Supplementary Figure 1. Dystrophic mice show unbalanced stem cell niche.

(**A**) Single channel images for the merged panels shown in Figure 1A, for of PAX7, MYOD and Laminin immunohistochemical staining in *Lmna* Δ8-11 mice of PAX7 and MYOD markers at the indicated days of post-natal growth. Basement membrane of muscle fibers was stained with Laminin. Scale bars, 50 μm. (**B**) Quantification of the % of PAX7+ MuSCs per 100 fibers at the indicated days of post-natal growth in (A). n =3-6 animals per genotype. (**C**) Immunohistochemical staining in *Lmna* Δ8-11 mice of activated, ASCs (PAX7+/KI67+) and quiescent QSCs (PAX7+/Ki67-) MuSCs at d19 and relative quantification (below). n= 4-6 animals per genotype. Scale bars, 50 μm. (**D**) Quantification of the number of cells per cluster in single myofibers extracted from d19 *Lmna* Δ8-11 mice and cultured 96h. n= 4-5 animals per group. Data are box with median and whiskers min to max. **B, C**, Data are mean ± s.e.m. Statistics by one-way (B) or two-way (C, D) analysis of variance (ANOVA) with multiple comparisons. * * P < 0.01, * * * P < 0.001. wt= *Lmna* Δ8-11 +/+; het= *Lmna* Δ8-11 +/; hom= *Lmna* Δ8-11 -/-.

Supplementary Figure 2. Heterozygous mice show intermediate Lamin A levels.

(**A**) RNA-seq signal tracks as the effective genome size normalized coverage of each biological replicate of *Lmna* Δ8-11 mice on Lmna locus. Neomycine cassette is indicated as a dark blue rectangle. (**B**) Western blot of total protein extracted from the whole *Lmna* Δ8-11 muscles at d19 hybridized with indicated antibodies. α-tubulin was used as loading control. wt= *Lmna* Δ8-11 +/+; het= *Lmna* Δ8-11 +/; hom= *Lmna* Δ8-11 -/-.

Supplementary Figure 3. *Lmna* Δ8-11 dystrophic mice show alteration of PcG nuclear distribution.

(**A**) Representative images of Ezh2/Lamin A immunofluorescence analysis on fixed and sorted *Lmna* Δ8-11 MuSCs at d19. On the right, 3D reconstruction of PcG bodies (see additional methods). Of note, in some *Lmna* Δ8-11 -/- nuclei we could see low levels of the truncated form of Lamin A/C (1) recognizable by the Lamin A/C antibody. (**B**) Quantification of number of PcG bodies/nucleus (x-axis) in (A) by cumulative frequency distributions (y-axis). n=4 animals per genotype. (**C**) Quantification of number of PcG body volumes (x-axis) in (A) by cumulative frequency distributions (y-axis). n=4 animals per genotype. (**D**) RTPCR analysis of *Ezh2* in satellite cells and whole muscles from *Lmna* Δ8-11 +/+ and *Lmna* Δ8-11 -/- mice at d19. n=2-6 animals per genotype. Value were normalized on gapdh and compared with the average of wt amplification. (**E**) Western blot of total extracts from *Lmna* Δ8-11 MuSCs at d19 hybridized with indicated antibodies. The * indicates the truncated form of Lamin A detected in mutant mice (1) (**F**) Band density quantification of Ezh2 normalized on actin levels. n=3 animals per genotype. (**G**) Immunohistochemical staining in *Lmna* Δ8-11 mice of Ezh2 in Activated, ASCs (PAX7+/KI67+) and quiescent, QSCs (PAX7+/Ki67-) MuSCs at d19. Scale bars, 50 μm. (**H**) Quantification of *Ezh2* fluorescence intensity in ASCs (PAX7+/KI67+) and QSCs (PAX7+/Ki67-) MuSCs in (G); n =4-5 animals per genotype (**I**) Magnification of the immunohistochemical staining described in (G). Scale bars, 10 μm. (**J**) Quantification of number of PcG bodies/nucleus (x-axis) in (I) by cumulative frequency distributions (y-axis). n =5 animals per genotype. **D, F, H**, Data are mean ± s.e.m. Comparisons by unpaired *t-test*. **B, C, J**, Comparisons by Kolmogorov-Smirnov test. ns: not statistical. * * P < 0.01, * * * P < 0.001. wt= *Lmna* Δ8-11 +/+; hom= *Lmna* Δ8-11 -/-.

Supplementary Figure 4. Transcriptional deregulation in *Lmna* Δ8-11 dystrophic mice.

(**A**) Heatmap of differentially expressed genes Z-scores in *Lmna* Δ8-11 -/- vs *Lmna* Δ8-11 +/+ comparison (FDR < 0.05). (**B**) pre-ranked GSEA on log Fold Change from Ezh2 KO vs WT satellite cells (2). Up-regulated (logFC > 1) in hom vs wt comparison added to Biocarta mouse pathways from *gskb* R package were used as gene sets (NES = 2.31, FDR = 0.020). (**C, D**) heatmaps showing H3K27me3 spike-in normalized linear ratio IP/input signal along the gene body (C) or around the TSS (D) (coordinates along x-axis) of individual annotated mouse genes (y-axis). Genes are sorted by computing the average signal for each gene and then sorting them in descending order based on the mean value. TES= annotated transcript end. wt= *Lmna* Δ8-11 +/+; hom= *Lmna* Δ8-11 -/-.

Supplementary Figure 5. H3K27me3 levels in *Lmna* Δ8-11 dystrophic mice.

(**A**) Western blot of total histones extracted from *Lmna* Δ8-11 MuSCs at d19 hybridized with indicated antibodies. The * indicates the truncated form of Lamin A detected in mutant mice (1). (**B**) Band density quantification of H3K27me3 normalized on H3 levels. n=3 animals per genotype. (**C**) Western blot of total histones extracted from *Lmna* Δ8-11 whole muscles at d19 hybridized with indicated antibodies. (**D**) Band density quantification of H3K27me3 normalized on H3 levels. n=3 animals per genotype. (**E**) Average profile of H3K27me3 signal as the spike-in normalized linear ratio IP/input at the TSS using genes grouped as in panel (Figure 3E). **B, D**, Data are mean ± s.e.m. Comparisons by unpaired *t-test*. ns: not statistical. wt= *Lmna* Δ8-11 +/+; hom= *Lmna* Δ8-11 -/-.

Supplementary Figure 6. Aberrant H3K27me3 deposition in *Lmna* Δ8-11 -/- MuSCs

(**A**) ChIP-seq of H3K27me3 mark as the spike-in normalized linear ratio IP/input and RNA-seq signal tracks as the effective genome size normalized coverage on Hoxb genes, belonging to the I/II quartiles of expression. (**B**) ChIP-seq of H3K27me3 mark

as the spike-in normalized linear ratio IP/input and RNA-seq signal tracks as the effective genome size normalized coverage on Eno2 locus, belonging to the III quartile of expression. Eno2 promoter is highlighted by a light blue rectangle.

Supplementary Figure 7. Statistical analysis of H3K27me3 distribution at TSS

(**A**) Cartoon to illustrate the approach used to measure relative differences in H3K27me3 ChIP over input enrichment at TSS (A point) vs 2.5Kb downstream (B point). For each sample (wt or hom), for each individual gene, the ratio o H3K27me3 ChIP over input enrichment at point A over point B is computed. (**B**) The boxplots report the distribution of A/B ChIP-seq enrichment ratios (defined as in panel C) in each sample, for each gene, grouped as defined in panel (Figure 3E). The p-values reported are based on non-parametric Wilcoxon test.

Supplementary Figure 8. Bivalent genes deregulation in *Lmna* Δ8-11 -/- MuSCs

(**A, B**) Average profile and heatmap of H3K27me3 (A) and H3K4me3 (B) ChIP-seq signal along the gene body calculated as the ratio IP/input over annotated mouse genes. TES= annotated transcript end. (**C**) ChIP-seq signal tracks of H3K27me3 and H3K4me3 marks as the library size normalized linear ratio IP/input on Lonrf2 locus, showing a bivalent promoter. Lonrf2 promoter is highlighted by a light blue rectangle. (**D, E**) Results of pre-ranked GSEA using log fold change from RNA-seq differential analysis in hom vs wt comparison. Representative muscle development-related NES = -3.11, FDR = 1.86e-5 (**D**) and lipid metabolism-related NES = 2.91, FDR = 1.54e-4 (**E**) gene sets among Gene Ontology terms from gskb R package are shown.

Supplementary Figure 9. PPARG is a bivalent gene.

(**A**) ChIP-seq signal tracks of H3K27me3 and H3K4me3 marks as the library size normalize linear ratio ChIP/input on PPARG locus, showing the bivalent PPARG promoter, highlighted by a light blue rectangle. (**B**) ChIP-seq of H3K27me3 mark as

the spike-in normalized linear ratio IP/input and RNA-seq signal tracks as the effective genome size normalized coverage on *PPARG* locus. PPARG promoter is highlighted by a light blue rectangle.

Supplementary Figure 10. Hi-C contact map at the PPARG locus.

At the top, the Hi-C contact map of mouse embryonic stem cells ((3), resolution 10kb) showing the TADs compartmentalization (horizontal light yellow and blue bars) in the region chr6:114,760,000-116,080,000. At the bottom, H3K27me3 ChIP-seq spike-in normalized linear IP/input ratio of the same genomic region. In the middle of two dashed lines are highlighted as dark blue rectangles the mapping positions of BAC clones used for FISH experiments described in Figure 5E. H3K27me3 peak lost in the *Lmna* Δ8-11 -/- MuSCs is highlighted by light red rectangle.

Supplementary Figure 11. *Lmna* Δ8-11 -/- MuSCs undergo premature senescence.

(**A**) Immunohistochemical staining in *Lmna* Δ8-11 mice of PAX7 and Ph-P38 markers at d19. Basement membrane of muscle fibers was stained with Laminin. Scale bars, 50 μm. (**B**) Quantification of MuSCs pool in (A); n= 5 animals per genotype. (**C**) Immunohistochemical staining in *Lmna* Δ8-11 mice of PAX7 and γH2AX markers at d19. Basement membrane of muscle fibers was stained with Laminin. Scale bars, 50 μm. (**D**) Quantification of MuSCs pool in (C); n= 3 animals per genotype. **B, D,** Data are mean ± s.e.m. Statistics by two-way analysis of variance (ANOVA) with multiple comparisons. * * P < 0.01. wt= *Lmna* Δ8-11 +/+; het= *Lmna* Δ8-11 +/-; hom= *Lmna* Δ8-11 -/-.

Supplementary Figure 12. *Lmna* Δ8-11 -/- MuSCs do not show apoptosis.

(**A**) Apoptosis assay performed on MuSCs of Lmna Δ8-11 +/+ and -/- at 19 and 26 days of post-natal growth evidenced living, apoptotic or necrotic cells. n=3-4 animals per genotype. (**B, C**) pre-ranked GSEA on log Fold Change from RNA-seq differential analysis in hom vs wt comparison. Up-regulated genes (q-value < 0.05) in old vs young (B) and geriatric vs young (C) mice comparisons from (4) were added to Biocarta mouse pathways from *gskb* R package and used as gene sets. (**B**) old vs. young mice up-regulated genes are enriched in hom vs wt up-regulated ones (NES = 2.86, FDR = 3.81e-04). (**C**) geriatric vs young mice up-regulated genes are enriched in hom vs wt down-regulated ones (NES = -5,09, FDR < 10e-4). **A,** Data are mean ± s.e.m. Statistics by Unpaired t test with Welch's correction. wt= *Lmna* Δ8-11 +/+; hom= *Lmna* Δ8-11 -/-.

Supplementary Figure 13. *Cdkn2a* absence restores MuSCs quiescence in *Lmna* Δ8-11 -/- mice.

(**A**) ChIP-seq signal tracks of H3K27me3 mark as the spike-in normalized linear ratio IP/input on *Cdkn2a* locus. Promoters are highlighted by a light blue rectangle. (**B**) Immunohistochemical staining in *Cdkn2a*/*Lmna* Δ8-11 mice of Activated, ASCs (PAX7+/KI67+) and quiescent, QSCs (PAX7+/Ki67-) of MuSCs at d19. Scale bars, 50 μm. (**C**) Quantification of MuSCs pool in (B). n=4-5 animals per genotype. Data are mean ± s.e.m. Statistics by two-way analysis of variance (ANOVA) with multiple comparisons. * P < 0.05, ** P < 0.01. wt= *Lmna* Δ8-11 +/+; hom= *Lmna* Δ8-11 -/-.

Tables

Supplementary Table S1: Characterization of genes in "GO:0006629 lipid metabolic process" term.

The result of differential transcriptional analysis between *Lmna* Δ8-11 +/+ and *Lmna* Δ8-11 -/- MuSCs at d19 are shown. Only genes significantly deregulated were

considered. Genes are in descending order with respect to the log fold change value. The promoter status of each gene in *Lmna* Δ8-11 +/+ mice is indicated. The row corresponding to PPARG gene is highlighted in yellow.

Supplementary Table S2: Antibodies used in this study.

Additional methods

Bioinformatics analysis

RNA-seq: the overall quality of the sequenced reads was assessed using FastQC tool (version 0.11.2; http:/www.bioinformatics.babraham.ac.uk/projects/fastqc), then reads were trimmed and the adapters removed using Trimmomatic software (version 0.33;(5)). The remaining reads were aligned to mouse genome (version GRCm38; Ensembl release 87) providing the murine transcriptome (Ensembl release 87) with Spliced Transcripts Alignment to a Reference (STAR; version 2.5.2b;(6)). STAR alignments were used as input for HTSeq (version 0.6.1;(7)) to quantify the amount of reads per gene in the annotation with -s reverse and -t exon parameters. The differentially expressed genes (DEGs) between Lmna homozigous and wild type mice were identified using edgeR (version 3.16.0;(8) in R environment version 3.3.2); the significance threshold was set to False Discovery Rate (FDR) ≤ 0.05. Raw expression values normalization was computed calculating $\log_2$ count per million (cpm) with the same tool. Z-scores of hom vs. wt DEGs were calculated and visualized using *gplots* R package (version 3.0.1 in R environment version 3.3.2). A functional enrichment on DEGs between Lmna homozygous and wild type mice was conducted using the Gene Set Enrichment Analysis (GSEA) software (9) and the mouse Gene Ontology (GO) terms of the *"Biological Processes"* section retrieved from the R package *"gskb"* (version 1.6.1 in R environment 3.3.2; (10)). GSEA tool was used in pre-ranked mode as suggested for RNA-seq experiments using as input the log fold change (log FC) for all the genes in the annotation and the *"classic"* metric for gene ranking. The significance threshold was set to FDR ≤ 0.05. To compare our results with public data a GSEA analysis was performed on Liu et al., 2013 dataset (11), Sousa-Victor et al., 2014 dataset (4) and Juan et al., 2011 dataset (2). The first was retrieved from Gene Expression Omnibus (GEO; https://www.ncbi.nlm.nih.gov/geo/; GSE47177), the second one from supplementary data, whereas the latter was obtained from the authors in form of raw data. On Liu et

al., 2013: gene expression level of quiescent satellite cells from old and young mice was calculated starting from raw data using affy and annotate R packages (gene-level summarization using Brainarray Entrez gene custom cdf for mouse gene 1.0 st microarrays; http://brainarray.mbni.med.umich.edu/Brainarray/Database/CustomCDF/CDF_download.asp) and was used as expression dataset, up-regulated genes in homozygous mice filtered for log FC ≥ 1 were added to Biocarta mouse pathways retrieved from gskb R package and used as gene sets database; moreover the old vs young class comparison was used as phenotype labels and *Signal2Noise* as metric for gene ranking as defined in (9). On Sousa-Victor et al., 2014: differential expressed genes from old vs. young mice and geriatric vs. young mice were filtered for q-value ≤ 0.05 and added to Biocarta mouse pathways retrieved from gskb R package and used as gene sets database and hom vs. wt log FC of all genes for a pre-ranked analysis with classic as metric for gene ranking. For Juan et al., 2011: raw data were analyzed using affy and annotate R packages (gene-level summarization using Brainarray Entrez gene custom cdf for mouse 430.2 microarrays; http://brainarray.mbni.med.umich.edu/Brainarray/Database/CustomCDF/CDF_download.asp); log FC were calculated for all genes to perform a pre-ranked analysis with classic as metric for gene ranking; up-regulated genes in homozygous mice filtered for log FC ≥ 1 were added to Biocarta mouse pathways retrieved from gskb R package and used as gene sets database. To correlate H3K27me3 changes with gene expression, genes were divided into groups based on the expression level in wt condition. In this case we quantified gene expression using kallisto (version 0.44.0; (12)). Genes with 0 coverage, i.e. 0 transcript per million (tpm) in all of the 3 replicates were classified as *"zero-expressed"* were excluded from the analysis. This group includes genes not expressed and not detected for technical reasons, i.e. either low abundance resulting in technical dropout, or low coverage due to low mappability of the sequence. Remaining genes were divided into 4 equally sized groups (i.e. *"I"*, *"II"*, *"III"* and *"IV"* categories) based on quartiles of the mean expression values in the 3 replicates. RNA-seq genome coverage was determined using *bamCoverage* function of *deepTools* suite (version 2.5.1;(13)) with 1 base bin size and effective genome size normalization (excluding X and Y chromosomes) and visualized using *pyGenomeTracks* (version 2.0;(13)). To refine the functional analysis on DEGs, an additional enrichment of GO terms was performed using the *"FGNet"* R package (version 3.8;(14)) followed by a semantic similarity analysis on significantly enriched terms given and FDR threshold of 0.05 taking advantage of the *"GOSemSim"* R package (version 2.0.4;(15)). Then the macro-categories grouping

GO terms taking part of the same biological process were identified using Revigo web tool (16). Similarity scores heatmap was visualized using *gplots* R package (version 3.0.1 in R environment version 3.3.2). To test the enrichment of up-regulated genes among those with a bivalent promoter and among H3K27me3 target genes a Fisher exact test was performed using *fisher.test* function of *stats* R package (R environment version 3.3.2; the p-value for significant threshold was set to 0.05) considering only mappable genes as reference background (i.e. genes with at least one reported alignment in one of the RNA-seq/ChIP-seq samples). Moreover, the same procedure was used to test the enrichment of Pparγ-related up-regulated genes among those with a bivalent promoter selecting up-regulated genes in significantly enriched adipogenesis-related GO terms. The expected number of genes was determined by means of the product of marginal distributions and the $\log_2$ ratio of observed over expected number of genes was computed and visualized using *gplots* R package (version 3.0.1 in R environment version 3.3.2).

ChIP-seq: FastQC (version 0.11.3; http:/www.bioinformatics.babraham.ac.uk/projects/fastqc) and Trimmomatic (version 0.32;(5)) were respectively used for the quality control of the sequenced reads and trimming/adapter removal steps. Reads were aligned to mouse genome (GRCm38; Ensembl release 87) using Bowtie (version 1.0.1;(17)) and retaining only those reads that map to unique loci. PCR duplicates were removed using samtools (version 0.1.19;(18)). Peak calling step was performed with Model-based Analysis of ChIP-Seq 2 (MACS2; version 2.1.1;(19)) using input samples as control and *--broad* parameter for H3K27me3 ChIP-seq samples. Signal tracks were constructed calculating the linear fold enrichment (IP/input) with the same tool. Annotation of called peaks was performed with *ChIPpeakAnno* R package (version 3.8.9 in R environment version 3.3.2;(20)) in *both* mode (nearest start plus overlapping annotation) and calculating the distance between the middle point of peaks and the transcription start site (TSS) of genes. Genes with bivalent promoter were identified as those genes having an H3K27me3 peak that overlap for at least the 5% an H3K4me3 peak in a window between -0.5kb and +2.0kb around the TSS (similarly to what originally proposed by (21)) in wt condition (*bedtools* version 2.24.0;(22)). For ChIP-seq with spike-in approach reads were aligned also to Drosophila melanogaster genome (BDGP6; Ensembl release 87) and filtered as those mapping to mouse genome; then ambiguous reads aligning to both genomes were removed using *BBMap* tool (BBMap - Bushnell B. - sourceforge.net/projects/bbmap/). Reads mapping to Dm6 genome were used to calculate spike-in normalization factors for IP samples as in (23) which were employed as scaling factors to normalize signal tracks

(MACS2 version 2.1.1). H3K27me3 target genes were identified as those genes with a H3K27me3 peak in a window of +/- 5 kb around the TSS in the wt condition. We defined intergenic and interpeaks regions as those outside H3K27me3 peaks and outside annotated genes (*bedtools* version 2.24.0).

Average IP/input ChIP-seq profiles on the indicated lists of genes were calculated and visualized using *computeMatrix* and *plotProfile* functions of *deepTools* suite (version 2.5.1; (13)). Heatmap of average IP/input ChIP-seq signal on indicated lists of genes were calculated and visualized using *computeMatrix* and *plotHeatmap* functions of *deepTools* suite (version 2.5.1; (13)). Both average profiles and average heatmaps were performed after excluding genes with length less than 2kb and genes overlapping each other without respect of the strand in the window of visualization. Signal tracks on specific loci were visualized using *pyGenomeTracks* tool (version 2.0;(13)).

The HiC matrix, showing the TAD information in the region chr6:114,760,000-116,080,000 (UCSC coordinates style) has been downloaded form the "3D Genome Browser website" (http://promoter.bx.psu.edu/hi-c/). The query has been inserted in the "HiC" section with the following parameters: "Hi-C" as "Dataset Type" (step 1), "mouse" as Species and "mm10" as "assembly" (step 2), the checkbox "Browse Available Hi-C Data" has been flagged and "mESC" as "Tissue" (step 3), "Bonev_2017-raw" as "Type" and "10kb" as "Resolution" have been chosen, finally "chr6" as "Chromosome", "114760000" as "Start" and "116080000" as "End" have been chosen in the box "Option 2: Search by Location" (step 4).

Image analysis

Image analysis derived from (24) with some adaptation. The algorithm performs the 2D segmentation of cell nuclei and the detection of PcG bodies for each slice of the stack, followed by the 3D reconstruction and identification of nuclei and PcG bodies. It then measures the volume of nuclei and the number and volume of the PcG bodies. The algorithm has been implemented in MATLAB following this scheme:

```
[nuclei_n, avg_Ezh2,n] = nuclei_seg(I_dapi,lamin,n, I_Ezh2,n) %Performs 2D
nuclei segmentation of the middle section n of the stack
I_avg,n = imfilter(I_Ezh2,n, fspecial('average', [3,3]))
I_filt,n = I_Ezh2,n - I_avg,n
t_n = isodata_thresh(I_filt,n, avg_Ezh2,n) %Applies ISODATA method to
separate PcG bodies from nuclei regions in the middle section
n of the stack
for each slice n of the stack
      nuclei_n = nuclei_seg(I_dapi,lamin,n) %Performs 2D nuclei
      segmentation
      I_avg,n = imfilter(I_Ezh2,n, fspecial('average', [3,3]))
      I_filt,n = I_Ezh2,n - I_avg,n
```

```
      pcg_n = I_filt,n > t_n %Performs thresholding operation for 2D
      PcG bodies detection
      pcg_vol(:,:,n) = pcg_n(:,:)
      nuclei_vol(:,:,n) = nuclei_n(:,:)
endfor
nuclei_CC = bwconncomp(nuclei_vol)
nuclei_L = labelmatrix(nuclei_CC)
compute volume for each nucleus object in nuclei_CC
exclude nuclei whose volume is less than 10% of mean volumes
{NCL}_M <- identified 3D nuclei
for each nucleus m in {NCL}_M
      NCL_m.PcG = pcg_vol .* {NCL}_M       %3D positions of
      detected PcG bodies within the nucleus NCL_m
      NCL_m.PcG = bwareaopen(NCL_m.PcG,17,6)
      PcG_CC = bwconncomp(NCL_m.PcG)
      compute number of PcG bodies in PcG_CC
      compute volume for each PcG body in PcG_CC
endfor
```

$I_{dapi,lamin}$ is the image obtained by the sum of both images showing the fluorescence of nucleus and lamin.

The function *nuclei_seg* performs a partition of cell image $I_{dapi,lamin}$ in nuclei regions and background implementing a region based segmentation algorithm (25). avg_{Ezh2} is the mean intensity value of the nuclei regions in the image I_{Ezh2} that shows the fluorescence of PcG bodies.

In order to better enhance PcG areas we subtract from the original I_{Ezh2} image its smoothed version obtained by applying an averaging filter of size 3, obtaining the image I_{filt}. The function *isodata_thresh* implements the ISODATA classification algorithm (26) and uses relevant values computed by *nuclei_seg* function in order to extract PcG bodies from the nuclei regions. It sets the initial threshold value of ISODATA method as avg_{Ezh2}. For each slice of the stack, the algorithm separates PcG bodies from nuclei regions by means of a thresholding operation using the threshold value estimated by the function *isodata_thresh* applied to the middle section. *pcg_vol* and *nuclei_vol* are 3D arrays that contain the positions of the detected PcG bodies and nuclei from all slices. 3D reconstructions of nuclei are obtained through the connected components algorithm (*bwconncomp* MATLAB function, using a connectivity of 26). 3D nuclei are then labeled by applying the *labelmatrix* MATLAB function so they can easily separated each from the others.

The algorithm computes the volume of each 3D reconstruction, discarding objects whose volume is less than 10% of mean volumes which are just noise. The algorithm uses the *bwareaopen* function In order to discard too small detected PcG objects

which are probably just noise. 3D reconstructions of PcG bodies are obtained through the connected components algorithm (*bwconncomp* MATLAB function, using a connectivity of 6). The algorithm computes the number of the PcG bodies and the volume of any PcG body. For the 3D multicolor DNA FISH image analysis we used the tool NuCLεD described in (27), which is capable of automatically detecting and localizing fluorescent spots in 3D reconstructed nuclei. We adopted the following parameters: size 9 and standard deviation 7 for the Laplacian of Gaussian (LoG) operator and h=0.5 with a neighborhood size of 15x15 for the h-dome transformation. Fluorescence intensity measurements (Fig 6A and S3G) were executed with imageJ software. Asymmetric or symmetric distribution of pp38 protein in single myofibers was assigned by measuring the relative fluorescence intensity of the two MuSCs with asymmetry achieved when the ratio is higher than 2. For the apico-basal evaluation were considered asymmetric only cell doublets forming an angle between 50° and 90° with the fiber.

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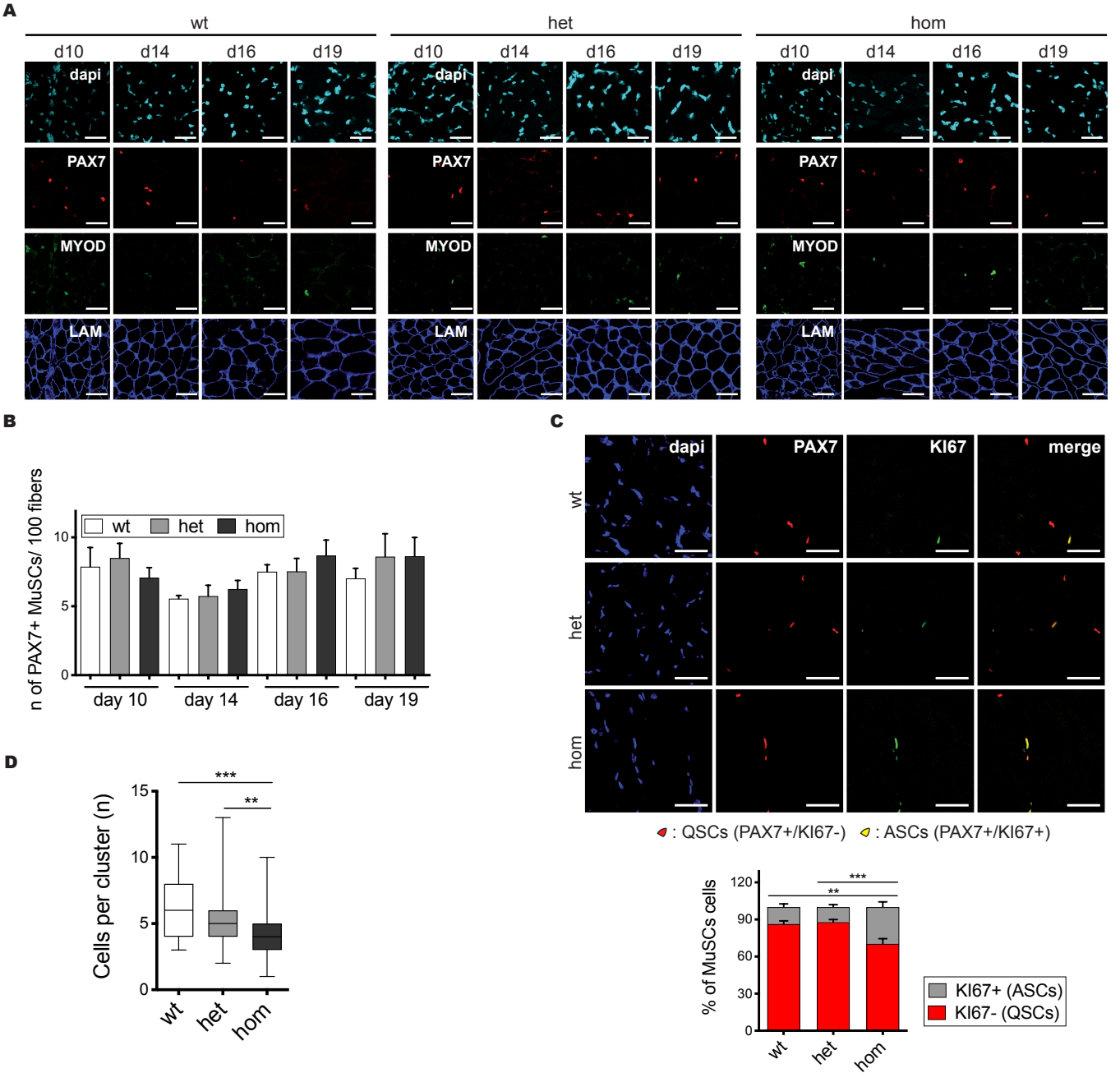
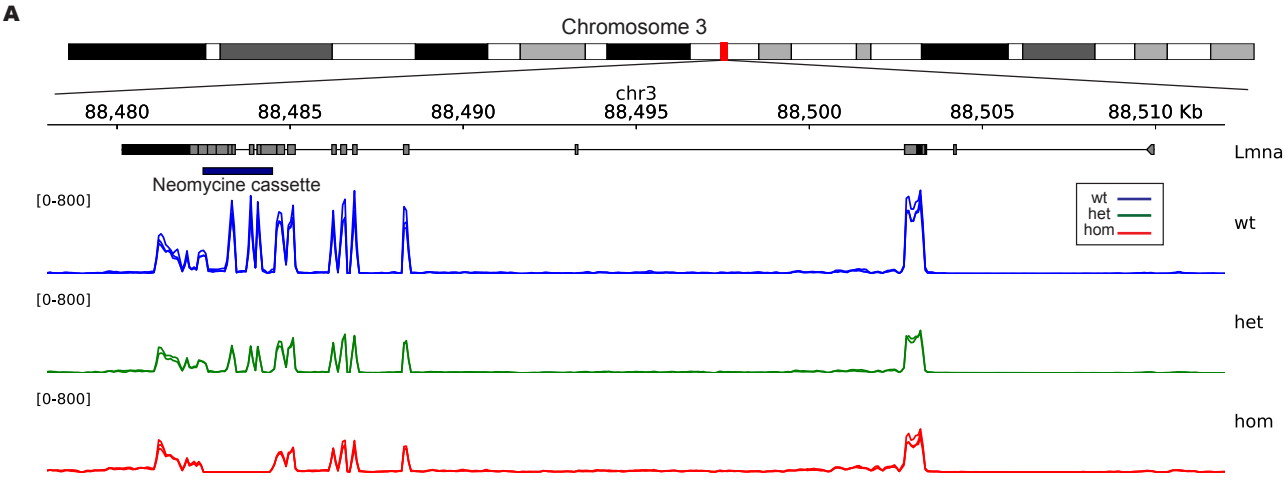
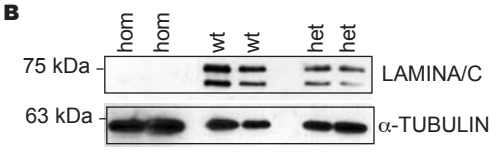
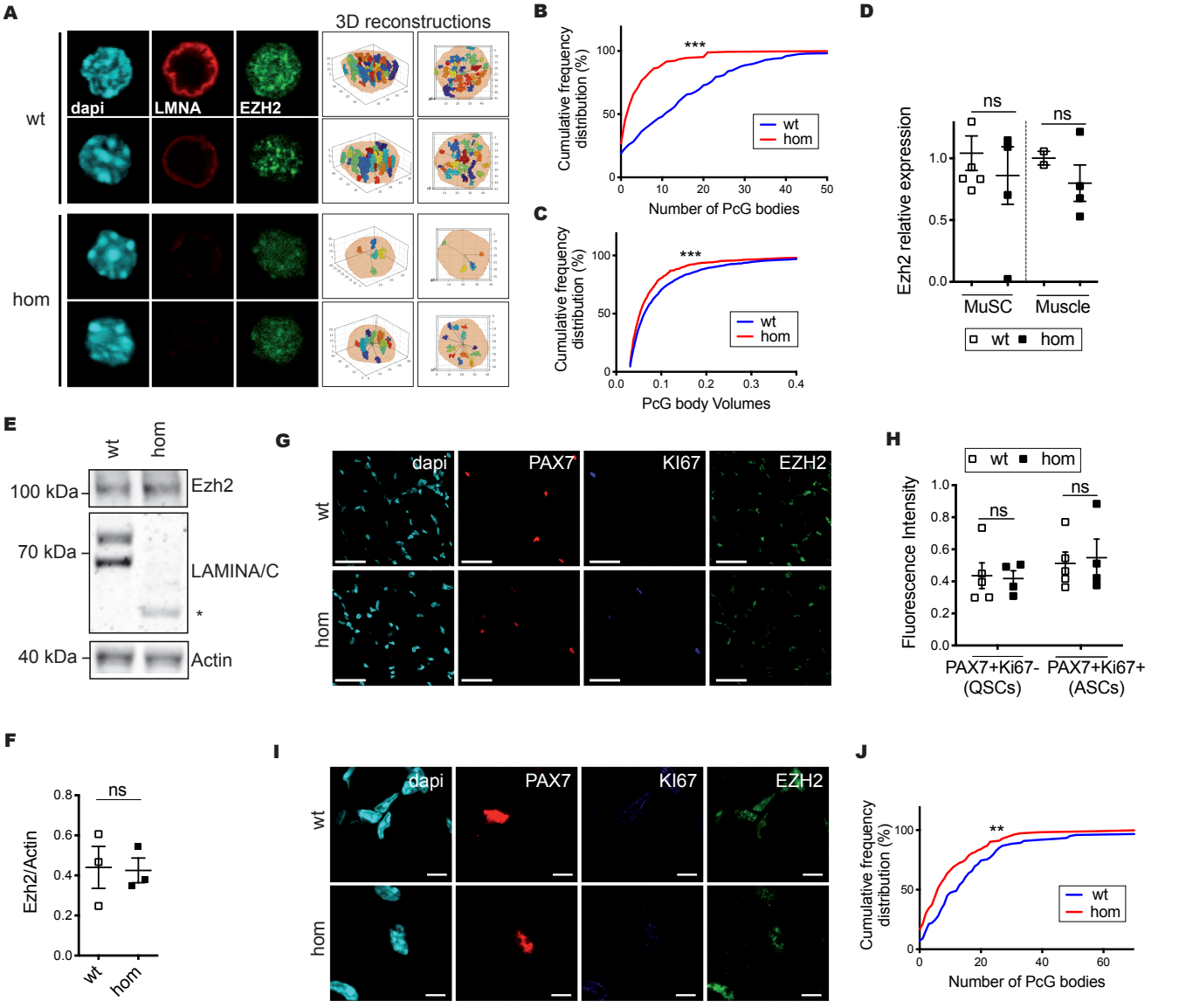
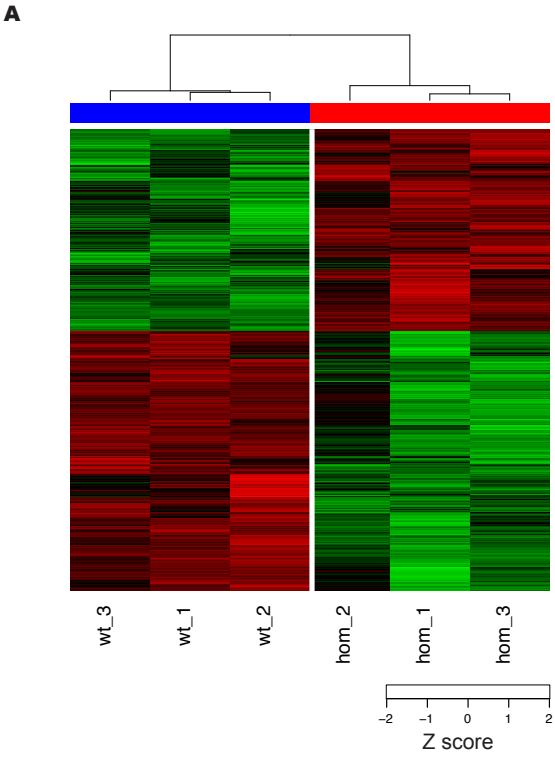
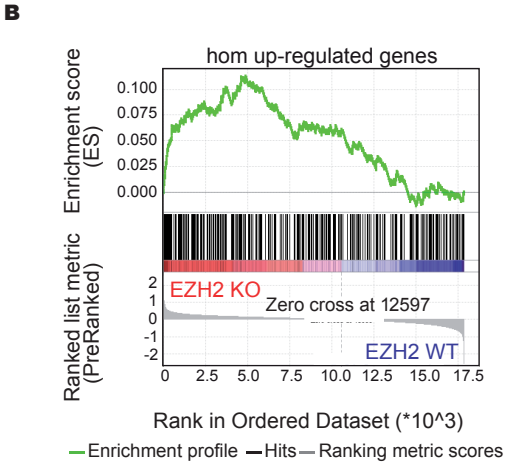

A
wt
het
hom
d10
d14
d16
d19
dapi
PAX7
MYOD
LAM
B
n of PAX7+ MuSCs/ 100 fibers
wt
het
hom
day 10
day 14
day 16
day 19
C
dapi
PAX7
KI67
merge
wt
het
hom
: QSCs (PAX7+/KI67-)
: ASCs (PAX7+/KI67+)
% of MuSCs cells
KI67+ (ASCs)
KI67- (QSCs)
D
Cells per cluster (n)
***
**

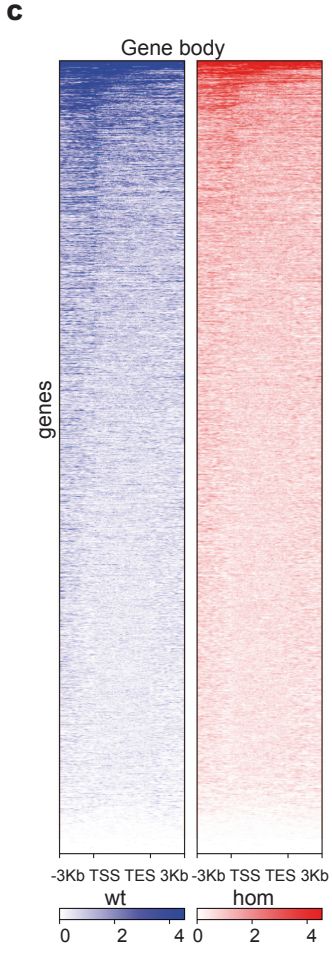

A
Chromosome 3
chr3
88,480
88,485
88,490
88,495
88,500
88,505
88,510 Kb
Lmna
Neomycine cassette
[0-800]
wt
het
hom
wt
het
hom

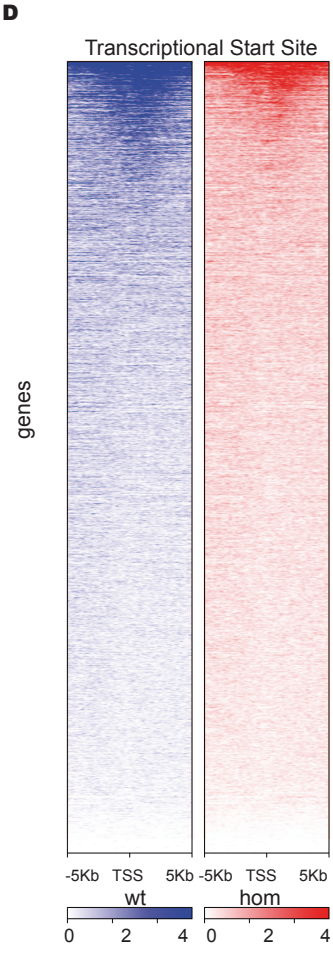

B
hom
hom
wt
wt
het
het
75 kDa
LAMINA/C
63 kDa
α-TUBULIN

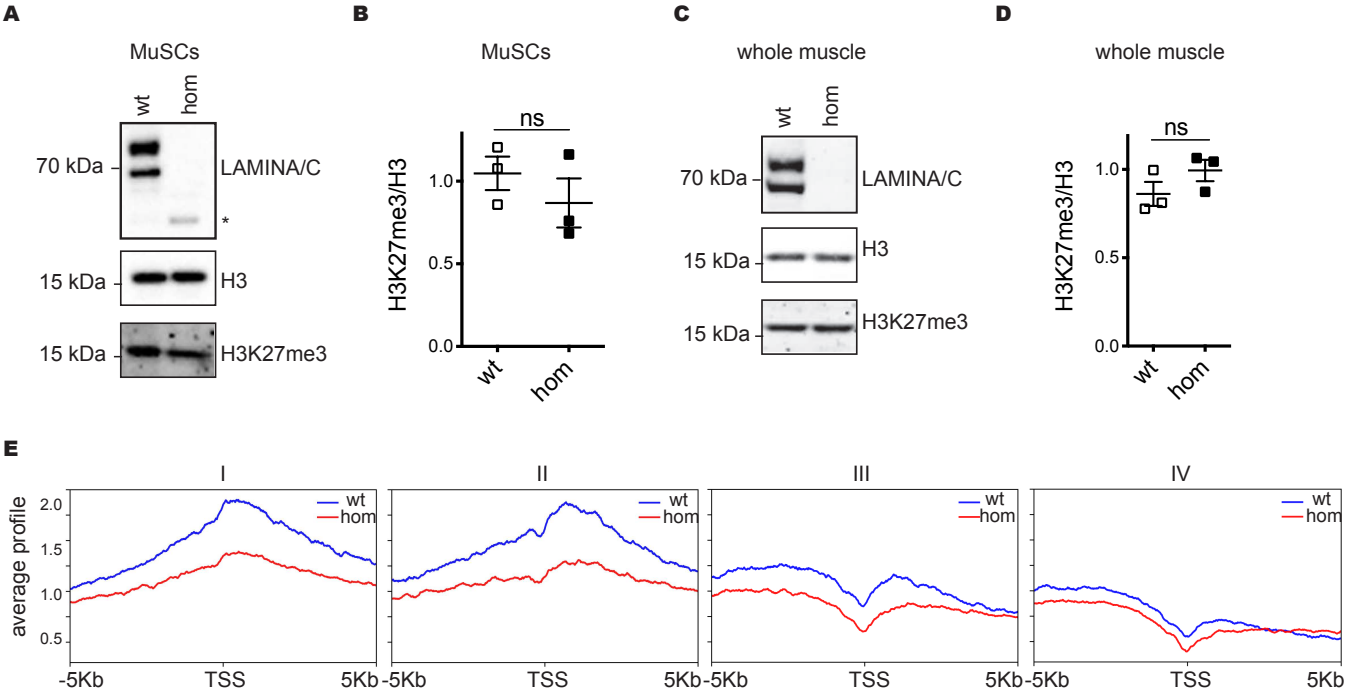

A
3D reconstructions
wt
hom
dapi
LMNA
EZH2
B
Cumulative frequency distribution (%)
***
wt
hom
Number of PcG bodies
C
Cumulative frequency distribution (%)
***
wt
hom
PcG body Volumes
D
Ezh2 relative expression
ns
ns
MuSC
Muscle
wt
hom
E
wt
hom
100 kDa
Ezh2
70 kDa
LAMINA/C
*
40 kDa
Actin
F
Ezh2/Actin
ns
wt
hom
G
dapi
PAX7
KI67
EZH2
wt
hom
H
wt
hom
Fluorescence Intensity
ns
ns
PAX7+Ki67-
(QSCs)
PAX7+Ki67+
(ASCs)
I
dapi
PAX7
KI67
EZH2
wt
hom
J
Cumulative frequency distribution (%)
**
wt
hom
Number of PcG bodies


A
wt_3
wt_1
wt_2
hom_2
hom_1
hom_3
−2 −1 0 1 2
Z score

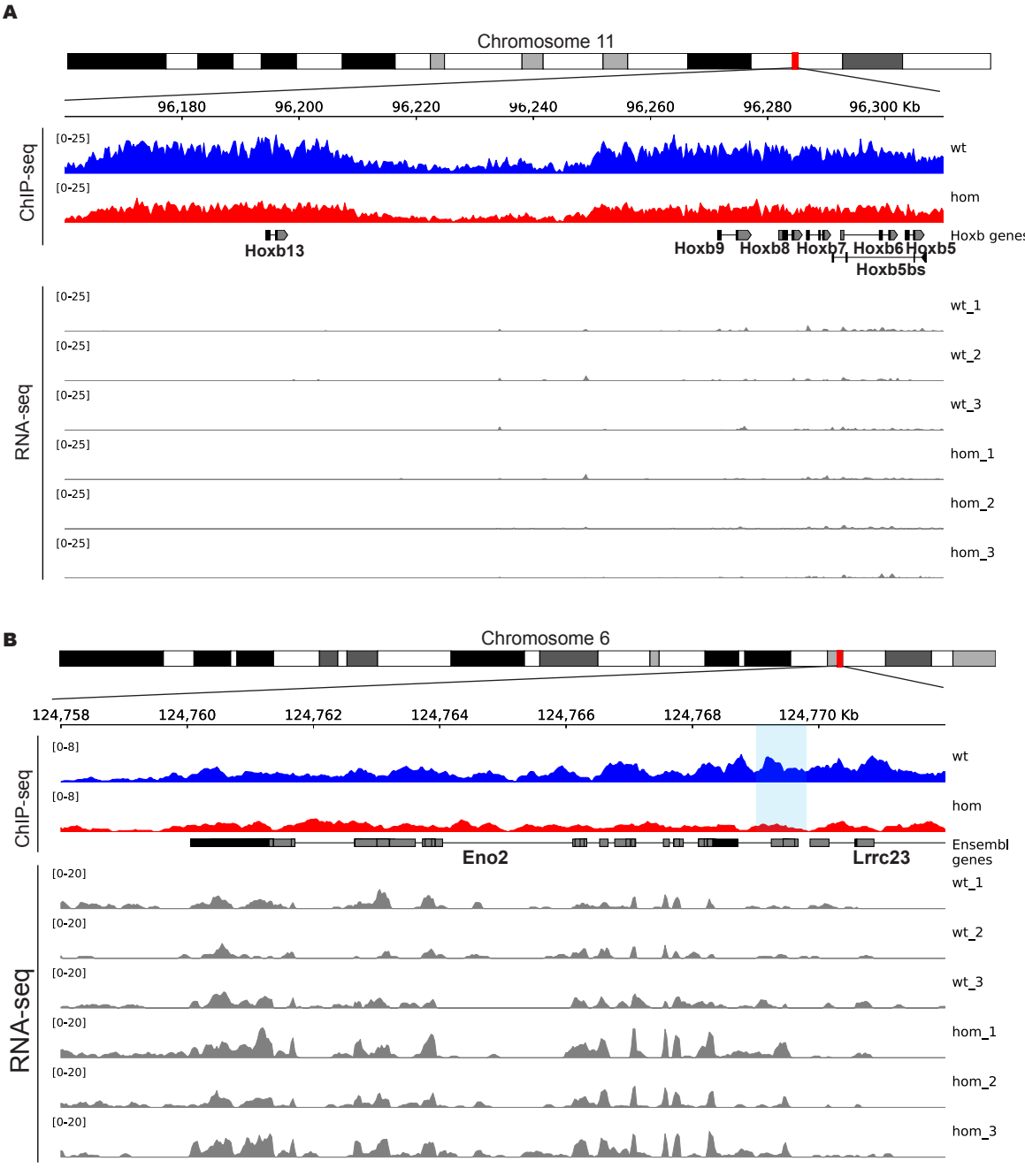

B
hom up-regulated genes
Enrichment score (ES)
0.100
0.075
0.050
0.025
0.000
Ranked list metric (PreRanked)
EZH2 KO
Zero cross at 12597
EZH2 WT
0 2.5 5.0 7.5 10.0 12.5 15.0 17.5
Rank in Ordered Dataset (*10^3)
Enrichment profile Hits Ranking metric scores


C
Gene body
genes
-3Kb TSS TES 3Kb
wt
hom
0 2 4

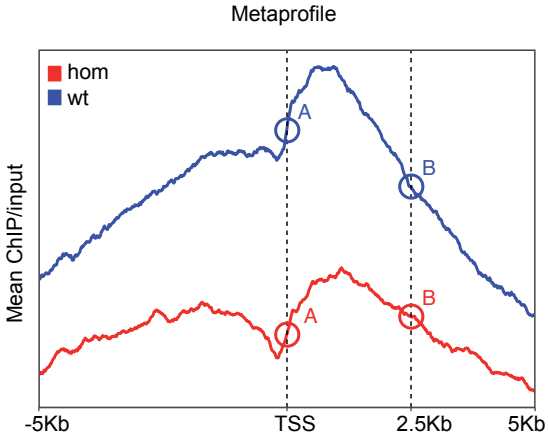

D
Transcriptional Start Site
genes
-5Kb TSS 5Kb
wt
hom
0 2 4


A
MuSCs
wt
hom
70 kDa
LAMINA/C
*
15 kDa
H3
15 kDa
H3K27me3
B
MuSCs
ns
H3K27me3/H3
1.0
0.5
0.0
wt
hom
C
whole muscle
wt
hom
70 kDa
LAMINA/C
15 kDa
H3
15 kDa
H3K27me3
D
whole muscle
ns
H3K27me3/H3
1.0
0.5
0.0
wt
hom

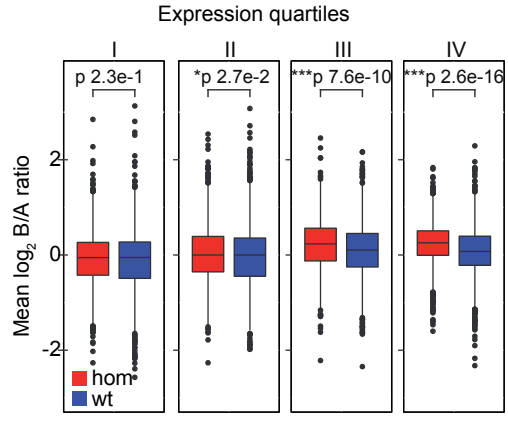
E
I
II
III
IV
average profile
2.0
1.5
1.0
0.5
wt
hom
-5Kb
TSS
5Kb

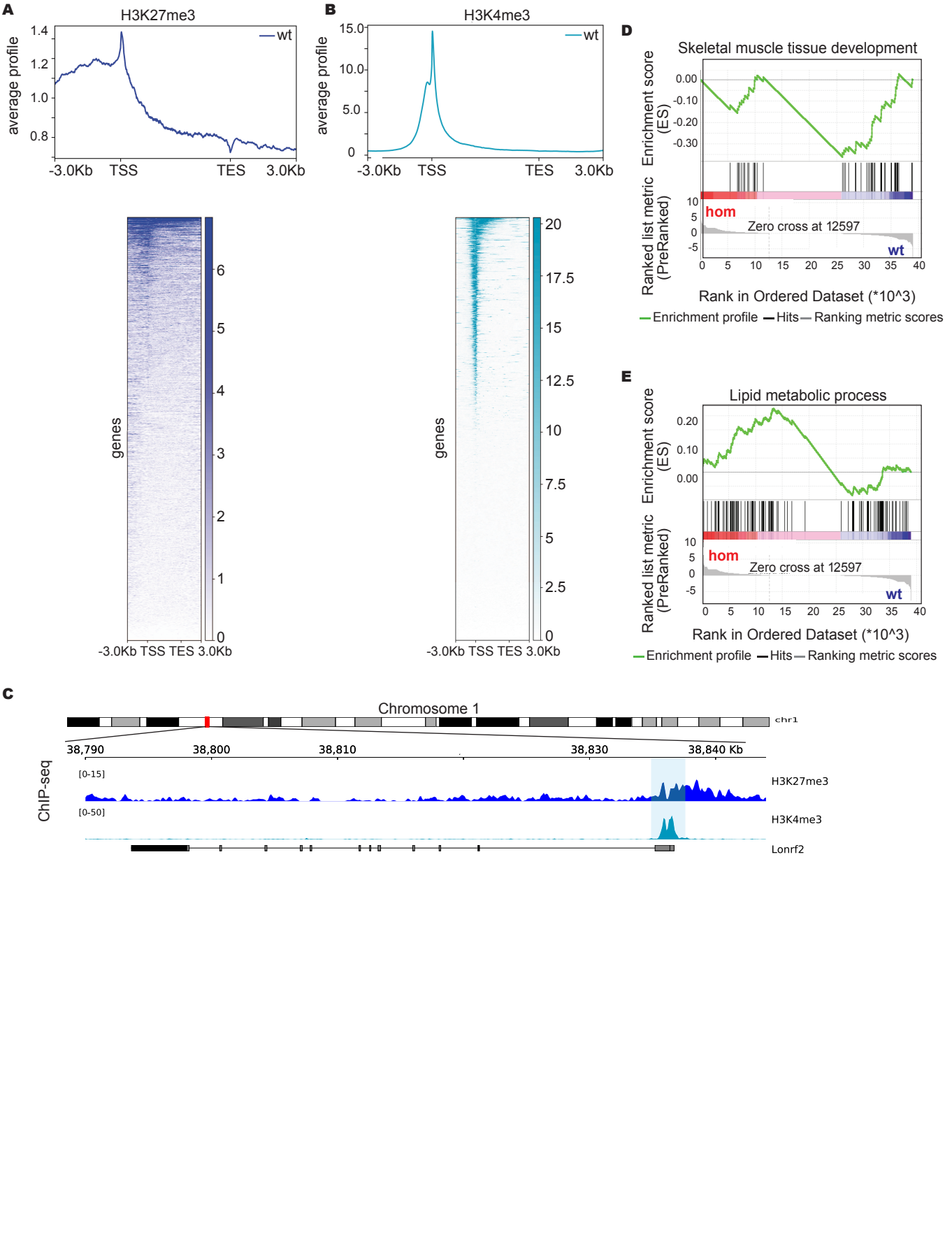

A
Chromosome 11
96,180
96,200
96,220
96,240
96,260
96,280
96,300 Kb
ChIP-seq
[0-25]
wt
[0-25]
hom
Hoxb13
Hoxb9
Hoxb8
Hoxb7
Hoxb6
Hoxb5
Hoxb5bs
Hoxb genes
RNA-seq
[0-25]
wt_1
wt_2
wt_3
hom_1
hom_2
hom_3
B
Chromosome 6
124,758
124,760
124,762
124,764
124,766
124,768
124,770 Kb
ChIP-seq
[0-8]
wt
hom
Eno2
Lrrc23
Ensembl genes
RNA-seq
[0-20]
wt_1
wt_2
wt_3
hom_1
hom_2
hom_3

A

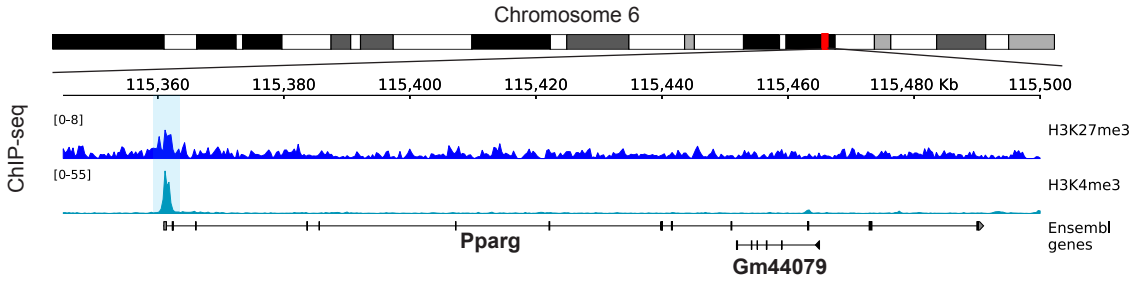

Metaprofile
hom
wt
A
B
A
B
Mean ChIP/input
-5Kb
TSS
2.5Kb
5Kb

B

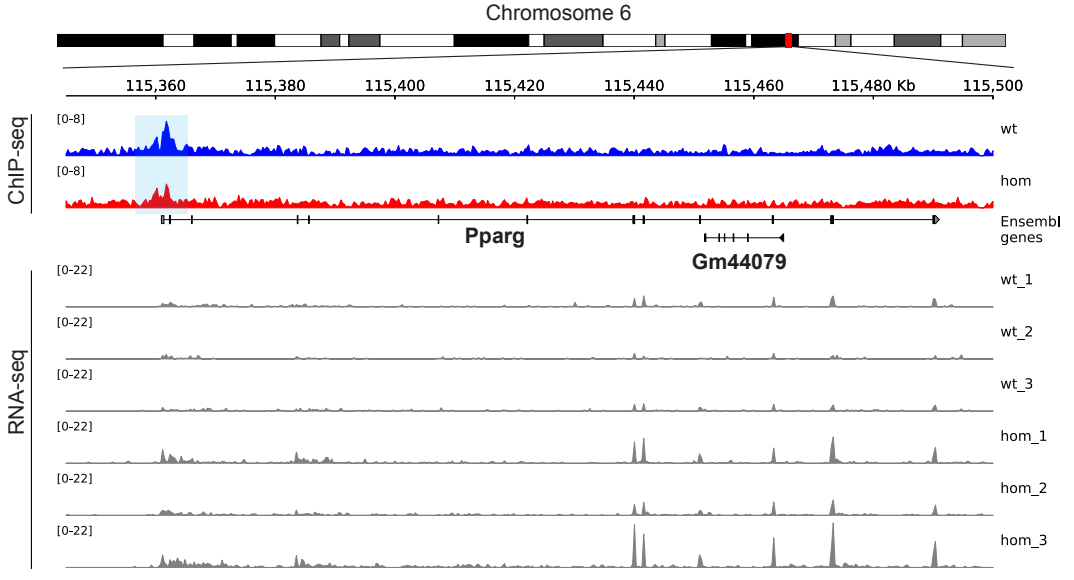

Expression quartiles
I
II
III
IV
p 2.3e-1
*p 2.7e-2
***p 7.6e-10
***p 2.6e-16
Mean log2 B/A ratio
2
0
-2
hom
wt

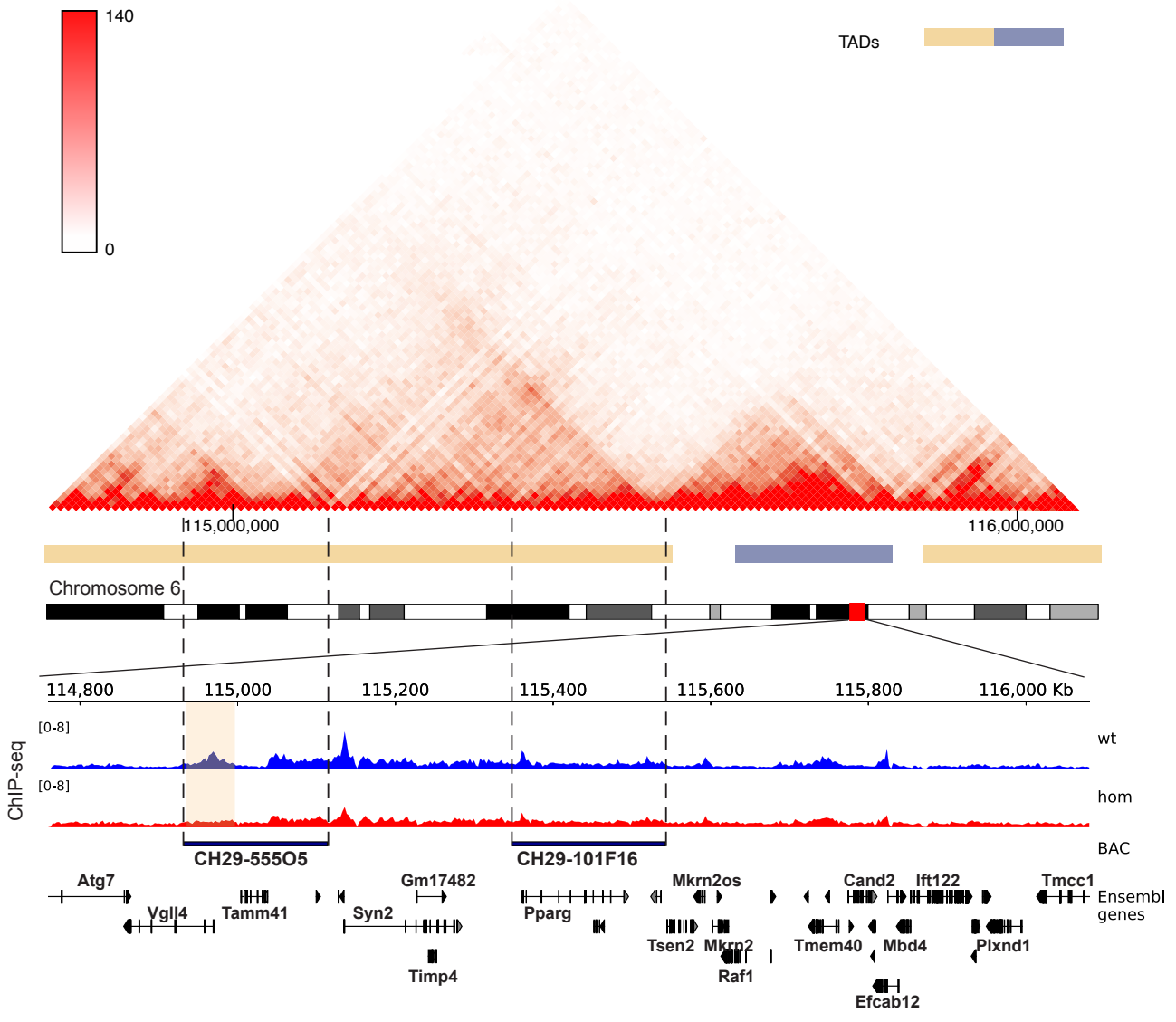

A
H3K27me3
average profile
wt
-3.0Kb TSS TES 3.0Kb
B
H3K4me3
average profile
wt
-3.0Kb TSS TES 3.0Kb
genes
-3.0Kb TSS TES 3.0Kb
genes
-3.0Kb TSS TES 3.0Kb
D
Skeletal muscle tissue development
Enrichment score (ES)
Ranked list metric (PreRanked)
hom
Zero cross at 12597
wt
Rank in Ordered Dataset (*10^3)
Enrichment profile Hits Ranking metric scores
E
Lipid metabolic process
Enrichment score (ES)
Ranked list metric (PreRanked)
hom
Zero cross at 12597
wt
Rank in Ordered Dataset (*10^3)
Enrichment profile Hits Ranking metric scores
C
Chromosome 1
chr1
38,790 38,800 38,810 38,830 38,840 Kb
ChIP-seq
[0-15]
H3K27me3
[0-50]
H3K4me3
Lonrf2

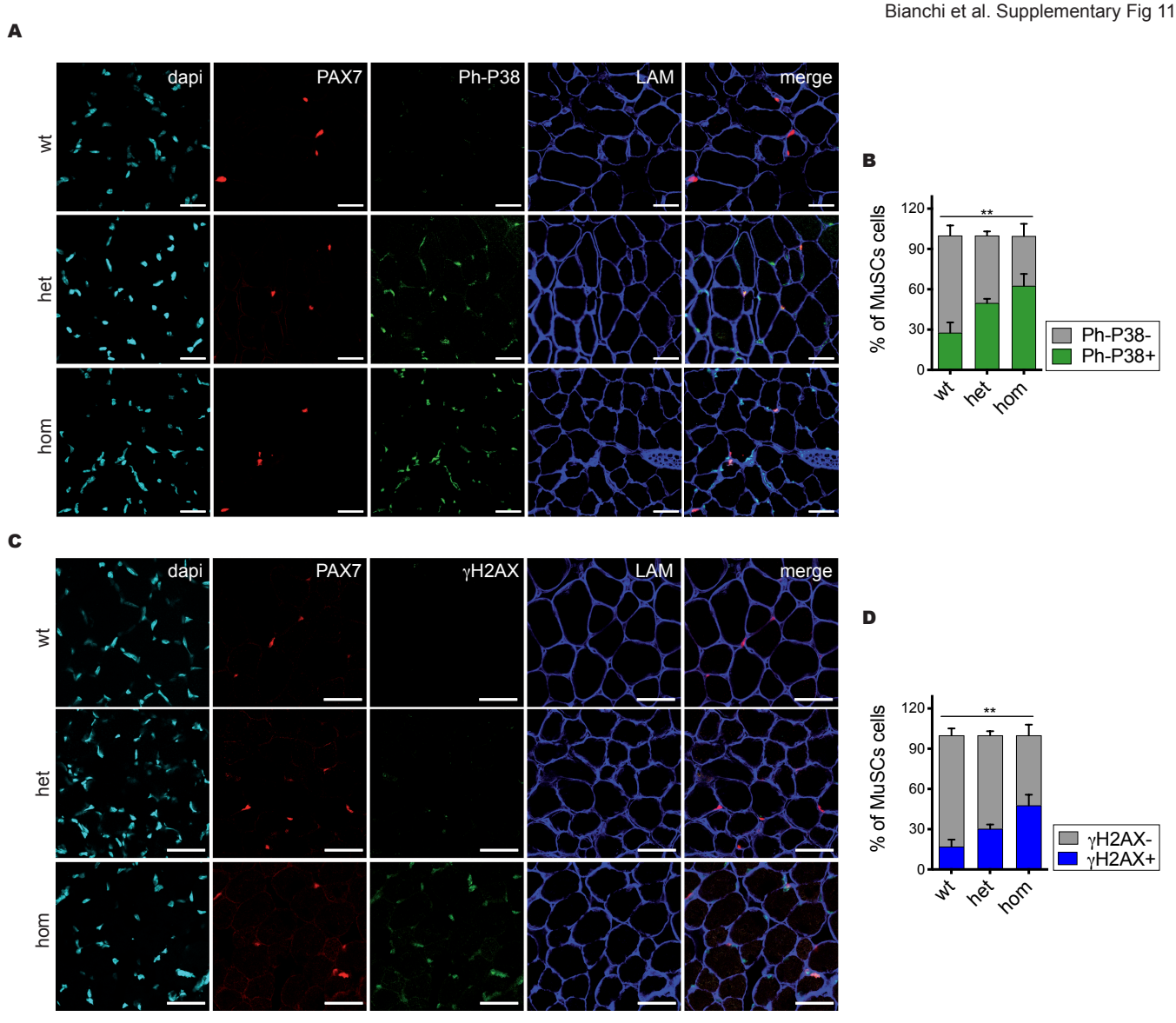
A

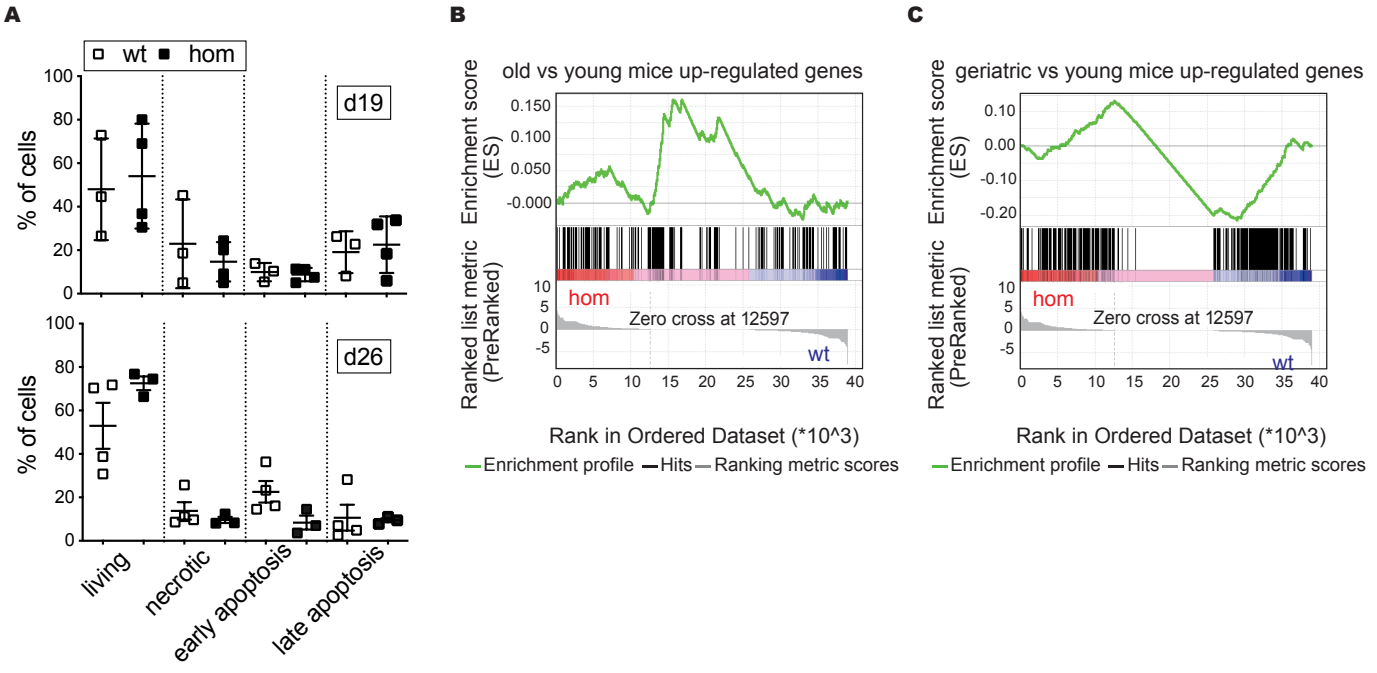

Chromosome 6
115,360
115,380
115,400
115,420
115,440
115,460
115,480 Kb
115,500
ChIP-seq
[0-8]
H3K27me3
[0-55]
H3K4me3
Pparg
Gm44079
Ensembl genes

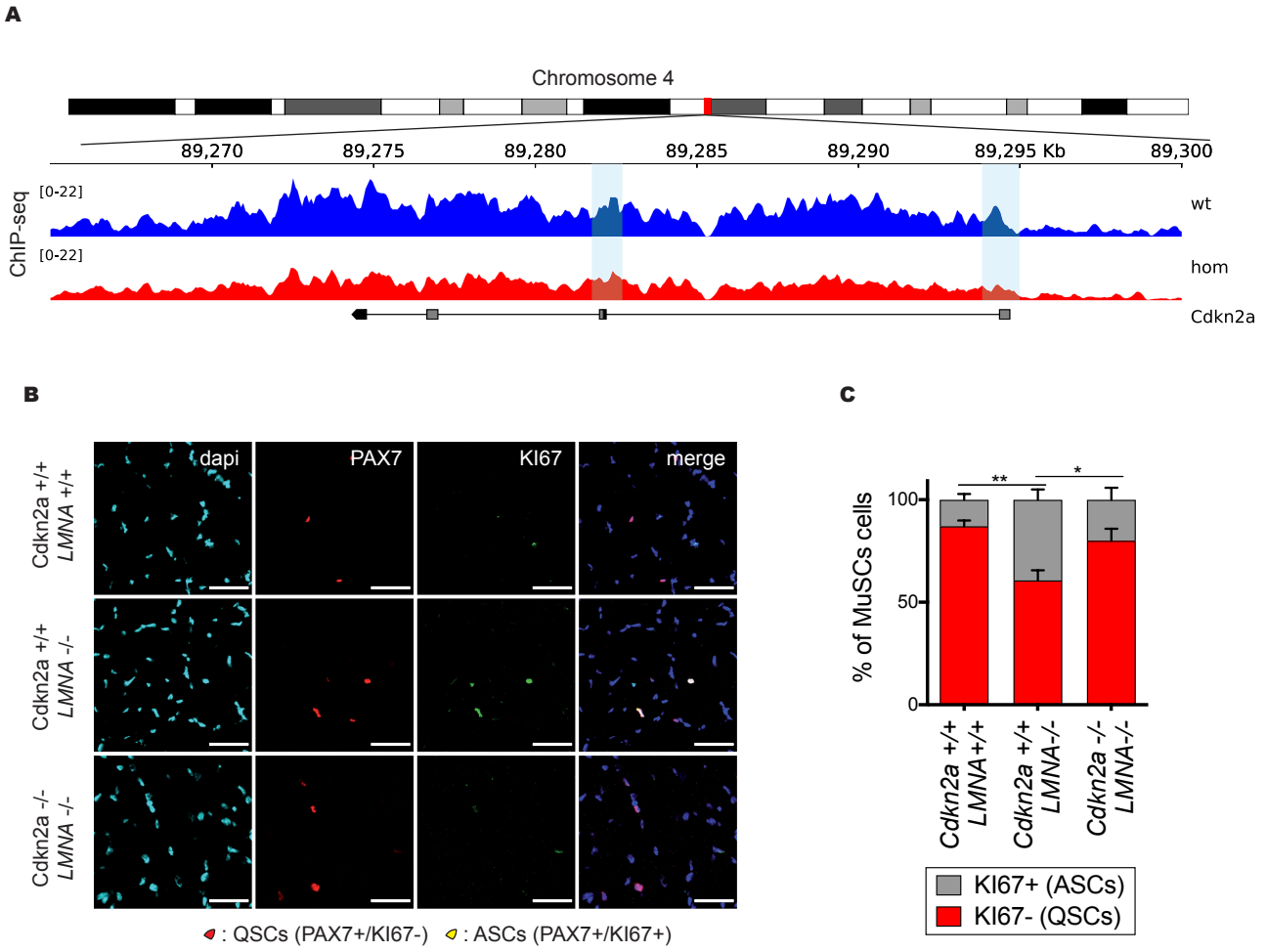
B


Chromosome 6
115,360
115,380
115,400
115,420
115,440
115,460
115,480 Kb
115,500
ChIP-seq
[0-8]
wt
[0-8]
hom
Pparg
Gm44079
Ensembl genes
RNA-seq
[0-22]
wt_1
[0-22]
wt_2
[0-22]
wt_3
[0-22]
hom_1
[0-22]
hom_2
[0-22]
hom_3


140
0
TADs
115,000,000
116,000,000
Chromosome 6
114,800
115,000
115,200
115,400
115,600
115,800
116,000 Kb
ChIP-seq
[0-8]
wt
[0-8]
hom
BAC
CH29-555O5
CH29-101F16
Atg7
Vgll4
Tamm41
Gm17482
Syn2
Timp4
Pparg
Mkrn2os
Tsen2
Mkrn2
Raf1
Cand2
Ift122
Tmem40
Mbd4
Efcab12
Plxnd1
Tmcc1
Ensembl genes


A
dapi
PAX7
Ph-P38
LAM
merge
wt
het
hom
B
% of MuSCs cells
120
90
60
30
0
**
wt
het
hom
Ph-P38-
Ph-P38+
C
dapi
PAX7
γH2AX
LAM
merge
wt
het
hom
D
% of MuSCs cells
120
90
60
30
0
**
wt
het
hom
γH2AX-
γH2AX+


A
wt
hom
d19
d26
% of cells
living
necrotic
early apoptosis
late apoptosis
B
old vs young mice up-regulated genes
Enrichment score (ES)
Ranked list metric (PreRanked)
hom
wt
Zero cross at 12597
Rank in Ordered Dataset (*10^3)
Enrichment profile
Hits
Ranking metric scores
C
geriatric vs young mice up-regulated genes
Enrichment score (ES)
Ranked list metric (PreRanked)
hom
wt
Zero cross at 12597
Rank in Ordered Dataset (*10^3)
Enrichment profile
Hits
Ranking metric scores


A
Chromosome 4
89,270
89,275
89,280
89,285
89,290
89,295 Kb
89,300
ChIP-seq
[0-22]
wt
[0-22]
hom
Cdkn2a
B
dapi
PAX7
KI67
merge
Cdkn2a +/+ LMNA +/+
Cdkn2a +/+ LMNA -/-
Cdkn2a -/- LMNA -/-
: QSCs (PAX7+/KI67-)
: ASCs (PAX7+/KI67+)
C
% of MuSCs cells
100
50
0
**
*
Cdkn2a +/+ LMNA+/+
Cdkn2a +/+ LMNA-/-
Cdkn2a -/- LMNA-/-
KI67+ (ASCs)
KI67- (QSCs)

Supplementary Table S1: Characterization of GO:0006629 lipid metabolic process genes - all genes							
Ensembl_ID	Gene_name	logFC	PValue	FDR	up-regulated in mutant	Polycomb target in wt (5kb)	bivalent in wt
ENSMUSG00000032081	Apoc3	9,343952501	5,95E-14	7,83E-12	yes	yes	no
ENSMUSG00000027513	Pck1	6,991887325	7,31E-12	6,69E-10	yes	yes	no
ENSMUSG00000040564	Apoc1	6,58869164	4,71E-13	5,38E-11	yes	no	no
ENSMUSG00000030935	Acsm3	5,810318241	2,06E-09	1,06E-07	yes	yes	no
ENSMUSG00000022878	Adipoq	5,578611362	1,64E-15	3,14E-13	yes	no	no
ENSMUSG00000025479	Cyp2e1	5,535216852	2,88E-17	9,21E-15	yes	yes	no
ENSMUSG00000056973	Ces1d	5,309075574	7,46E-09	3,25E-07	yes	no	no
ENSMUSG00000037686	Aspg	4,265370967	1,20E-11	1,06E-09	yes	no	yes
ENSMUSG00000045502	Hcar2	3,213484639	2,10E-05	0,000313773	yes	yes	no
ENSMUSG00000031980	Agt	2,9824302	2,33E-06	4,85E-05	yes	yes	no
ENSMUSG00000028150	Rorc	2,420780664	3,21E-15	5,83E-13	yes	yes	yes
ENSMUSG00000031906	Smpd3	2,220827944	4,55E-08	1,60E-06	yes	yes	yes
ENSMUSG00000002108	Nr1h3	2,143356062	1,90E-12	2,00E-10	yes	no	no
ENSMUSG00000002847	Pla1a	2,142876121	3,25E-09	1,59E-07	yes	no	no
ENSMUSG00000024030	Abcg1	2,12899818	1,24E-14	1,88E-12	yes	yes	yes
ENSMUSG00000020892	Aloxe3	1,790110786	0,000386166	0,00354358	yes	yes	no
ENSMUSG00000038007	Acer2	1,762409664	2,59E-09	1,31E-07	yes	yes	yes
ENSMUSG00000015243	Abca1	1,711984873	2,81E-14	4,01E-12	yes	no	no
ENSMUSG00000000440	Pparg	1,703255632	4,97E-07	1,30E-05	yes	yes	yes
ENSMUSG00000022479	Vdr	1,697074001	8,98E-05	0,00105638	yes	yes	no
ENSMUSG00000052974	Cyp2f2	1,686084363	0,011578053	0,051610641	no	no	no
ENSMUSG00000036833	Pnpla7	1,68454833	9,56E-15	1,51E-12	yes	no	no
ENSMUSG00000042010	Acacb	1,639161558	1,72E-06	3,72E-05	yes	no	no
ENSMUSG00000022040	Ephx2	1,534155625	0,000729511	0,005993562	yes	yes	no
ENSMUSG00000000686	Abhd15	1,501493916	0,002122487	0,013924272	yes	yes	no
ENSMUSG00000020593	Lpin1	1,491830861	6,75E-09	2,98E-07	yes	no	no
ENSMUSG00000005373	Mlxipl	1,483030171	6,27E-06	0,000114124	yes	no	no
ENSMUSG00000022548	Apod	1,455350492	1,54E-08	6,16E-07	yes	no	no
ENSMUSG00000005672	Kit	1,44455108	2,91E-07	8,23E-06	yes	yes	yes
ENSMUSG00000021684	Pde8b	1,370523046	6,71E-05	0,000829996	yes	yes	yes
ENSMUSG00000020777	Acox1	1,367443725	4,54E-08	1,60E-06	yes	no	no
ENSMUSG00000025509	Pnpla2	1,362826501	2,23E-15	4,21E-13	yes	no	no
ENSMUSG00000031425	Plp1	1,342541504	5,22E-09	2,37E-07	yes	no	no
ENSMUSG00000028794	A3galt2	1,22621756	0,003638562	0,02118286	yes	no	no
ENSMUSG00000022853	Ehhadh	1,198277052	0,000185656	0,001922881	yes	no	no
ENSMUSG00000020538	Srebf1	1,168693464	5,92E-10	3,46E-08	yes	no	no
ENSMUSG00000003123	Lipe	1,156723965	0,000101077	0,00116393	yes	no	no
ENSMUSG00000061878	Sphk1	1,136387663	7,65E-06	0,000134159	yes	yes	yes
ENSMUSG00000019139	Isyna1	1,10035843	4,71E-11	3,54E-09	yes	no	yes
ENSMUSG00000032652	Crebl2	1,077329908	7,09E-12	6,53E-10	yes	no	no
ENSMUSG00000024892	Pcx	1,076024367	0,000799902	0,006406172	yes	yes	yes
ENSMUSG00000042821	Snai1	1,027308894	0,001242229	0,009143199	yes	yes	no
ENSMUSG00000024620	Pdgfrb	1,019837154	4,97E-08	1,74E-06	yes	no	no
ENSMUSG00000063415	Cyp26b1	0,981704871	0,000223189	0,002245302	yes	no	no
ENSMUSG00000003809	Gcdh	0,960005352	2,16E-05	0,000322923	yes	yes	no
ENSMUSG00000049115	Agtr1a	0,947485202	0,000897794	0,007067185	yes	no	no
ENSMUSG00000062515	Fabp4	0,944433977	4,27E-05	0,000566377	yes	no	no
ENSMUSG00000030703	Gdpd3	0,940422103	0,003004217	0,018200786	yes	no	no
ENSMUSG00000038150	Ormdl3	0,919254386	2,69E-05	0,000385968	yes	no	no
ENSMUSG00000019726	Lyst	0,908492983	3,77E-07	1,02E-05	yes	no	no
ENSMUSG00000033849	B3galt2	0,893752779	0,005098829	0,027649322	yes	no	no
ENSMUSG00000004035	Gstm7	0,878211367	0,032308752	0,110790057	no	no	no
ENSMUSG00000020263	Appl2	0,877822136	9,53E-07	2,27E-05	yes	no	no
ENSMUSG00000029231	Pdgfra	0,877255241	0,000184232	0,001912166	yes	yes	yes
ENSMUSG00000022555	Dgat1	0,865985364	7,95E-05	0,000954735	yes	no	no
ENSMUSG00000031666	Rbl2	0,843804724	8,00E-07	1,95E-05	yes	no	no
ENSMUSG00000023019	Gpd1	0,843033024	0,013277535	0,057296085	no	no	no
ENSMUSG00000030747	Dgat2	0,833065039	3,41E-05	0,00047152	yes	yes	yes
ENSMUSG00000024843	Chka	0,829053584	7,75E-05	0,000932863	yes	no	no
ENSMUSG00000027452	Acss1	0,828964606	7,53E-06	0,000132142	yes	yes	yes
ENSMUSG00000020889	Nr1d1	0,825069909	5,33E-07	1,37E-05	yes	no	no
ENSMUSG00000005533	Igf1r	0,819566952	4,02E-06	7,75E-05	yes	no	yes
ENSMUSG00000032462	Pik3cb	0,800945481	0,000742125	0,006055408	yes	yes	yes
ENSMUSG00000031574	Star	0,783523187	0,050781944	0,152729522	no	no	no
ENSMUSG00000024525	Impa2	0,768599071	0,00618597	0,0320348	yes	no	no
ENSMUSG00000026170	Cyp27a1	0,767225455	0,000410466	0,003717927	yes	yes	no
ENSMUSG00000040249	Lrp1	0,760022301	2,41E-06	4,97E-05	yes	yes	no
ENSMUSG00000027332	Ivd	0,75515174	1,89E-05	0,000287317	yes	yes	no
ENSMUSG00000006127	Inpp5k	0,753168765	1,61E-06	3,50E-05	yes	no	no
ENSMUSG00000009905	Kdsr	0,746529704	1,00E-05	0,000168602	yes	no	no
ENSMUSG00000006731	B4galnt1	0,741328174	0,045626481	0,141619982	no	no	yes
ENSMUSG00000056666	Retsat	0,737481407	0,026891216	0,096929474	no	no	no
ENSMUSG00000074604	Mgst2	0,734303903	0,302333958	0,508363324	no	no	no
ENSMUSG00000029098	Acox3	0,723496205	3,39E-06	6,67E-05	yes	yes	no
ENSMUSG00000049922	Slc35c1	0,722445297	0,017953505	0,071892123	no	yes	no
ENSMUSG00000058793	Cds2	0,717810285	2,03E-06	4,32E-05	yes	no	no
ENSMUSG00000024087	Cyp1b1	0,716606093	0,050408839	0,151970085	no	yes	yes
ENSMUSG00000031808	Slc27a1	0,713018115	0,000363294	0,003365154	yes	yes	no
ENSMUSG00000034614	Pik3ip1	0,708849344	9,11E-05	0,001069391	yes	no	no
ENSMUSG00000002985	Apoe	0,707021891	0,000130497	0,001438593	yes	no	no
ENSMUSG00000039936	Pik3cd	0,696199916	0,001683938	0,011654621	yes	no	no
ENSMUSG00000031760	Mt3	0,687627428	0,059389827	0,171239892	no	yes	yes
ENSMUSG00000038349	Plcl1	0,687562171	0,000335358	0,003160045	yes	yes	yes
ENSMUSG00000021259	Cyp46a1	0,686206878	0,244886087	0,444008652	no	yes	yes

ENSMUSG00000041653	Pnpla3	0,686041824	0,057585358	0,167083758	no	yes	no
ENSMUSG00000061740	Cyp2d22	0,683740661	3,81E-05	0,000516616	yes	no	no
ENSMUSG00000024646	Cyb5a	0,675918708	0,000661039	0,005534836	yes	no	no
ENSMUSG00000024664	Fads3	0,669366754	9,36E-05	0,001094934	yes	no	no
ENSMUSG00000029727	Cyp3a13	0,668948297	0,24982835	0,449703244	no	yes	no
ENSMUSG00000020937	Plcd3	0,665604886	2,67E-05	0,000384858	yes	no	no
ENSMUSG00000027134	Lpcat4	0,662138541	0,092721847	0,233756824	no	yes	yes
ENSMUSG00000038967	Pdk2	0,660395108	0,000532172	0,004602362	yes	yes	no
ENSMUSG00000021948	Prkcd	0,659161302	7,55E-05	0,000915635	yes	no	yes
ENSMUSG00000025353	Ormdl2	0,652750098	0,017277348	0,069868418	no	no	no
ENSMUSG00000039958	Etfbkmt	0,647239952	0,00382294	0,021985266	yes	no	no
ENSMUSG00000032594	Ip6k1	0,644202893	7,70E-05	0,000929481	yes	no	no
ENSMUSG00000023045	Soat2	0,637605179	0,155785966	0,331818954	no	no	no
ENSMUSG00000026784	Pdss1	0,636036272	0,049096693	0,148969117	no	no	no
ENSMUSG00000017969	Ptgis	0,633325032	0,003719048	0,021530717	yes	yes	yes
ENSMUSG00000029598	Plbd2	0,631974032	0,000118907	0,001334803	yes	no	no
ENSMUSG00000028158	Mttp	0,625054734	0,015603365	0,06453422	no	no	no
ENSMUSG00000055866	Per2	0,620225987	0,000707236	0,005850892	yes	yes	no
ENSMUSG00000004565	Pnpla6	0,61094626	0,00109307	0,008268482	yes	no	no
ENSMUSG00000029482	Aacs	0,609183746	0,00944619	0,044194246	yes	no	no
ENSMUSG00000046110	Serinc4	0,600402047	0,300839714	0,507010792	no	no	no
ENSMUSG00000016933	Plcg1	0,594650049	0,000154386	0,001653669	yes	no	no
ENSMUSG00000075000	Nrbf2	0,58784792	0,040466714	0,129535701	no	no	no
ENSMUSG00000024659	Anxa1	0,586910271	0,0001773	0,00185328	yes	no	no
ENSMUSG00000019996	Map7	0,583420859	0,017234849	0,069754012	no	yes	yes
ENSMUSG00000037071	Scd1	0,57117515	0,000581383	0,004955215	yes	yes	yes
ENSMUSG00000037225	Fgf2	0,566063639	0,013584205	0,058227059	no	yes	yes
ENSMUSG00000063810	Alms1	0,56387624	0,000234643	0,002338176	yes	yes	no
ENSMUSG00000040618	Pck2	0,563513898	0,001040769	0,007954564	yes	yes	no
ENSMUSG00000039529	Atp8b1	0,562202237	0,003314248	0,019666494	yes	yes	yes
ENSMUSG00000018167	Stard3	0,551280824	0,007392111	0,036942997	yes	no	no
ENSMUSG00000048486	Fitm2	0,544516502	0,021294031	0,081353692	no	yes	no
ENSMUSG00000053113	Socs3	0,543270479	0,00040927	0,003709368	yes	no	no
ENSMUSG00000022383	Ppara	0,543084054	0,06747471	0,187361902	no	yes	yes
ENSMUSG00000007783	Cpt1c	0,542154744	0,01780181	0,071401161	no	no	no
ENSMUSG00000029330	Cds1	0,536564395	0,202563491	0,392082415	no	yes	yes
ENSMUSG00000022843	Clcn2	0,521001938	0,000694369	0,005771255	yes	no	no
ENSMUSG00000030168	Adipor2	0,520055596	0,009039609	0,042822566	yes	no	no
ENSMUSG00000003068	Stk11	0,515921498	0,000623403	0,005258576	yes	no	no
ENSMUSG00000023021	Cers5	0,508901313	0,001022406	0,00785498	yes	no	no
ENSMUSG00000074207	Adh1	0,508780209	0,050471579	0,152044471	no	no	no
ENSMUSG00000027533	Fabp5	0,507843073	0,007081576	0,035669441	yes	no	no
ENSMUSG00000028093	Acp6	0,502847435	0,009925322	0,045910849	yes	no	no
ENSMUSG00000034593	Myo5a	0,498091728	0,003038776	0,018349771	yes	no	no
ENSMUSG00000036257	Pnpla8	0,496501846	0,002053946	0,013563253	yes	no	no
ENSMUSG00000024799	Tm7sf2	0,495744851	0,120331799	0,280374424	no	no	no
ENSMUSG00000037526	Atg14	0,493876429	0,023313176	0,087301412	no	no	no
ENSMUSG00000060063	Alox5ap	0,493262516	0,394634525	0,600850883	no	yes	no
ENSMUSG00000022453	Naga	0,480176291	0,001735413	0,011921249	yes	no	no
ENSMUSG00000037295	Ldlrap1	0,478416899	0,00601642	0,031388533	yes	no	no
ENSMUSG00000030711	Sult1a1	0,478399737	0,001765199	0,012092021	yes	no	no
ENSMUSG00000023963	Cyp39a1	0,477838187	0,020430555	0,079163696	no	no	no
ENSMUSG00000027875	Hmgcs2	0,476109787	0,120622002	0,280784075	no	no	no
ENSMUSG00000041736	Tspo	0,474384432	0,019445407	0,076127581	no	no	no
ENSMUSG00000021460	Auh	0,472918565	0,004092986	0,023149596	yes	yes	no
ENSMUSG00000017707	Serinc3	0,472765262	0,002418783	0,015461733	yes	no	no
ENSMUSG00000032599	Ip6k2	0,472209127	0,001985836	0,013198282	yes	no	no
ENSMUSG00000032540	Abhd5	0,46984844	0,008355861	0,040488587	yes	no	no
ENSMUSG00000027905	Ddx20	0,468902214	0,011183481	0,050364757	no	no	no
ENSMUSG00000033628	Pik3c3	0,466728009	0,003427129	0,020205213	yes	no	no
ENSMUSG00000033579	Fa2h	0,465732022	0,00610164	0,031709584	yes	yes	yes
ENSMUSG00000059743	Fdps	0,462984122	0,201989379	0,391073954	no	no	no
ENSMUSG00000015568	Lpl	0,462783211	0,022489756	0,084887015	no	no	no
ENSMUSG00000004880	Lbr	0,45984949	0,006987541	0,035280256	yes	no	no
ENSMUSG00000018042	Cyb5r3	0,457910363	0,003796926	0,021869817	yes	no	no
ENSMUSG00000019822	Smpd2	0,454043439	0,005305776	0,028561209	yes	no	no
ENSMUSG00000021669	Col4a3bp	0,453892156	0,011427188	0,051123823	no	no	no
ENSMUSG00000005994	Tyrp1	0,453535398	0,048059398	0,146698201	no	no	no
ENSMUSG00000060601	Nr1h2	0,452277082	0,002576847	0,016225652	yes	yes	no
ENSMUSG00000032578	Cish	0,44959387	0,072456811	0,196599838	no	no	yes
ENSMUSG00000034957	Cebpa	0,446564991	0,053086939	0,157443505	no	yes	no
ENSMUSG00000022973	Synj1	0,443432516	0,025475277	0,093365884	no	no	no
ENSMUSG00000041720	Pi4ka	0,443027649	0,002443101	0,015550025	yes	no	no
ENSMUSG00000052534	Pbx1	0,441555792	0,013102102	0,056738535	no	no	no
ENSMUSG00000009281	Rarres2	0,436462224	0,027299178	0,098207692	no	no	no
ENSMUSG00000015659	Serac1	0,435861002	0,046464767	0,143405928	no	no	no
ENSMUSG00000020334	Slc22a4	0,435683504	0,135557849	0,303741974	no	yes	no
ENSMUSG00000020063	Sirt1	0,435672614	0,023717525	0,088388591	no	no	no
ENSMUSG00000017715	Pgs1	0,434145763	0,017538939	0,070616046	no	no	no
ENSMUSG00000030341	Tnfrsf1a	0,433574243	0,01613155	0,066179798	no	no	no
ENSMUSG00000025235	Bbs4	0,430928195	0,031178529	0,108122764	no	no	no
ENSMUSG00000028991	Mtor	0,428366891	0,003822689	0,021985266	yes	no	no
ENSMUSG00000052423	B4galt3	0,428194337	0,023364469	0,08740525	no	no	no
ENSMUSG00000058486	Wdr91	0,428164022	0,013004872	0,056450265	no	no	no
ENSMUSG00000021364	Elovl2	0,421326501	0,429356605	0,631031242	no	yes	yes
ENSMUSG00000053279	Aldh1a1	0,415124494	0,134379343	0,30215862	no	no	no

ENSMUSG00000060733	Ipmk	0,414093236	0,011902394	0,052705491	no	no	no
ENSMUSG00000031918	Mtmr2	0,413978715	0,017938819	0,071866068	no	no	no
ENSMUSG00000036810	Cnep1r1	0,410149816	0,033906209	0,114718732	no	no	no
ENSMUSG00000029635	Cdk8	0,410089204	0,01592337	0,065524548	no	no	no
ENSMUSG00000021003	Galc	0,408977953	0,102855317	0,251427901	no	no	no
ENSMUSG00000003873	Bax	0,40831811	0,065144132	0,182855494	no	no	no
ENSMUSG00000024949	Sf1	0,408200439	0,009179648	0,043334134	yes	no	no
ENSMUSG00000022178	Ajuba	0,404041382	0,078295461	0,207720358	no	yes	no
ENSMUSG00000025178	Pi4k2a	0,402499009	0,01351574	0,058034934	no	no	no
ENSMUSG00000026623	Lpgat1	0,401255735	0,027390161	0,098414808	no	no	no
ENSMUSG00000027695	Pld1	0,400510217	0,017931844	0,071864	no	no	no
ENSMUSG00000030772	Dkk3	0,395634818	0,008421307	0,040705288	yes	yes	yes
ENSMUSG00000025949	Pikfyve	0,39364532	0,026829285	0,096801008	no	no	no
ENSMUSG00000023170	Gps2	0,389596915	0,04167245	0,132363215	no	no	no
ENSMUSG00000030655	Smg1	0,38827814	0,022158744	0,083960377	no	no	no
ENSMUSG00000002603	Tgfb1	0,388014541	0,069094821	0,190204118	no	no	yes
ENSMUSG00000004815	Dgkq	0,387852817	0,027486433	0,098713674	no	yes	no
ENSMUSG00000038037	Socs1	0,383938092	0,100748187	0,247784254	no	no	no
ENSMUSG00000018796	Acsl1	0,379873799	0,050200599	0,151507053	no	no	no
ENSMUSG00000040479	Dgkz	0,377562896	0,031035182	0,107777921	no	yes	yes
ENSMUSG00000029311	Hsd17b11	0,373703646	0,03393428	0,114760983	no	yes	no
ENSMUSG00000034853	Acot11	0,368756398	0,160053698	0,337427311	no	yes	no
ENSMUSG00000029762	Akr1b8	0,361563237	0,282066094	0,486847467	no	no	no
ENSMUSG00000056492	Adgrf5	0,360885362	0,126983305	0,291010863	no	no	no
ENSMUSG00000047250	Ptgs1	0,35430768	0,189258809	0,376371015	no	yes	yes
ENSMUSG00000055782	Abcd2	0,354194668	0,346752167	0,553840789	no	no	no
ENSMUSG00000022105	Rb1	0,353268246	0,03317672	0,112988723	no	no	no
ENSMUSG00000034218	Atm	0,350701171	0,022280425	0,084291316	no	no	no
ENSMUSG00000051413	Plagl2	0,347708361	0,203245423	0,392744382	no	no	no
ENSMUSG00000040268	Plekha1	0,346644381	0,041524372	0,131974742	no	no	no
ENSMUSG00000042105	Inpp5f	0,343556481	0,03548644	0,118513444	no	no	no
ENSMUSG00000017307	Acot8	0,338717538	0,173653066	0,356703257	no	no	no
ENSMUSG00000063856	Gpx1	0,335298753	0,036440804	0,12057968	no	no	no
ENSMUSG00000042759	Apobr	0,333708033	0,493063629	0,682188697	no	yes	no
ENSMUSG00000037622	Wdtc1	0,332419812	0,150132221	0,324167622	no	yes	no
ENSMUSG00000028145	Them4	0,329479689	0,254682156	0,455570011	no	yes	no
ENSMUSG00000014245	Pigl	0,327375894	0,255170706	0,455920678	no	no	no
ENSMUSG00000028670	Lypla2	0,327231086	0,131911988	0,298570733	no	no	no
ENSMUSG00000078919	Dpm1	0,326904773	0,163477217	0,342244841	no	no	no
ENSMUSG00000038894	Irs2	0,325644144	0,042883311	0,135069591	no	yes	no
ENSMUSG00000018401	Mtmr4	0,324922539	0,024492889	0,090544996	no	no	no
ENSMUSG00000013663	Pten	0,317155706	0,061320701	0,175603984	no	yes	yes
ENSMUSG00000035891	Cerk	0,31648258	0,038944689	0,126255202	no	no	no
ENSMUSG00000031982	Arv1	0,316032014	0,34885969	0,555960136	no	no	no
ENSMUSG00000034308	Sdr42e1	0,314414716	0,358754134	0,566437702	no	yes	no
ENSMUSG00000026097	Ormdl1	0,30834118	0,303458805	0,509791408	no	no	no
ENSMUSG00000026113	Inpp4a	0,302381212	0,060361948	0,173364035	no	no	no
ENSMUSG00000002944	Cd36	0,302181845	0,220113994	0,413605373	no	no	no
ENSMUSG00000002250	Ppard	0,297640286	0,20056536	0,389441709	no	no	no
ENSMUSG00000027777	Schip1	0,297252857	0,325539586	0,531251748	no	yes	no
ENSMUSG00000057342	Sphk2	0,294891259	0,166581641	0,34633179	no	no	no
ENSMUSG00000050229	Pigm	0,294857545	0,108400301	0,260339153	no	no	no
ENSMUSG00000032715	Trib3	0,294842638	0,4905274	0,68014381	no	yes	yes
ENSMUSG00000024781	Lipa	0,293106293	0,062183484	0,177076248	no	no	no
ENSMUSG00000072115	Ang	0,292911344	0,44361877	0,642440241	no	no	no
ENSMUSG00000021884	Hacl1	0,292357117	0,177183576	0,361835789	no	no	no
ENSMUSG00000075419	Dolk	0,290169351	0,197145887	0,38554835	no	no	no
ENSMUSG00000026457	Adipor1	0,288501833	0,059739614	0,172012715	no	no	no
ENSMUSG00000020810	Cygb	0,288385766	0,160849502	0,338620849	no	yes	yes
ENSMUSG00000026829	Gbgt1	0,287940243	0,381829449	0,58842567	no	yes	no
ENSMUSG00000022561	Gpaa1	0,28601151	0,257160879	0,458142667	no	no	no
ENSMUSG00000009995	Taz	0,28525592	0,090674051	0,230051236	no	no	no
ENSMUSG00000029513	Prkab1	0,282601152	0,137838356	0,306919396	no	no	no
ENSMUSG00000067713	Prkag1	0,281590403	0,103304914	0,25207886	no	no	no
ENSMUSG00000027665	Pik3ca	0,280932299	0,069182723	0,190346187	no	yes	no
ENSMUSG00000050931	Sgms2	0,280761416	0,192761276	0,380408425	no	yes	no
ENSMUSG00000030842	Lamtor1	0,278802261	0,195805768	0,384273052	no	no	no
ENSMUSG00000075256	Cerkl	0,278709445	0,562358065	0,739987431	no	yes	no
ENSMUSG00000053436	Mapk14	0,275180985	0,055683748	0,162940213	no	no	no
ENSMUSG00000021987	Mtmr6	0,272721585	0,092456354	0,233247204	no	yes	no
ENSMUSG00000024413	Npc1	0,271578232	0,106833184	0,258092471	no	no	no
ENSMUSG00000024985	Tcf7l2	0,270453951	0,242907275	0,441889617	no	no	no
ENSMUSG00000031400	G6pdx	0,268529578	0,293314969	0,498838667	no	no	no
ENSMUSG00000024145	Pigf	0,265906828	0,344381234	0,55166922	no	no	no
ENSMUSG00000038174	Fam126b	0,265206813	0,089999642	0,228773684	no	no	no
ENSMUSG00000024960	Plcb3	0,264715693	0,100010604	0,246437372	no	no	no
ENSMUSG00000029524	Sirt4	0,262299259	0,365646165	0,573080421	no	no	no
ENSMUSG00000031467	Agpat5	0,259396725	0,104312871	0,253811326	no	no	no
ENSMUSG00000029648	Flt1	0,259043506	0,201975139	0,391073954	no	yes	yes
ENSMUSG00000022064	Pibf1	0,255111341	0,147512708	0,320579485	no	no	no
ENSMUSG00000011305	Plin5	0,252733219	0,695475365	0,833744899	no	yes	yes
ENSMUSG00000019577	Pdk4	0,25194924	0,147890373	0,320993432	no	no	no
ENSMUSG00000027357	Crls1	0,250324729	0,276197248	0,480377074	no	no	no
ENSMUSG00000031381	Piga	0,248715613	0,156576594	0,332646758	no	yes	yes
ENSMUSG00000066441	Rdh11	0,246611641	0,184937332	0,370730507	no	no	no
ENSMUSG00000050737	Ptges	0,242948589	0,430823176	0,63232559	no	no	no

ENSMUSG00000028603	Scp2	0,242282348	0,22160382	0,415133688	no	no	no
ENSMUSG00000004270	Lpcat3	0,238041943	0,238768669	0,437223046	no	no	no
ENSMUSG00000031337	Mtm1	0,236918874	0,264351183	0,465546362	no	no	no
ENSMUSG00000072949	Acot1	0,236188778	0,224404801	0,418411685	no	yes	no
ENSMUSG00000028467	Gba2	0,233176792	0,260591931	0,461833531	no	no	no
ENSMUSG00000045374	Wdr81	0,231755641	0,251271291	0,451482277	no	no	no
ENSMUSG00000027605	Acss2	0,230839171	0,229610665	0,424890799	no	yes	no
ENSMUSG00000028894	Inpp5b	0,230274139	0,154703485	0,330117782	no	no	no
ENSMUSG00000090150	Acad11	0,229524739	0,324826447	0,530617116	no	no	no
ENSMUSG00000034902	Pip5k1c	0,229304839	0,190829132	0,37796281	no	no	no
ENSMUSG00000070738	Dgkd	0,228871043	0,136474405	0,305006834	no	no	no
ENSMUSG00000032046	Abhd12	0,228858477	0,168398279	0,349270505	no	no	no
ENSMUSG00000061313	Ddhd2	0,228543825	0,20295459	0,392529902	no	no	no
ENSMUSG00000026944	Abca2	0,227903206	0,216613524	0,409010767	no	no	no
ENSMUSG00000037514	Pank2	0,227540354	0,133541301	0,300779366	no	no	no
ENSMUSG00000010660	Plcd1	0,227066058	0,120322556	0,280374424	no	yes	no
ENSMUSG00000056536	Pign	0,225531571	0,168288752	0,349143869	no	no	no
ENSMUSG00000037270	4932438A13Rik	0,225004736	0,182396077	0,367738457	no	no	no
ENSMUSG00000022617	Chkb	0,221585671	0,131165628	0,297491071	no	no	no
ENSMUSG00000031545	Gpat4	0,220013243	0,14944944	0,323169071	no	no	no
ENSMUSG00000032485	Scap	0,218375554	0,173390641	0,356313292	no	no	no
ENSMUSG00000031516	Dctn6	0,217996698	0,185109894	0,370870109	no	no	no
ENSMUSG00000045140	Pigw	0,217769216	0,52600238	0,711138226	no	no	no
ENSMUSG00000025006	Sorbs1	0,217179462	0,167608008	0,348121667	no	no	no
ENSMUSG00000005069	Pex5	0,21206881	0,156042394	0,332012767	no	no	no
ENSMUSG00000021775	Nr1d2	0,211476394	0,210390251	0,401840138	no	no	no
ENSMUSG00000018559	Ctdnep1	0,208349863	0,279808406	0,484028448	no	no	no
ENSMUSG00000025486	Sirt3	0,205638347	0,381029689	0,587707031	no	no	no
ENSMUSG00000024665	Fads2	0,205254615	0,256820855	0,457647617	no	no	no
ENSMUSG00000026626	Ppp2r5a	0,204981778	0,179899114	0,364851853	no	yes	no
ENSMUSG00000018160	Med1	0,204757923	0,220895658	0,414156741	no	yes	no
ENSMUSG00000035376	Hacd2	0,204180485	0,327058728	0,533134794	no	yes	no
ENSMUSG00000025856	Pdgfa	0,201916829	0,225159175	0,419499599	no	yes	yes
ENSMUSG00000025417	Pip4k2c	0,20173008	0,188372343	0,375216103	no	yes	no
ENSMUSG00000031278	Acsl4	0,195348939	0,302747845	0,508945356	no	no	yes
ENSMUSG00000032238	Rora	0,193935047	0,322147157	0,528114796	no	no	no
ENSMUSG00000020532	Acaca	0,193443665	0,287128037	0,491666287	no	no	no
ENSMUSG00000021367	Edn1	0,193408325	0,582590241	0,755515459	no	yes	yes
ENSMUSG00000023832	Acat2	0,193322809	0,382330914	0,58899055	no	no	no
ENSMUSG00000030660	Pik3c2a	0,193317318	0,227066817	0,421826448	no	no	no
ENSMUSG00000025357	Dgka	0,193139437	0,270930682	0,473622206	no	no	no
ENSMUSG00000021340	Gpld1	0,191334451	0,734359852	0,860790354	no	yes	no
ENSMUSG00000034731	Dgkh	0,190710193	0,250532872	0,450640954	no	no	no
ENSMUSG00000006344	Ggt5	0,188017414	0,386181699	0,593186265	no	yes	no
ENSMUSG00000025059	Gk	0,188005085	0,378966234	0,586344647	no	no	no
ENSMUSG00000033530	Ttc7b	0,184231962	0,25762155	0,458464257	no	no	no
ENSMUSG00000027187	Cat	0,182423783	0,313022813	0,519737561	no	yes	no
ENSMUSG00000020366	Mapk9	0,181204821	0,226464386	0,42123863	no	no	no
ENSMUSG00000030670	Cyp2r1	0,180216613	0,805217145	0,904214263	no	no	no
ENSMUSG00000047866	Lonp2	0,177511561	0,257690862	0,4585322	no	no	no
ENSMUSG00000044968	Napepld	0,176737145	0,463443192	0,658332497	no	no	no
ENSMUSG00000028672	Hmgcl	0,176356122	0,411552012	0,616458272	no	no	no
ENSMUSG00000032051	Fdx1	0,175215755	0,389524104	0,596104634	no	no	no
ENSMUSG00000028577	Plaa	0,173591612	0,260840927	0,462016257	no	no	no
ENSMUSG00000026810	Dpm2	0,173445871	0,387175497	0,593929874	no	no	no
ENSMUSG00000026698	Pigc	0,172967955	0,440163438	0,639902258	no	yes	no
ENSMUSG00000040451	Sgms1	0,172622602	0,245794764	0,445136993	no	no	no
ENSMUSG00000021756	Il6st	0,169332229	0,306636706	0,512965176	no	no	no
ENSMUSG00000087408	Cers1	0,168858311	0,774574967	0,885778408	no	yes	no
ENSMUSG00000021665	Hexb	0,168648645	0,305807502	0,512043302	no	no	no
ENSMUSG00000028910	Mecr	0,166048311	0,512466107	0,699499613	no	no	no
ENSMUSG00000030790	Adm	0,163784152	0,356829376	0,564487975	no	yes	yes
ENSMUSG00000012117	Dhdds	0,163226378	0,397107734	0,602812804	no	yes	no
ENSMUSG00000040506	Ambra1	0,159860094	0,342757396	0,549725681	no	yes	no
ENSMUSG00000078937	Cpt1b	0,158502939	0,817873545	0,91268689	no	no	no
ENSMUSG00000026435	Slc45a3	0,155569981	0,754892287	0,875023894	no	yes	yes
ENSMUSG00000026883	Dab2ip	0,154244914	0,332807748	0,5385504	no	yes	no
ENSMUSG00000008206	Cers4	0,152615823	0,330675405	0,536778062	no	no	no
ENSMUSG00000048379	Socs4	0,151089714	0,38691678	0,593656665	no	no	no
ENSMUSG00000027195	Hsd17b12	0,149468747	0,451292532	0,648617762	no	no	no
ENSMUSG00000015889	Lta4h	0,149183177	0,326082847	0,531961472	no	no	no
ENSMUSG00000028518	Prkaa2	0,148848314	0,439708532	0,639670808	no	yes	yes
ENSMUSG00000023068	Nus1	0,146927522	0,373155804	0,580403282	no	no	no
ENSMUSG00000060002	Chpt1	0,144523554	0,448211549	0,646426296	no	no	no
ENSMUSG00000034354	Mtmr3	0,1414336	0,364473041	0,571667619	no	no	no
ENSMUSG00000023452	Pisd	0,13497821	0,457951038	0,654507801	no	no	no
ENSMUSG00000034449	Dhrs11	0,133171366	0,724556246	0,854237799	no	no	no
ENSMUSG00000038615	Nfe2l1	0,132891017	0,414483441	0,619118877	no	no	no
ENSMUSG00000031565	Fgfr1	0,130882418	0,488173055	0,678092309	no	yes	yes
ENSMUSG00000025465	Echs1	0,129988217	0,439000486	0,639170112	no	no	no
ENSMUSG00000038172	Ttc39b	0,129399508	0,459306077	0,654982562	no	no	yes
ENSMUSG00000025153	Fasn	0,129056103	0,420013916	0,623815635	no	no	no
ENSMUSG00000020828	Pld2	0,128615827	0,580466888	0,7536245	no	no	no
ENSMUSG00000019689	Fmc1	0,127955177	0,651384105	0,805439098	no	no	no
ENSMUSG00000025137	Pcyt2	0,126417056	0,431385543	0,632624343	no	no	no
ENSMUSG00000030861	Acadsb	0,124966692	0,427203435	0,629616585	no	no	no

ENSMUSG00000029199	Lias	0,118235868	0,521080093	0,706998398	no	no	no
ENSMUSG00000010936	Vac14	0,11735444	0,560628424	0,738413113	no	no	no
ENSMUSG00000020669	Sh3yl1	0,113216657	0,87101601	0,942992573	no	yes	no
ENSMUSG00000029134	Plb1	0,112429925	0,782971113	0,891074675	no	no	no
ENSMUSG00000025495	Ptdss2	0,112381529	0,643103881	0,798704254	no	no	no
ENSMUSG00000032737	Inppl1	0,111729857	0,52850337	0,713324563	no	no	no
ENSMUSG00000028995	Fam126a	0,107096888	0,516780947	0,703274211	no	no	no
ENSMUSG00000004043	Stat5a	0,106185111	0,611383148	0,77651354	no	yes	no
ENSMUSG00000018965	Ywhah	0,104074195	0,559206587	0,737397673	no	no	no
ENSMUSG00000025203	Scd2	0,100366161	0,546065952	0,726671419	no	no	no
ENSMUSG00000026153	Fam135a	0,09716487	0,545747956	0,726573866	no	no	no
ENSMUSG00000037697	Ddhd1	0,094025348	0,562633275	0,740041948	no	no	no
ENSMUSG00000031399	Fam3a	0,094000228	0,644767948	0,800146809	no	no	no
ENSMUSG00000006494	Pdk1	0,093263336	0,577471086	0,751656575	no	yes	yes
ENSMUSG00000062078	Qk	0,093001107	0,623798487	0,786180397	no	no	no
ENSMUSG00000032558	Nphp3	0,092412987	0,670458695	0,819110447	no	no	no
ENSMUSG00000035629	Rubcn	0,090175856	0,635325308	0,793981429	no	no	no
ENSMUSG00000071657	Bscl2	0,088748391	0,642551474	0,798674834	no	no	no
ENSMUSG00000005836	Gata6	0,088352908	0,851046702	0,931704142	no	yes	yes
ENSMUSG00000028420	Tmem38b	0,086377412	0,5690059	0,745447331	no	no	no
ENSMUSG00000038417	Fig4	0,084684407	0,639083321	0,796178239	no	no	no
ENSMUSG00000079434	Neu2	0,084107352	0,945687113	0,983978725	no	yes	yes
ENSMUSG00000028048	Gba	0,082861666	0,664440485	0,815259065	no	no	no
ENSMUSG00000061666	Gdpd1	0,079078229	0,788975922	0,894812673	no	no	no
ENSMUSG00000017929	B4galt5	0,076858916	0,662407077	0,813740214	no	no	no
ENSMUSG00000027412	Lpin3	0,075606699	0,75838213	0,876569675	no	no	no
ENSMUSG00000075470	Alg10b	0,074377785	0,661012801	0,812458646	no	no	no
ENSMUSG00000031378	Abcd1	0,074084502	0,71173393	0,845727909	no	no	no
ENSMUSG00000026925	Inpp5e	0,073426106	0,723064401	0,853375352	no	no	no
ENSMUSG00000022747	St3gal6	0,071909562	0,805245601	0,904214263	no	yes	yes
ENSMUSG00000021759	Plpp1	0,071148202	0,647726948	0,80253407	no	no	no
ENSMUSG00000026688	Mgst3	0,070234993	0,719083319	0,851065503	no	yes	no
ENSMUSG00000009621	Vav2	0,069274398	0,680926896	0,825135044	no	no	no
ENSMUSG00000027613	Eif6	0,068244323	0,692903954	0,832253257	no	no	no
ENSMUSG00000041417	Pik3r1	0,067825091	0,670842072	0,819329641	no	no	no
ENSMUSG00000028252	Ccnc	0,067272059	0,709941287	0,844805714	no	no	no
ENSMUSG00000005899	Smpd4	0,066071491	0,771382689	0,883457973	no	no	no
ENSMUSG00000079057	Cyp4v3	0,064547045	0,801182836	0,901920111	no	no	no
ENSMUSG00000004056	Akt2	0,064490104	0,670894707	0,819329641	no	no	no
ENSMUSG00000005615	Pcyt1a	0,063906555	0,673495434	0,821129201	no	no	no
ENSMUSG00000021779	Thrb	0,062187032	0,858879347	0,936034855	no	yes	yes
ENSMUSG00000074064	Mlycd	0,061805415	0,799752331	0,900848938	no	yes	no
ENSMUSG00000042632	Pla2g6	0,059794577	0,894041244	0,956796937	no	no	no
ENSMUSG00000024924	Vldlr	0,058558224	0,810049743	0,906704106	no	yes	yes
ENSMUSG00000020964	Sel1l	0,057062738	0,710124955	0,844880396	no	no	no
ENSMUSG00000036918	Ttc7	0,056905347	0,784706256	0,891762721	no	yes	no
ENSMUSG00000045282	Tmem86b	0,056352046	0,916631941	0,967267695	no	no	no
ENSMUSG00000032123	Dpagt1	0,056064911	0,885759291	0,952252	no	no	no
ENSMUSG00000029304	Spp1	0,054782555	0,902755643	0,96073955	no	yes	no
ENSMUSG00000024042	Sik1	0,053748417	0,732970397	0,859900271	no	no	no
ENSMUSG00000031985	Gnpat	0,053503022	0,734251376	0,860790354	no	no	no
ENSMUSG00000027630	Tbl1xr1	0,053338296	0,755817167	0,875526503	no	no	no
ENSMUSG00000021468	Sptlc1	0,05290912	0,763296895	0,879057681	no	no	no
ENSMUSG00000041958	Pigs	0,052758788	0,8612589	0,937587485	no	no	no
ENSMUSG00000026853	Crat	0,050476385	0,777162265	0,887595522	no	no	no
ENSMUSG00000020097	Sgpl1	0,050452694	0,749528384	0,871687779	no	no	no
ENSMUSG00000002997	Prkar2b	0,049411678	0,83129531	0,919805659	no	yes	yes
ENSMUSG00000027698	Nceh1	0,047760722	0,803074097	0,902834182	no	no	no
ENSMUSG00000022680	Pdxdc1	0,04765502	0,754004049	0,874734834	no	no	no
ENSMUSG00000026307	Scly	0,046144254	0,844331415	0,927662296	no	no	no
ENSMUSG00000024764	Naa40	0,045035439	0,883528694	0,950898465	no	no	no
ENSMUSG00000041718	Alg13	0,044707241	0,842804368	0,926606654	no	yes	no
ENSMUSG00000000276	Dgke	0,04395699	0,8208417	0,914363409	no	no	no
ENSMUSG00000028893	Sesn2	0,043840765	0,802503997	0,902579524	no	no	no
ENSMUSG00000079477	Rab7	0,037875808	0,814350629	0,910203844	no	no	no
ENSMUSG00000023791	Pigx	0,036606071	0,904179974	0,961253389	no	no	no
ENSMUSG00000030314	Atg7	0,034945146	0,888379332	0,953217002	no	yes	no
ENSMUSG00000020745	Pafah1b1	0,034914475	0,828187745	0,918213574	no	no	no
ENSMUSG00000027398	Il1b	0,031373096	1	1	no	no	no
ENSMUSG00000063568	Jazf1	0,028859695	0,93818759	0,979765073	no	yes	yes
ENSMUSG00000020003	Pex7	0,025150119	0,912848769	0,965857048	no	yes	no
ENSMUSG00000026922	Agpat2	0,024597489	0,926660854	0,973319227	no	no	no
ENSMUSG00000022175	Lrp10	0,023076581	0,898441201	0,959122179	no	no	no
ENSMUSG00000076435	Acsf2	0,020734724	0,94862096	0,985420334	no	no	no
ENSMUSG00000039202	Abhd2	0,0201885	0,899484528	0,959510592	no	no	no
ENSMUSG00000055923	Aasdh	0,019677709	0,941582635	0,982015497	no	no	no
ENSMUSG00000035778	Ggta1	0,018874659	0,905194587	0,961503706	no	no	no
ENSMUSG00000002289	Angptl4	0,01809214	0,927027946	0,9734347	no	no	no
ENSMUSG00000043257	Pigv	0,016966264	1	1	no	no	no
ENSMUSG00000022861	Dgkg	0,014387796	0,9374453	0,979483083	no	yes	no
ENSMUSG00000021242	Npc2	0,01415061	0,93393208	0,977153307	no	no	no
ENSMUSG00000055912	Tmem150a	0,012088045	1	1	no	no	no
ENSMUSG00000032571	Pik3r4	0,011442376	0,966261762	0,996506073	no	no	no
ENSMUSG00000033307	Mif	0,01142066	0,971612629	0,999275938	no	no	no
ENSMUSG00000026737	Pip4k2a	0,011228433	0,962523673	0,993973402	no	no	no
ENSMUSG00000025240	Sacm1l	0,010203312	0,95125679	0,986766446	no	no	no

ENSMUSG00000035596	Mboat7	0,009778252	0,976530803	1	no	no	no
ENSMUSG00000020658	Efr3b	0,008620775	0,982305064	1	no	yes	yes
ENSMUSG00000052920	Prkg1	0,007720491	0,965364666	0,995783196	no	yes	yes
ENSMUSG00000008435	Rdh13	0,00723329	0,978455082	1	no	no	no
ENSMUSG00000028126	Pip5k1a	0,005961538	0,981336069	1	no	no	no
ENSMUSG00000026811	St6galnac6	0,005310085	0,992951429	1	no	no	no
ENSMUSG00000033161	Atp1a1	0,005215084	0,974495995	1	no	yes	no
ENSMUSG00000037936	Scarb1	0,004768882	0,978564146	1	no	no	no
ENSMUSG00000042410	Agps	0,004388587	0,978911056	1	no	no	no
ENSMUSG00000031393	Mecp2	0,003643014	0,979415004	1	no	yes	no
ENSMUSG00000019877	Serinc1	0,001400384	0,994162321	1	no	no	no
ENSMUSG00000010663	Fads1	0,001328014	1	1	no	no	no
ENSMUSG00000063362	Alg11	-0,002255167	1	1	no	no	yes
ENSMUSG00000026385	Dbi	-0,004524241	0,98136243	1	no	no	no
ENSMUSG00000030682	Cdipt	-0,004557071	0,981185014	1	no	no	no
ENSMUSG00000038383	Pigu	-0,005449488	0,975401079	1	no	no	no
ENSMUSG00000003623	Crot	-0,005601932	0,980524335	1	no	no	no
ENSMUSG00000020917	Acly	-0,011704144	0,940714133	0,981637931	no	no	no
ENSMUSG00000026820	Ptges2	-0,012489503	0,96742302	0,997019259	no	no	no
ENSMUSG00000032314	Etfa	-0,012897622	0,953731546	0,988011409	no	yes	no
ENSMUSG00000024507	Hsd17b4	-0,014390701	0,923575857	0,971254925	no	yes	no
ENSMUSG00000020283	Pex13	-0,014635752	0,942162889	0,982361238	no	no	no
ENSMUSG00000010025	Aldh3a2	-0,016056257	0,914754808	0,966672082	no	no	no
ENSMUSG00000024913	Lrp5	-0,017026291	0,932065538	0,976070908	no	no	no
ENSMUSG00000018500	Adora2b	-0,017298623	1	1	no	yes	yes
ENSMUSG00000020553	Pctp	-0,018346061	1	1	no	no	no
ENSMUSG00000030759	Far1	-0,019706332	0,909071971	0,96345445	no	yes	no
ENSMUSG00000040613	Apobec1	-0,023485629	0,942344161	0,982361238	no	no	no
ENSMUSG00000032262	Elovl4	-0,024244163	0,952531192	0,987389903	no	yes	yes
ENSMUSG00000059447	Hadhb	-0,024405705	0,879940163	0,948737828	no	no	no
ENSMUSG00000000326	Comt	-0,025018259	0,874154806	0,94521477	no	no	no
ENSMUSG00000001729	Akt1	-0,025441112	0,874029353	0,945201873	no	no	no
ENSMUSG00000028601	Echdc2	-0,025773155	0,973481166	1	no	yes	yes
ENSMUSG00000045038	Prkce	-0,028673405	0,90900299	0,96345445	no	no	no
ENSMUSG00000074272	Ceacam1	-0,029235339	0,90717543	0,962668761	no	no	no
ENSMUSG00000039615	Stub1	-0,031977185	0,847231776	0,929462167	no	no	no
ENSMUSG00000028454	Pigo	-0,032971973	0,914298328	0,966547297	no	no	no
ENSMUSG00000021770	Samd8	-0,034448887	0,846608787	0,929193994	no	no	no
ENSMUSG00000033192	Lpcat2	-0,038780506	0,888430865	0,953217002	no	yes	yes
ENSMUSG00000007827	Ankrd26	-0,039945101	0,845120164	0,928202766	no	no	no
ENSMUSG00000040997	Abhd4	-0,040724371	0,794793619	0,898155688	no	no	no
ENSMUSG00000015714	Cers2	-0,041002736	0,792203685	0,897091794	no	no	no
ENSMUSG00000028381	Ugcg	-0,046560111	0,795684899	0,898481428	no	no	no
ENSMUSG00000040105	Plpp6	-0,046900975	0,917913392	0,967995736	no	no	no
ENSMUSG00000031168	Ebp	-0,046954277	0,839402929	0,924458029	no	no	no
ENSMUSG00000005514	Por	-0,047907217	0,754319237	0,874910516	no	yes	no
ENSMUSG00000020120	Plek	-0,049653575	0,880055343	0,948792555	no	no	no
ENSMUSG00000024132	Eci1	-0,049777206	0,827899643	0,917963256	no	no	no
ENSMUSG00000021608	Lpcat1	-0,05028448	0,783490795	0,891227903	no	yes	no
ENSMUSG00000038485	Socs7	-0,051008905	0,76967845	0,882123934	no	no	no
ENSMUSG00000025198	Erlin1	-0,054368239	0,822829047	0,915442378	no	no	no
ENSMUSG00000023805	Synj2	-0,056104798	0,753504871	0,874619422	no	no	yes
ENSMUSG00000027646	Src	-0,057372711	0,803689056	0,903213734	no	no	no
ENSMUSG00000035799	Twist1	-0,058954243	0,899011398	0,959209357	no	no	yes
ENSMUSG00000007036	Abhd16a	-0,061153333	0,709255422	0,844455445	no	no	no
ENSMUSG00000006390	Elovl1	-0,062740393	0,678782009	0,82416335	no	no	no
ENSMUSG00000035314	Gdpd5	-0,063518522	0,767914373	0,88127051	no	yes	yes
ENSMUSG00000030527	Crtc3	-0,065895055	0,724553441	0,854237799	no	no	no
ENSMUSG00000041440	Gk5	-0,067454458	0,689981362	0,830761521	no	no	no
ENSMUSG00000002661	Alkbh7	-0,069543071	0,829180468	0,918716614	no	no	no
ENSMUSG00000040374	Pex2	-0,075333901	0,687211359	0,828886333	no	no	no
ENSMUSG00000001847	Rac1	-0,076996118	0,62344622	0,785938194	no	no	no
ENSMUSG00000031668	Eif2ak3	-0,078173058	0,642523213	0,798674834	no	no	no
ENSMUSG00000007038	Neu1	-0,078506954	0,648433548	0,803071754	no	no	no
ENSMUSG00000006464	Bbs1	-0,078994833	0,799128309	0,900570949	no	no	no
ENSMUSG00000024978	Gpam	-0,07969041	0,59949348	0,76730164	no	no	no
ENSMUSG00000020027	Socs2	-0,08041691	0,634099585	0,793459532	no	no	no
ENSMUSG00000031834	Pik3r2	-0,082541926	0,628994517	0,78908273	no	no	no
ENSMUSG00000018861	Fdxr	-0,083326479	0,74134722	0,865316362	no	no	no
ENSMUSG00000031835	Mbtps1	-0,083653565	0,605382948	0,771954984	no	no	no
ENSMUSG00000026003	Acadl	-0,085532583	0,588687902	0,760143383	no	no	no
ENSMUSG00000024981	Acsl5	-0,085702777	0,636592978	0,794554354	no	yes	no
ENSMUSG00000020644	Id2	-0,087187781	0,599349573	0,767250804	no	yes	yes
ENSMUSG00000033917	Gde1	-0,087538985	0,595767871	0,764526374	no	no	no
ENSMUSG00000021302	Ggps1	-0,088571668	0,59979133	0,767549458	no	no	no
ENSMUSG00000031903	Pla2g15	-0,089846816	0,803134008	0,902834182	no	no	no
ENSMUSG00000036138	Acaa1a	-0,092357808	0,613587987	0,778307112	no	no	no
ENSMUSG00000029233	Srd5a3	-0,092529632	0,701577902	0,838636421	no	no	no
ENSMUSG00000054474	Thnsl2	-0,093089139	0,695056403	0,833547	no	no	no
ENSMUSG00000030316	Tamm41	-0,094158218	0,727352197	0,855831521	no	yes	no
ENSMUSG00000054469	Lclat1	-0,095990625	0,55961556	0,737738808	no	no	no
ENSMUSG00000043733	Ptpn11	-0,09664971	0,536858207	0,71978586	no	no	no
ENSMUSG00000029249	Rest	-0,100865641	0,574739637	0,750023513	no	no	no
ENSMUSG00000017776	Crk	-0,103252449	0,501466536	0,689984973	no	no	no
ENSMUSG00000026509	Capn2	-0,105155388	0,512194914	0,699194243	no	no	no
ENSMUSG00000035845	Alg12	-0,106705111	0,677651943	0,823673996	no	no	no

ENSMUSG00000055980	Irs1	-0,110479259	0,506036291	0,694280893	no	yes	no
ENSMUSG00000008035	Mid1ip1	-0,114075313	0,468137464	0,662059242	no	no	no
ENSMUSG00000030990	Pgap2	-0,114611977	0,63907468	0,796178239	no	no	no
ENSMUSG00000031996	Aplp2	-0,115387162	0,491442267	0,680879297	no	no	no
ENSMUSG00000049090	Zadh2	-0,117518255	0,584539901	0,756578229	no	no	no
ENSMUSG00000034088	Hdlbp	-0,117593226	0,448231572	0,646426296	no	no	no
ENSMUSG00000003721	Insig2	-0,118360883	0,537738891	0,720448413	no	no	no
ENSMUSG00000001211	Agpat3	-0,120490641	0,52840577	0,713309576	no	no	no
ENSMUSG00000036256	Igfbp7	-0,120599278	0,487146073	0,677240642	no	no	no
ENSMUSG00000059316	Slc27a4	-0,121527674	0,562669047	0,740041948	no	yes	no
ENSMUSG00000064141	Zfp69	-0,124437121	0,781286983	0,890067658	no	no	no
ENSMUSG00000044408	Sptssa	-0,125297687	0,426172552	0,629176959	no	no	no
ENSMUSG00000032883	Acsl3	-0,12529936	0,463648244	0,658506136	no	no	no
ENSMUSG00000027809	Etfdh	-0,126568333	0,397351802	0,602884242	no	no	no
ENSMUSG00000028937	Acot7	-0,126830175	0,677005376	0,823234353	no	no	no
ENSMUSG00000006638	Abhd1	-0,12713652	0,768050329	0,88127051	no	no	no
ENSMUSG00000006134	Crkl	-0,130776938	0,374718204	0,581736162	no	no	no
ENSMUSG00000038861	Pi4kb	-0,133563892	0,379379384	0,586606032	no	no	no
ENSMUSG00000050697	Prkaa1	-0,136011845	0,367701151	0,575021632	no	no	no
ENSMUSG00000050103	Agmo	-0,136978382	0,600088653	0,767596463	no	no	no
ENSMUSG00000032114	Slc37a4	-0,137404034	0,615460553	0,780010586	no	no	no
ENSMUSG00000040563	Plppr2	-0,137420542	0,896916148	0,958480701	no	yes	no
ENSMUSG00000026189	Pecr	-0,137750172	0,679462957	0,824536898	no	no	no
ENSMUSG00000075703	Selenoi	-0,139134554	0,362699619	0,570204203	no	no	no
ENSMUSG00000035078	Mtmr9	-0,139210432	0,471181128	0,664665915	no	no	no
ENSMUSG00000062908	Acadm	-0,145976037	0,376563595	0,583669609	no	no	no
ENSMUSG00000028607	Cpt2	-0,146567553	0,591156222	0,761794455	no	no	no
ENSMUSG00000020664	Dld	-0,146933751	0,390638332	0,597076409	no	no	no
ENSMUSG00000026456	Cyb5r1	-0,148821383	0,418629987	0,622936315	no	no	no
ENSMUSG00000026102	Inpp1	-0,150105697	0,468515531	0,662153031	no	no	no
ENSMUSG00000063275	Hacd1	-0,151129077	0,457921184	0,654507801	no	no	no
ENSMUSG00000000301	Pemt	-0,153151662	0,791946992	0,896939042	no	yes	no
ENSMUSG00000025921	Rdh10	-0,153370502	0,352792348	0,560166545	no	no	no
ENSMUSG00000000594	Gm2a	-0,154230435	0,334437986	0,540443566	no	no	no
ENSMUSG00000025321	Itgb8	-0,15482143	0,421972002	0,625546416	no	yes	no
ENSMUSG00000021703	Serinc5	-0,156905994	0,342821141	0,549768049	no	no	no
ENSMUSG00000056153	Socs6	-0,159493574	0,30199982	0,507977769	no	no	no
ENSMUSG00000042737	Dpm3	-0,161109374	0,528061168	0,71298908	no	yes	no
ENSMUSG00000030659	Nucb2	-0,162570616	0,439533756	0,639601706	no	no	no
ENSMUSG00000054252	Fgfr3	-0,162951522	0,431043706	0,632437905	no	yes	yes
ENSMUSG00000027999	Pla2g12a	-0,163136451	0,48319059	0,674223687	no	yes	no
ENSMUSG00000018574	Acadvl	-0,163185994	0,296712381	0,502643196	no	no	no
ENSMUSG00000034640	Tiparp	-0,166057626	0,332470713	0,5385504	no	no	no
ENSMUSG00000004610	Etfb	-0,168133567	0,776571192	0,887441071	no	no	no
ENSMUSG00000015016	Acsf3	-0,169202993	0,58023133	0,75345151	no	no	yes
ENSMUSG00000042429	Adora1	-0,169881842	0,487317802	0,67728759	no	yes	yes
ENSMUSG00000031969	Acad8	-0,171638669	0,321089687	0,527320351	no	no	no
ENSMUSG00000051177	Plcb1	-0,175236952	0,245828953	0,445136993	no	yes	yes
ENSMUSG00000024621	Csf1r	-0,176201557	0,635130046	0,793807846	no	no	no
ENSMUSG00000038633	Degs1	-0,177209713	0,251766709	0,452032194	no	no	yes
ENSMUSG00000029916	Agk	-0,182435373	0,374233255	0,581465069	no	no	no
ENSMUSG00000022982	Sod1	-0,184339053	0,262351508	0,463762456	no	no	no
ENSMUSG00000022210	Dhrs4	-0,184388511	0,429524998	0,631102285	no	no	no
ENSMUSG00000003418	St8sia6	-0,18796768	0,625211768	0,78695145	no	yes	yes
ENSMUSG00000022013	Dnajc15	-0,188553112	0,620895807	0,78434457	no	no	no
ENSMUSG00000006386	Tek	-0,188768187	0,380561057	0,587331368	no	no	no
ENSMUSG00000021786	Oxsm	-0,190833128	0,554871569	0,734024305	no	no	no
ENSMUSG00000070644	Etnk2	-0,19107523	0,476966463	0,669088682	no	yes	yes
ENSMUSG00000020621	Rdh14	-0,191376249	0,417368666	0,621537484	no	no	no
ENSMUSG00000037049	Smpd1	-0,191538718	0,250847817	0,451042198	no	no	no
ENSMUSG00000025277	Abhd6	-0,192407789	0,592243072	0,762343266	no	yes	yes
ENSMUSG00000032370	Lactb	-0,194593872	0,419822532	0,62363205	no	no	no
ENSMUSG00000031641	Cbr4	-0,195790938	0,447621814	0,646140751	no	no	no
ENSMUSG00000026288	Inpp5d	-0,196568196	0,672747057	0,820633706	no	no	no
ENSMUSG00000087141	Plcxd2	-0,198051695	0,459551825	0,655142704	no	no	no
ENSMUSG00000043207	Zmpste24	-0,19943779	0,206339999	0,39606093	no	no	no
ENSMUSG00000030275	Etnk1	-0,199649678	0,21137665	0,402736779	no	yes	no
ENSMUSG00000033715	Akr1c14	-0,200435846	0,594014644	0,763274096	no	no	no
ENSMUSG00000025950	Idh1	-0,200804311	0,161897233	0,340145857	no	no	no
ENSMUSG00000073792	Alg6	-0,201257003	0,362186896	0,56978088	no	no	no
ENSMUSG00000034254	Agpat1	-0,204011238	0,316135032	0,522739053	no	no	no
ENSMUSG00000025889	Snca	-0,208945828	0,321843897	0,528076438	no	yes	yes
ENSMUSG00000020484	Xbp1	-0,210889957	0,278675117	0,482862014	no	no	no
ENSMUSG00000029413	Naaa	-0,212106058	0,345568905	0,552585491	no	no	no
ENSMUSG00000018547	Pip4k2b	-0,214108687	0,278927331	0,48298625	no	no	no
ENSMUSG00000026600	Soat1	-0,216559449	0,200509554	0,38943752	no	no	no
ENSMUSG00000041939	Mvk	-0,217186724	0,442378568	0,641653688	no	no	no
ENSMUSG00000024112	Cacna1h	-0,220452554	0,189233156	0,376370819	no	yes	yes
ENSMUSG00000063235	Ptpmt1	-0,221013353	0,310463059	0,516725046	no	no	no
ENSMUSG00000066026	Dhrs3	-0,222663253	0,220256037	0,413608429	no	no	no
ENSMUSG00000048076	Arf1	-0,223629362	0,171911386	0,354212492	no	no	no
ENSMUSG00000029468	P2rx7	-0,224238288	0,242646892	0,441633246	no	no	no
ENSMUSG00000058756	Thra	-0,228061781	0,227291016	0,42189483	no	no	no
ENSMUSG00000035704	Alg8	-0,229272264	0,524809423	0,710226333	no	yes	no
ENSMUSG00000025728	Pigq	-0,23000109	0,19309046	0,380758756	no	no	no
ENSMUSG00000020919	Stat5b	-0,230819014	0,17319803	0,356125883	no	no	no

ENSMUSG00000031591	Asah1	-0,232487355	0,160494212	0,338114541	no	no	no
ENSMUSG00000034171	Faah	-0,237540274	0,415376698	0,619698947	no	yes	yes
ENSMUSG00000028445	Enho	-0,238882111	0,429541177	0,631102285	no	yes	no
ENSMUSG00000021518	Ptdss1	-0,239748461	0,115025068	0,271532169	no	no	no
ENSMUSG00000027710	Acad9	-0,243736864	0,215554453	0,407847635	no	no	no
ENSMUSG00000030671	Pde3b	-0,245991701	0,313083588	0,519737561	no	yes	yes
ENSMUSG00000015214	Mtmr1	-0,246899793	0,120968671	0,281368697	no	no	no
ENSMUSG00000019883	Echdc1	-0,247572932	0,314837071	0,521471028	no	no	no
ENSMUSG00000028455	Stoml2	-0,248906905	0,184179703	0,370118525	no	no	no
ENSMUSG00000026856	Dolpp1	-0,25129238	0,331446477	0,537674161	no	no	no
ENSMUSG00000047878	A4galt	-0,253426062	0,171151912	0,35324066	no	yes	yes
ENSMUSG00000024735	Prpf19	-0,257276945	0,118614564	0,277294493	no	no	no
ENSMUSG00000001173	Ocrl	-0,258181112	0,128139974	0,292823201	no	no	no
ENSMUSG00000032245	Cln6	-0,26086998	0,440465445	0,64006919	no	no	no
ENSMUSG00000071347	C1qtnf9	-0,2624187	0,503666565	0,691913177	no	no	no
ENSMUSG00000003585	Sec14l2	-0,262956705	0,375079918	0,582105061	no	yes	no
ENSMUSG00000037940	Inpp4b	-0,267054395	0,096333078	0,239712415	no	yes	yes
ENSMUSG00000025958	Creb1	-0,267498227	0,085962469	0,221609529	no	no	no
ENSMUSG00000036880	Acaa2	-0,268488006	0,114509579	0,270749251	no	no	no
ENSMUSG00000021036	Sptlc2	-0,271236875	0,083494313	0,217300625	no	yes	no
ENSMUSG00000022404	Slc25a17	-0,271724067	0,119551492	0,278997683	no	no	no
ENSMUSG00000028583	Pdpn	-0,273797786	0,205807621	0,395709482	no	yes	yes
ENSMUSG00000038418	Egr1	-0,274262894	0,084935339	0,219923993	no	no	no
ENSMUSG00000052151	Plpp2	-0,275560735	0,307505674	0,514068509	no	no	no
ENSMUSG00000006699	Cdc42	-0,278313131	0,081060651	0,213075364	no	no	no
ENSMUSG00000048755	Mcat	-0,278557263	0,378855248	0,586234512	no	no	no
ENSMUSG00000003363	Pld3	-0,281984043	0,146120872	0,318400385	no	no	no
ENSMUSG00000044288	Cnr1	-0,283904283	0,384288239	0,590767513	no	yes	yes
ENSMUSG00000036095	Dgkb	-0,28579705	0,081606537	0,214013725	no	no	no
ENSMUSG00000037366	Pafah2	-0,289845818	0,307615451	0,514076973	no	yes	no
ENSMUSG00000025903	Lypla1	-0,291439076	0,12677902	0,290931863	no	yes	no
ENSMUSG00000020087	Tysnd1	-0,297350485	0,314510567	0,521106044	no	no	no
ENSMUSG00000003131	Pafah1b2	-0,30181686	0,056344077	0,164351037	no	no	no
ENSMUSG00000004207	Psap	-0,304595002	0,058369101	0,168925156	no	no	no
ENSMUSG00000019872	Smpdl3a	-0,307715821	0,137241607	0,305976384	no	no	no
ENSMUSG00000027346	Gpcpd1	-0,307745966	0,067894981	0,188212493	no	no	no
ENSMUSG00000024867	Pip5k1b	-0,309978426	0,190493383	0,377602496	no	yes	yes
ENSMUSG00000031483	Erlin2	-0,312301814	0,074112637	0,199548614	no	no	no
ENSMUSG00000042228	Lyn	-0,313160603	0,169009226	0,349995483	no	yes	yes
ENSMUSG00000021606	Ndufs6	-0,313740745	0,153902081	0,329146266	no	no	no
ENSMUSG00000035069	Oma1	-0,320392383	0,263926926	0,465196393	no	yes	no
ENSMUSG00000055994	Nod2	-0,320576983	0,246620412	0,446109732	no	yes	yes
ENSMUSG00000053898	Ech1	-0,320857085	0,070709362	0,193606151	no	no	no
ENSMUSG00000025745	Hadha	-0,325564507	0,049241746	0,149221793	no	no	no
ENSMUSG00000007655	Cav1	-0,325747179	0,050213583	0,151515193	no	no	no
ENSMUSG00000046402	Rbp1	-0,326295146	0,143427101	0,314577118	no	yes	no
ENSMUSG00000079442	St6galnac4	-0,327809165	0,232529641	0,429106195	no	no	no
ENSMUSG00000038240	Pdss2	-0,328299384	0,215255124	0,407595457	no	no	no
ENSMUSG00000035735	Dagla	-0,333957099	0,27375076	0,477192709	no	yes	yes
ENSMUSG00000024766	Lipo3	-0,334585744	0,16160413	0,339723897	no	no	no
ENSMUSG00000023913	Pla2g7	-0,33521273	0,286345526	0,490842912	no	yes	no
ENSMUSG00000066324	Impad1	-0,345041198	0,024301099	0,090039391	no	no	no
ENSMUSG00000028944	Prkag2	-0,346020936	0,032242229	0,110647873	no	yes	no
ENSMUSG00000052214	Opa3	-0,346108924	0,036277633	0,120229175	no	no	no
ENSMUSG00000026317	Cln8	-0,348812768	0,05426681	0,160072415	no	yes	no
ENSMUSG00000037104	Socs5	-0,350338092	0,02908879	0,102729525	no	no	no
ENSMUSG00000021054	Sgpp1	-0,352065977	0,025044465	0,092167637	no	no	no
ENSMUSG00000024588	Fech	-0,354603537	0,031571068	0,10912431	no	no	no
ENSMUSG00000022892	App	-0,357081389	0,028629244	0,101749882	no	no	no
ENSMUSG00000021696	Elovl7	-0,358641509	0,093744759	0,235434464	no	yes	yes
ENSMUSG00000040774	Cept1	-0,360496275	0,03599358	0,119583452	no	no	no
ENSMUSG00000030869	Ndufab1	-0,360750996	0,051607423	0,15439247	no	no	no
ENSMUSG00000079469	Pigb	-0,366334675	0,243423761	0,442337465	no	no	no
ENSMUSG00000043487	Acot6	-0,368785115	0,243695275	0,442666998	no	no	no
ENSMUSG00000029545	Acads	-0,375284811	0,053356357	0,158051574	no	no	no
ENSMUSG00000035686	Thrsp	-0,377404468	0,337628762	0,543690838	no	no	no
ENSMUSG00000020646	Mboat2	-0,380135232	0,040821794	0,130530479	no	yes	yes
ENSMUSG00000028517	Plpp3	-0,381209755	0,012582723	0,05517069	no	no	no
ENSMUSG00000027358	Bmp2	-0,384965739	0,026949895	0,097093457	no	yes	yes
ENSMUSG00000028127	Abcd3	-0,385820736	0,012353478	0,054327271	no	no	no
ENSMUSG00000010607	Pigyl	-0,386729709	0,285635071	0,490182541	no	yes	no
ENSMUSG00000040430	Pitpnc1	-0,388068885	0,015927341	0,065524548	no	no	no
ENSMUSG00000017721	Pigt	-0,388264322	0,126803968	0,290931863	no	no	no
ENSMUSG00000029186	Pi4k2b	-0,389657331	0,042676735	0,13459164	no	yes	no
ENSMUSG00000038936	Sccpdh	-0,390960962	0,039351462	0,127265774	no	no	no
ENSMUSG00000052914	Cyp2j6	-0,391717067	0,010324446	0,047355479	no	no	no
ENSMUSG00000061758	Akr1b10	-0,392329859	0,154582223	0,330050301	no	no	no
ENSMUSG00000042569	Dhrs7b	-0,392436586	0,263241224	0,464535914	no	no	no
ENSMUSG00000029319	Coq2	-0,393794614	0,037906685	0,124050322	no	yes	no
ENSMUSG00000021120	Pigh	-0,394163558	0,108282186	0,260202323	no	no	no
ENSMUSG00000037062	Sh3glb1	-0,398872331	0,008758109	0,041811808	no	no	no
ENSMUSG00000028138	Adh5	-0,399070804	0,021306145	0,081378866	no	no	no
ENSMUSG00000028470	Hint2	-0,402236344	0,091095849	0,230729251	no	no	no
ENSMUSG00000062694	Cav3	-0,406398939	0,281727091	0,486490397	no	no	no
ENSMUSG00000015149	Sirt2	-0,409146644	0,009684007	0,045006645	no	no	no
ENSMUSG00000029263	Pigg	-0,409519758	0,044288831	0,138401423	no	no	no

ENSMUSG00000032349	Elovl5	-0,411189386	0,009648217	0,044863453	no	no	no
ENSMUSG00000028698	Pik3r3	-0,413816133	0,050889412	0,152990255	no	yes	yes
ENSMUSG00000026701	Prdx6	-0,414701606	0,006529776	0,033485564	no	no	no
ENSMUSG00000032038	St3gal4	-0,417676209	0,031899365	0,109970936	no	no	no
ENSMUSG00000039431	Mtmr7	-0,418754946	0,040203934	0,129087322	no	yes	yes
ENSMUSG00000046207	Pik3r6	-0,422384694	0,359428782	0,566834469	no	no	no
ENSMUSG00000021417	Eci2	-0,422492412	0,004296217	0,024067967	no	no	no
ENSMUSG00000031570	Plpp5	-0,422966019	0,063250266	0,179075339	no	no	no
ENSMUSG00000037706	Cd81	-0,426200186	0,010090233	0,046571279	no	no	no
ENSMUSG00000071072	Ptges3	-0,432174744	0,0085569	0,041158074	no	no	no
ENSMUSG00000028635	Edn2	-0,436645805	0,418784387	0,623015803	no	yes	no
ENSMUSG00000033105	Lss	-0,441996333	0,021245761	0,081232495	no	yes	no
ENSMUSG00000024998	Plce1	-0,442567532	0,01121262	0,050439668	no	yes	yes
ENSMUSG00000052544	St6galnac3	-0,446530516	0,313112986	0,519737561	no	yes	yes
ENSMUSG00000049721	Gal3st1	-0,448444972	0,049010137	0,148798453	no	yes	yes
ENSMUSG00000035232	Pdk3	-0,449828067	0,033589589	0,113859242	no	no	yes
ENSMUSG00000021947	Cryl1	-0,453187581	0,080808007	0,21267697	no	no	no
ENSMUSG00000023827	Agpat4	-0,464685074	0,028019793	0,100066805	no	no	no
ENSMUSG00000027035	Cers6	-0,466479914	0,023101105	0,086683586	no	yes	yes
ENSMUSG00000028163	Nfkb1	-0,470583456	0,005387728	0,028903583	no	no	no
ENSMUSG00000021273	Fdft1	-0,474823672	0,010581188	0,048173025	no	no	no
ENSMUSG00000000489	Pdgfb	-0,479518134	0,071311667	0,19460757	no	yes	yes
ENSMUSG00000019806	Aig1	-0,481954763	0,005271095	0,028395276	no	no	no
ENSMUSG00000032047	Acat1	-0,482089792	0,017303385	0,069922448	no	no	no
ENSMUSG00000031708	Tecr	-0,482233384	0,004564112	0,025232825	no	no	no
ENSMUSG00000039740	Alg2	-0,498459262	0,02049795	0,07926026	no	no	no
ENSMUSG00000005447	Pafah1b3	-0,50045286	0,355758872	0,563399641	no	no	no
ENSMUSG00000067370	B3galt4	-0,501274669	0,183049048	0,36865122	no	no	no
ENSMUSG00000018217	Pmp22	-0,501730378	0,013255997	0,057236684	no	no	no
ENSMUSG00000050370	Ch25h	-0,50636293	0,258459579	0,459631266	no	yes	yes
ENSMUSG00000045294	Insig1	-0,513742652	0,003336585	0,019767187	no	no	no
ENSMUSG00000025350	Rdh5	-0,514327282	0,027639464	0,099092995	no	no	no
ENSMUSG00000033327	Tnxb	-0,516838692	0,020150403	0,078263484	no	yes	yes
ENSMUSG00000036585	Fgf1	-0,519969151	0,002971549	0,018092174	no	no	no
ENSMUSG00000062054	Iah1	-0,520156917	0,023479202	0,087722395	no	no	no
ENSMUSG00000043445	Pgp	-0,526103186	0,021830087	0,083035518	no	no	no
ENSMUSG00000040447	Spns2	-0,532183778	0,107245126	0,258723376	no	yes	yes
ENSMUSG00000040875	Osbpl10	-0,535050198	0,150922042	0,325348337	no	yes	yes
ENSMUSG00000038732	Mboat1	-0,539092881	0,005722202	0,030195843	no	no	no
ENSMUSG00000023000	Dhh	-0,540901303	0,014214408	0,060209893	no	yes	yes
ENSMUSG00000074115	Saa1	-0,544379231	0,264239007	0,465460124	no	no	no
ENSMUSG00000024052	Lpin2	-0,548174035	0,002080781	0,013687246	no	no	no
ENSMUSG00000031749	St3gal2	-0,554950714	0,002824571	0,017435155	no	no	no
ENSMUSG00000022463	Srebf2	-0,559217697	0,001493437	0,010574681	no	no	no
ENSMUSG00000025393	Atp5b	-0,562423321	0,002662896	0,016646493	no	no	no
ENSMUSG00000073678	Pgap1	-0,565602127	0,000789199	0,006337686	no	yes	no
ENSMUSG00000023022	Lima1	-0,56931649	0,000246308	0,002430682	no	no	no
ENSMUSG00000030760	Acer3	-0,572955933	0,000691959	0,005754473	no	no	no
ENSMUSG00000033629	Hacd3	-0,577280967	0,001120419	0,008449321	no	no	no
ENSMUSG00000024431	Nr3c1	-0,57956935	0,000271191	0,002632896	no	no	no
ENSMUSG00000026398	Nr5a2	-0,582751594	0,283478655	0,488075519	no	no	no
ENSMUSG00000035237	Lcat	-0,591343993	0,126263861	0,290052166	no	no	no
ENSMUSG00000062526	Mppe1	-0,594665586	0,056367631	0,164360021	no	no	no
ENSMUSG00000020573	Pik3cg	-0,597761772	0,323009548	0,528939807	no	no	no
ENSMUSG00000027984	Hadh	-0,600876022	0,003329191	0,019739264	no	no	no
ENSMUSG00000044788	Fads6	-0,603583971	0,041183421	0,131316178	no	yes	yes
ENSMUSG00000028378	Ptgr1	-0,614691834	0,015365637	0,063768241	no	yes	yes
ENSMUSG00000053846	Lipg	-0,618947708	0,048879897	0,148586815	no	yes	yes
ENSMUSG00000026499	Acbd3	-0,62323625	2,25E-05	0,0003332	no	no	no
ENSMUSG00000026676	Ccdc3	-0,626942532	0,001444282	0,010308957	no	yes	yes
ENSMUSG00000037577	Ephx3	-0,634906351	0,036892034	0,121635521	no	yes	no
ENSMUSG00000039047	Pigk	-0,637079688	0,00012417	0,001379172	no	yes	no
ENSMUSG00000038208	Pgap3	-0,638137824	0,178501097	0,363151948	no	yes	no
ENSMUSG00000002475	Abhd3	-0,638904562	0,044689526	0,139387409	no	yes	yes
ENSMUSG00000026664	Phyh	-0,642684485	0,000255237	0,002509436	no	no	no
ENSMUSG00000006728	Cdk4	-0,664579451	0,000971374	0,007533648	no	no	no
ENSMUSG00000032902	Slc16a1	-0,678798529	0,00011575	0,001303335	no	no	no
ENSMUSG00000034330	Plcg2	-0,682861215	0,178736283	0,363444426	no	yes	yes
ENSMUSG00000025428	Atp5a1	-0,685172452	0,000124004	0,001379172	no	no	no
ENSMUSG00000038910	Plcl2	-0,686018897	0,084053602	0,218289804	no	yes	yes
ENSMUSG00000032179	Bmp5	-0,688393801	0,000199771	0,002048006	no	no	no
ENSMUSG00000022244	Amacr	-0,694873594	0,037739976	0,123745155	no	no	no
ENSMUSG00000028773	Fabp3	-0,697426269	0,018623041	0,073773688	no	yes	yes
ENSMUSG00000038173	Enpp6	-0,701188224	0,039135942	0,126707883	no	yes	no
ENSMUSG00000036775	Decr2	-0,703849366	0,00635293	0,032749719	no	no	no
ENSMUSG00000022940	Pigp	-0,708236309	0,000256319	0,002513357	no	no	no
ENSMUSG00000020787	P2rx1	-0,708741962	0,000362003	0,003355307	no	no	no
ENSMUSG00000028167	Bdh2	-0,711515536	0,026491086	0,095862582	no	no	no
ENSMUSG00000021556	Golm1	-0,717562012	0,002100624	0,013793128	no	no	no
ENSMUSG00000039206	Daglb	-0,718799016	0,004604086	0,02537761	no	no	no
ENSMUSG00000026675	Hsd17b7	-0,723124726	5,40E-05	0,000690959	no	no	no
ENSMUSG00000026447	Pik3c2b	-0,72400888	0,009270622	0,043580506	no	no	yes
ENSMUSG00000027531	Impa1	-0,724334076	4,92E-05	0,000636773	no	no	no
ENSMUSG00000058258	Idi1	-0,726471447	0,000131108	0,001443171	no	no	no
ENSMUSG00000055301	Adh7	-0,733959024	0,047990976	0,146610889	no	no	no
ENSMUSG00000038205	Prkab2	-0,734251751	4,90E-05	0,000635088	no	no	no

ENSMUSG00000002279	Lmf1	-0,735813589	0,000624255	0,005261205	no	no	no
ENSMUSG00000024107	Lhcgr	-0,742383134	0,090041294	0,228840064	no	yes	yes
ENSMUSG00000058454	Dhcr7	-0,746548016	0,009415824	0,044134683	no	no	no
ENSMUSG00000029167	Ppargc1a	-0,747721122	0,000794764	0,006371706	no	no	no
ENSMUSG00000022351	Sqle	-0,748354733	0,000416863	0,003764295	no	no	no
ENSMUSG00000027641	Rbl1	-0,753660322	0,005726661	0,03019972	no	no	no
ENSMUSG00000040938	Slc16a11	-0,75522955	0,117758104	0,275993214	no	yes	yes
ENSMUSG00000039887	Alg14	-0,755278411	0,000363845	0,003366026	no	no	no
ENSMUSG00000021928	Ebpl	-0,772521183	0,052279326	0,155706756	no	no	no
ENSMUSG00000024907	Gal	-0,773599943	0,053834109	0,159201912	no	yes	yes
ENSMUSG00000006517	Mvd	-0,775575548	0,002676404	0,016708162	no	no	no
ENSMUSG00000072946	Ptgr2	-0,781223077	2,48E-06	5,08E-05	no	yes	no
ENSMUSG00000032018	Sc5d	-0,781839736	1,34E-05	0,000216755	no	yes	no
ENSMUSG00000016194	Hsd11b1	-0,790892724	0,000124105	0,001379172	no	no	no
ENSMUSG00000053647	Gper1	-0,797852645	0,009178594	0,043334134	no	no	no
ENSMUSG00000032854	Ugt8a	-0,811018304	8,31E-06	0,000143816	no	yes	yes
ENSMUSG00000021670	Hmgcr	-0,813339352	2,42E-06	4,98E-05	no	no	no
ENSMUSG00000033174	Mgll	-0,819398896	3,01E-05	0,000423938	no	no	no
ENSMUSG00000028341	Nr4a3	-0,822191828	1,36E-05	0,000219522	no	yes	yes
ENSMUSG00000024887	Asah2	-0,826476674	0,001835431	0,01244005	no	no	no
ENSMUSG00000056124	B4galt6	-0,833462466	0,000415256	0,003754386	no	yes	no
ENSMUSG00000027952	Pmvk	-0,837575616	0,0002693	0,002624919	no	no	no
ENSMUSG00000022150	Dab2	-0,839983929	0,000684586	0,005702817	no	no	no
ENSMUSG00000012187	Mogat1	-0,846610563	0,05058373	0,15222664	no	yes	yes
ENSMUSG00000026335	Pam	-0,85102131	8,03E-06	0,000139988	no	no	no
ENSMUSG00000021226	Acot2	-0,860568061	0,000168493	0,001772543	no	no	no
ENSMUSG00000017754	Pltp	-0,865786804	0,009054826	0,042867076	no	yes	yes
ENSMUSG00000027932	Slc27a3	-0,889776167	0,014954854	0,062412891	no	yes	no
ENSMUSG00000028657	Ppt1	-0,889923212	2,79E-06	5,65E-05	no	yes	no
ENSMUSG00000036856	Wnt4	-0,922116895	0,109178184	0,261676214	no	yes	yes
ENSMUSG00000053004	Hrh1	-0,922694929	2,55E-05	0,000369002	no	yes	yes
ENSMUSG00000056220	Pla2g4a	-0,932552989	0,001654729	0,011495682	no	no	no
ENSMUSG00000024900	Cpt1a	-0,935237255	0,000405235	0,00368414	no	no	no
ENSMUSG00000032193	Ldlr	-0,956603581	9,47E-07	2,26E-05	no	no	no
ENSMUSG00000005320	Fgfr4	-0,957233341	0,01105084	0,049864207	no	yes	yes
ENSMUSG00000025232	Hexa	-0,959555685	3,91E-06	7,55E-05	no	no	no
ENSMUSG00000022676	Snai2	-0,962017339	0,001159783	0,008657522	no	no	no
ENSMUSG00000010175	Prox1	-0,971113119	0,000746811	0,006080173	no	yes	yes
ENSMUSG00000031266	Gla	-0,972010651	6,01E-08	2,04E-06	no	yes	yes
ENSMUSG00000001642	Akr1b3	-0,978220338	3,45E-06	6,75E-05	no	no	no
ENSMUSG00000057722	Lepr	-0,980920587	0,000215917	0,002179591	no	yes	yes
ENSMUSG00000039004	Bmp6	-0,982319939	7,16E-06	0,000127133	no	yes	yes
ENSMUSG00000022708	Zbtb20	-1,007292743	1,51E-08	6,11E-07	no	no	no
ENSMUSG00000043162	Pyurf	-1,007455141	5,20E-05	0,00066954	no	no	no
ENSMUSG00000028223	Decr1	-1,023453252	8,06E-07	1,97E-05	no	no	no
ENSMUSG00000027208	Fgf7	-1,024434717	0,001316196	0,009568081	no	no	no
ENSMUSG00000026617	Bpnt1	-1,025049988	3,50E-06	6,83E-05	no	no	no
ENSMUSG00000022425	Enpp2	-1,030592554	0,002292958	0,014764716	no	no	yes
ENSMUSG00000059456	Ptk2b	-1,044961468	0,009562995	0,044599045	no	yes	yes
ENSMUSG00000040710	St8sia4	-1,05043572	0,010057555	0,046478715	no	yes	yes
ENSMUSG00000033717	Adra2a	-1,057316534	0,00067874	0,005666939	no	yes	yes
ENSMUSG00000024378	Stard4	-1,067059019	2,44E-07	7,07E-06	no	no	no
ENSMUSG00000034926	Dhcr24	-1,07036139	2,07E-06	4,37E-05	no	yes	yes
ENSMUSG00000024164	C3	-1,073797633	0,019838445	0,077310146	no	yes	no
ENSMUSG00000026726	Cubn	-1,083435582	0,000267718	0,002611225	no	no	no
ENSMUSG00000048583	Igf2	-1,098350123	2,38E-09	1,22E-07	no	yes	no
ENSMUSG00000032369	Plscr1	-1,115159419	2,05E-06	4,34E-05	no	no	no
ENSMUSG00000035239	Neu3	-1,135979344	0,000270168	0,002628162	no	no	no
ENSMUSG00000052160	Pld4	-1,137775377	0,051994402	0,155266331	no	no	no
ENSMUSG00000039519	Cyp7b1	-1,141425975	5,03E-07	1,31E-05	no	no	no
ENSMUSG00000034780	B3galt1	-1,151473865	0,001633534	0,011395688	no	yes	yes
ENSMUSG00000046491	C1qtnf2	-1,160447465	0,000408018	0,003701888	no	no	no
ENSMUSG00000022686	B3gnt5	-1,167111885	0,000104348	0,001196883	no	no	no
ENSMUSG00000093930	Hmgcs1	-1,186837015	8,76E-10	4,90E-08	no	no	no
ENSMUSG00000031349	Nsdhl	-1,186950139	3,48E-07	9,58E-06	no	no	no
ENSMUSG00000033721	Vav3	-1,201112389	6,03E-07	1,54E-05	no	yes	yes
ENSMUSG00000063889	Crem	-1,203814657	6,13E-09	2,74E-07	no	no	no
ENSMUSG00000024600	Slc27a6	-1,225258397	0,006272613	0,032427903	no	yes	yes
ENSMUSG00000034997	Htr2a	-1,24157377	4,21E-05	0,000560958	no	yes	yes
ENSMUSG00000026173	Plcd4	-1,243798598	0,00952023	0,044432531	no	yes	no
ENSMUSG00000063142	Kcnma1	-1,246208628	3,63E-10	2,28E-08	no	yes	yes
ENSMUSG00000024401	Tnf	-1,250979914	0,001100147	0,008313476	no	yes	yes
ENSMUSG00000030559	Rab38	-1,267583878	0,001004814	0,007735965	no	yes	yes
ENSMUSG00000031604	Msmo1	-1,268887602	3,59E-11	2,80E-09	no	no	no
ENSMUSG00000052430	Bmpr1b	-1,281245447	0,000265333	0,002593115	no	yes	yes
ENSMUSG00000015090	Ptgds	-1,292362665	0,013391641	0,05768707	no	no	no
ENSMUSG00000035246	Pcyt1b	-1,302458756	0,002838747	0,0174877	no	yes	no
ENSMUSG00000049313	Sorl1	-1,307079549	7,60E-08	2,53E-06	no	yes	yes
ENSMUSG00000001467	Cyp51	-1,319873467	6,67E-13	7,45E-11	no	no	no
ENSMUSG00000041220	Elovl6	-1,323761905	3,36E-13	3,96E-11	no	no	no
ENSMUSG00000028885	Smpdl3b	-1,435760158	0,001682229	0,011651166	no	yes	yes
ENSMUSG00000021594	Srd5a1	-1,44964215	1,13E-06	2,62E-05	no	no	yes
ENSMUSG00000032487	Ptgs2	-1,453314845	2,38E-06	4,93E-05	no	no	yes
ENSMUSG00000001588	Acap1	-1,534216127	0,004330147	0,024202811	no	no	no
ENSMUSG00000020123	Avpr1a	-1,562188405	1,40E-11	1,18E-09	no	yes	no
ENSMUSG00000005952	Trpv1	-1,597211709	9,63E-07	2,29E-05	no	no	no

ENSMUSG00000028497	Hacd4	-1,680119618	5,41E-05	0,000691331	no	no	no
ENSMUSG00000020333	Acsl6	-1,735148255	0,005039833	0,027359627	no	yes	yes
ENSMUSG00000017146	Brca1	-1,783899298	0,00038103	0,003503002	no	no	no
ENSMUSG00000025789	St8sia2	-1,821570545	5,61E-05	0,000710691	no	yes	yes
ENSMUSG00000032281	Acsbg1	-1,856141515	1,06E-08	4,45E-07	no	no	no
ENSMUSG00000015134	Aldh1a3	-1,902647355	3,03E-10	1,94E-08	no	yes	yes
ENSMUSG00000030214	Plbd1	-2,035248519	1,32E-05	0,000213791	no	yes	yes
ENSMUSG00000004885	Crabp2	-2,105333853	9,20E-18	3,39E-15	no	yes	yes
ENSMUSG00000020053	Igf1	-2,114035705	3,45E-14	4,83E-12	no	yes	no
ENSMUSG00000071005	Ccl19	-2,15125548	0,000321446	0,003046494	no	no	no
ENSMUSG00000019768	Esr1	-2,176759879	4,63E-07	1,22E-05	no	no	no
ENSMUSG00000024610	Cd74	-2,294831733	0,001252191	0,009208469	no	no	no
ENSMUSG00000044667	Plppr4	-2,319507487	3,17E-06	6,29E-05	no	yes	yes
ENSMUSG00000030724	Cd19	-2,454154139	0,002368946	0,015182698	no	yes	no
ENSMUSG00000022215	Fitm1	-2,940878642	5,87E-09	2,64E-07	no	no	no
ENSMUSG00000023232	Serinc2	-3,198991904	1,44E-10	9,98E-09	no	yes	no

Protein	Company or Lab	Reference	Source	Figure n	IF	WB	ChIP	FACS
Pax-7	Developmental studies Hybridoma bank		mouse	1; 4A; 5A; 6C; S1A,C; S2G-J; S7; S8	X			
MyoD	Santacruz	SC-760	rabbit	1A, D, H; 6C; S1A	X			
Laminin	Sigma	L9393	rabbit	1A, H; 6C; S1A; S7	X			
Ki67	Abcam	15580	rabbit	S1C; S8	X			
Ki67	Invitrogen	14-5698-82	rat	S2G-J	X			
MyoG	Abcam	Ab219998	rabbit	1F	X			
LaminA/C	Santacruz	sc6215	goat	S2A	X			
LaminA/C	Santacruz	sc20681/sc20680	rabbit	S1F; S2E; S3E, G		X		
alpha-Tubulin	Sigma	T5168	mouse	S1F		X		
Ezh2	Cell Signalling	5246	rabbit	S2	X	X		
H3K27me3	Millipore	7449	rabbit	2; 4C; 5E; 6A; S3C-I; S4; S5C; S6		X	X	
H3	Abcam	Ab1791	rabbit	S3E, G		X		
H3K4me3	Millipore	7473	rabbit	S5; S6A			X	
Actin	Santacruz	SC1616	rabbit	S2E		X		
PPARgamma	Abcam	ab118521	rabbit	4A	X			
Piripilin	Abcam	ab3526	rabbit	4D	X			
Pospho-P38	Cell Signalling	4511	rabbit	5A; S7A	X			
gamma-H2AX	Cell Signalling	2577	rabbit	S7C	X			
PB-CD45	eBioscience	48-0451	rat	2; 3; 4C, F; 5E; 6A, B; S1E; S2A, D; S3; S4; S5; S6; S7E				X
PB-CD31	eBioscience	48-0311	rat	2; 3; 4C, F; 5E; 6A, B; S1E; S2A, D; S3; S4; S5; S6; S7E				X
PB-Ter119	eBioscience	48-5921	rat	2; 3; 4C, F; 5E; 6A, B; S1E; S2A, D; S3; S4; S5; S6; S7E				X
FITC-Sca1	eBioscience	115981	rat	2; 3; 4C, F; 5E; 6A, B; S1E; S2A, D; S3; S4; S5; S6; S7E				X
APC-alpha7Integrin	AbLab	67-001-05	rat	2; 3; 4C, F; 5E; 6A, B; S1E; S2A, D; S3; S4; S5; S6; S7E				X