994752	Gpatch4	66614	3
ENSMUSG00000031661	204.2028134	1.259915594	0.368520495	3.418848096	0.000628868	0.025110899	Nkd1	93960	8
ENSMUSG00000072944	787.4680846	0.635591348	0.186127098	3.414824355	0.000638232	0.02540004	Nup62cl	279706	X
ENSMUSG00000033774	23.57056702	2.164246882	0.635288071	3.406717332	0.000657492	0.025701429	Npbwr1	226304	1
ENSMUSG00000029778	77.98337059	1.323731271	0.39044806	3.390287736	0.000698193	0.026822417	Adcyap1r1	11517	6
ENSMUSG00000028212	279.8024987	0.686629797	0.203260622	3.378075836	0.000729949	0.02732541	Ccne2	12448	4
ENSMUSG00000042258	61.77892304	2.059807648	0.610147096	3.375919775	0.000735694	0.027357856	Isl1	16392	13
ENSMUSG00000033763	586.2635763	0.591255605	0.175488134	3.369205613	0.000753852	0.027714515	Mtss1l	244654	8
ENSMUSG00000070526	50.44535786	1.859870292	0.552354863	3.367165596	0.000759454	0.027721002	Peg12	27412	7
ENSMUSG00000024697	27.8346586	2.549456864	0.758440407	3.361446515	0.000775354	0.028071939	Gna14	14675	19
ENSMUSG00000068048	64.82582848	1.55728285	0.463566232	3.359353512	0.000781251	0.028204216	Rhox9	104384	X
ENSMUSG00000023942	491.9064894	0.588092262	0.175418653	3.35250699	0.000800832	0.028753585	Slc29a1	63959	17
ENSMUSG00000046352	48.39730106	1.537451	0.461628417	3.330494706	0.000866948	0.030061526	Gjb2	14619	14
ENSMUSG00000022346	626.0440882	0.78145252	0.234757534	3.32876439	0.000872322	0.030169508	Myc	17869	15
ENSMUSG00000040631	611.2569082	1.563915446	0.470624056	3.32306737	0.000890334	0.030551907	Dok4	114255	8
ENSMUSG00000029765	126.4924966	1.448277968	0.437119167	3.313233729	0.000922239	0.031401395	Plxna4	243743	6
ENSMUSG00000048450	523.6718304	2.184551489	0.659978105	3.310036308	0.000932830	0.031550273	Msx1	17701	5
ENSMUSG00000029298	92.57453724	1.508801165	0.457125488	3.300627956	0.000964687	0.032181474	Gbp9	236573	5
ENSMUSG00000032897	643.2071938	0.633624254	0.19220442	3.296616455	0.00097857	0.032480155	Nfyc	18046	4
ENSMUSG00000092035	34105.14985	0.937321237	0.284822182	3.29089972	0.000998675	0.032900921	Peg10	170676	6
ENSMUSG00000032291	148.6599521	0.974592154	0.296826366	3.283374608	0.001025723	0.033372709	Crabp1	12903	9
ENSMUSG00000000120	46.45589628	1.920260031	0.586139187	3.276116105	0.001052453	0.033990616	Ngfr	18053	11
ENSMUSG00000019789	91.61182862	1.103174145	0.338106508	3.262800681	0.001103171	0.035112274	Hey2	15214	10
ENSMUSG00000030170	122.0665686	1.417265475	0.434509978	3.261755882	0.001107245	0.035157014	Wnt5b	22419	6
ENSMUSG00000025529	132.5336115	1.26178139	0.388288596	3.249596826	0.001155687	0.036206822	Zfp711	245595	X
ENSMUSG00000036545	75.95336569	1.247597701	0.384035388	3.248652962	0.001159528	0.036206822	Adamts2	216725	11
ENSMUSG00000087365	159.8753079	1.226300099	0.377229288	3.250808299	0.001150774	0.036206822	C430049B03Rik	NA	X
ENSMUSG00000079481	173.5593355	1.203221511	0.370674722	3.246030657	0.001170262	0.03628364	Nhsl2	100042480	X
ENSMUSG00000022790	116.9654681	1.118268383	0.346024388	3.231761756	0.001230296	0.037182588	Igsf11	207683	16
ENSMUSG00000038244	160.2741548	0.773104716	0.239588898	3.226796908	0.001251843	0.037404836	Mical2	320878	7
ENSMUSG00000017493	1436.169009	1.268390188	0.393229761	3.225570176	0.00125722	0.037480519	Igfbp4	16010	11
ENSMUSG00000046743	40.60609731	2.044361415	0.635928622	3.214765533	0.001305511	0.038657797	Fat4	329628	3
ENSMUSG00000000567	124.0173741	1.123578986	0.351478328	3.196723375	0.001389982	0.039498407	Sox9	20682	11
ENSMUSG00000021506	37.8116986	1.653876652	0.517496003	3.195921595	0.001393385	0.039498407	Pitx1	18740	13
ENSMUSG00000038193	44.17411324	2.125041283	0.670823095	3.167811751	0.001535909	0.041951108	Hand2	15111	8
ENSMUSG00000001864	287.8491282	0.665475882	0.210655465	3.159072472	0.001582721	0.042832014	Aif1l	108897	2
ENSMUSG00000067786	135.1318425	1.117083388	0.353820947	3.157199699	0.001592922	0.042924203	Nnat	18111	2
ENSMUSG00000042821	371.0679347	0.874122045	0.277407294	3.151042043	0.001626891	0.043548472	Snai1	20613	2
ENSMUSG00000058806	27.30566452	2.282372194	0.724246316	3.151375633	0.001625034	0.043548472	Col13a1	12817	10
ENSMUSG00000031871	21.8326788	2.116838627	0.673511093	3.142989996	0.001672316	0.044338233	Cdh5	12562	8
ENSMUSG00000022449	32.94683304	2.094334543	0.667836104	3.136000781	0.001712687	0.044894731	Adamts20	223838	15
ENSMUSG00000053219	68.2590431	1.138872646	0.363457361	3.133442238	0.001727689	0.045038854	Raet1e	379043	10
ENSMUSG00000054716	246.7132298	0.72212711	0.231132016	3.124305859	0.001782251	0.045869275	Zfp771	244216	7
ENSMUSG00000029544	140.2233861	1.385115588	0.446273032	3.10374029	0.00191091	0.048053549	Cabp1	29867	5
ENSMUSG00000049288	100.0647123	1.174199241	0.378287247	3.103988438	0.001909308	0.048053549	Lix1l	280411	3
ENSMUSG00000021614	1019.126802	1.2602381	0.407274167	3.094323678	0.001972621	0.049043836	Vcan	13003	13