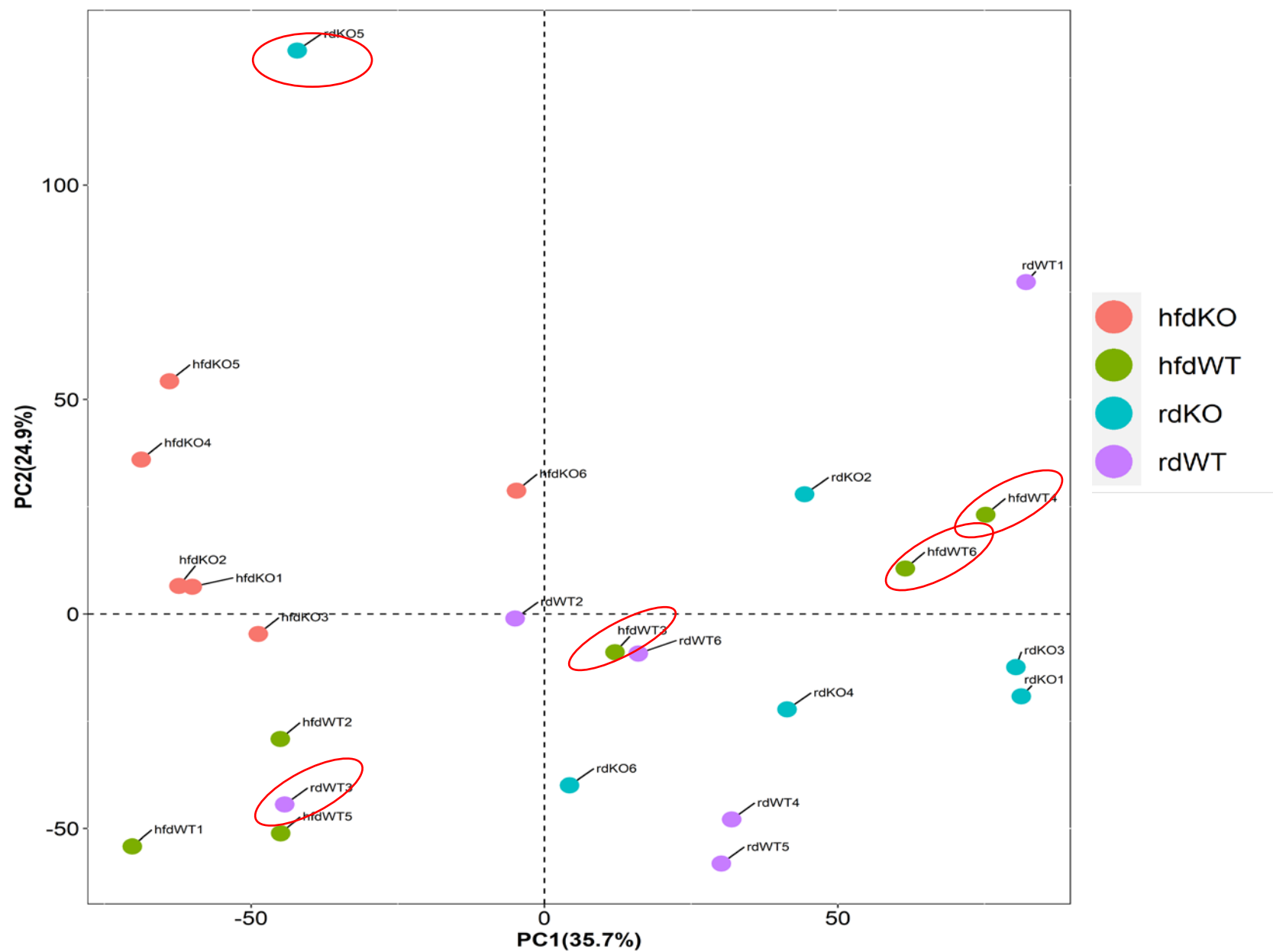


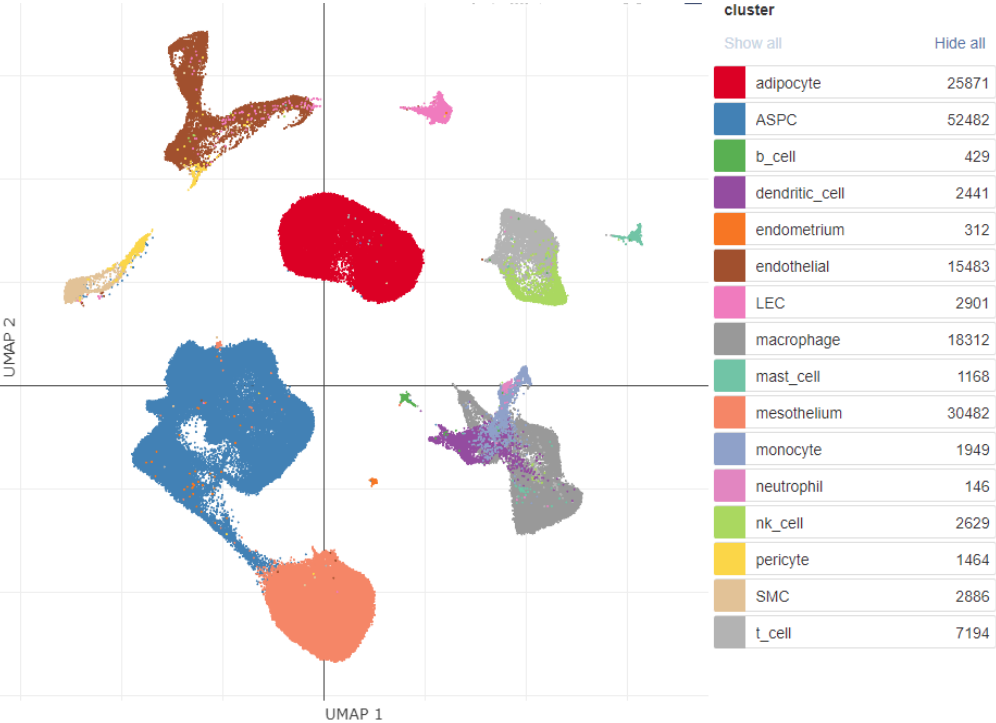
Supplementary Figure S1



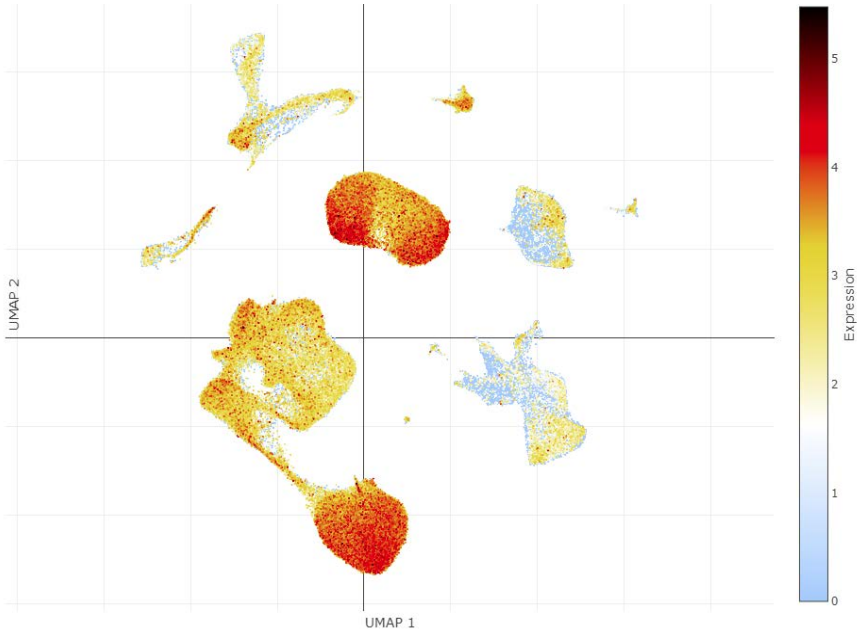
Supplementary Figure S2

Human White Adipose Tissue

Nuclei Clustering



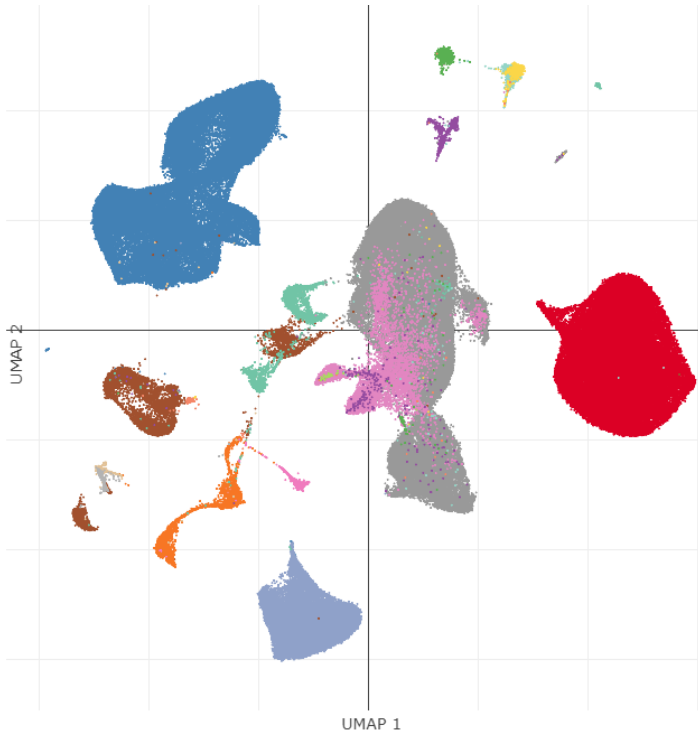
LAMA4 Expression



Supplementary Figure S3

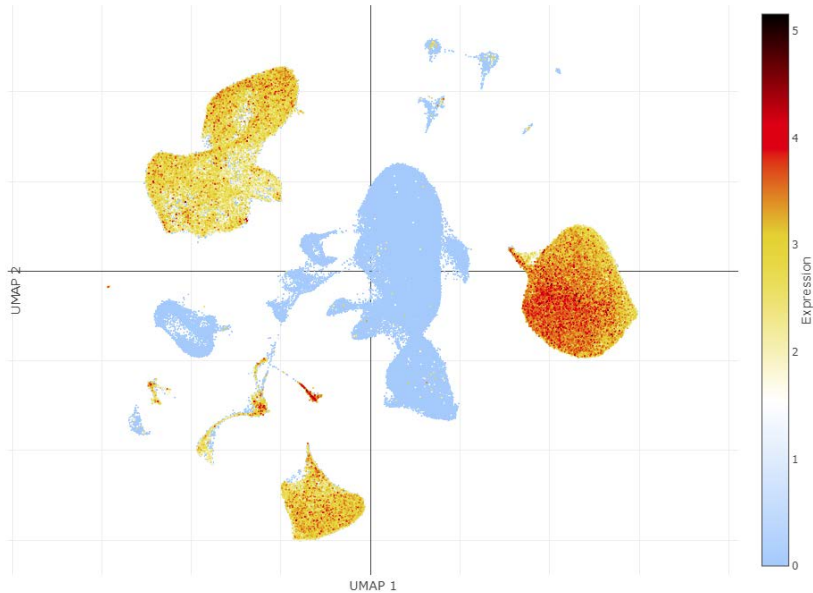
Mouse White Adipose Tissue

Nuclei Clustering



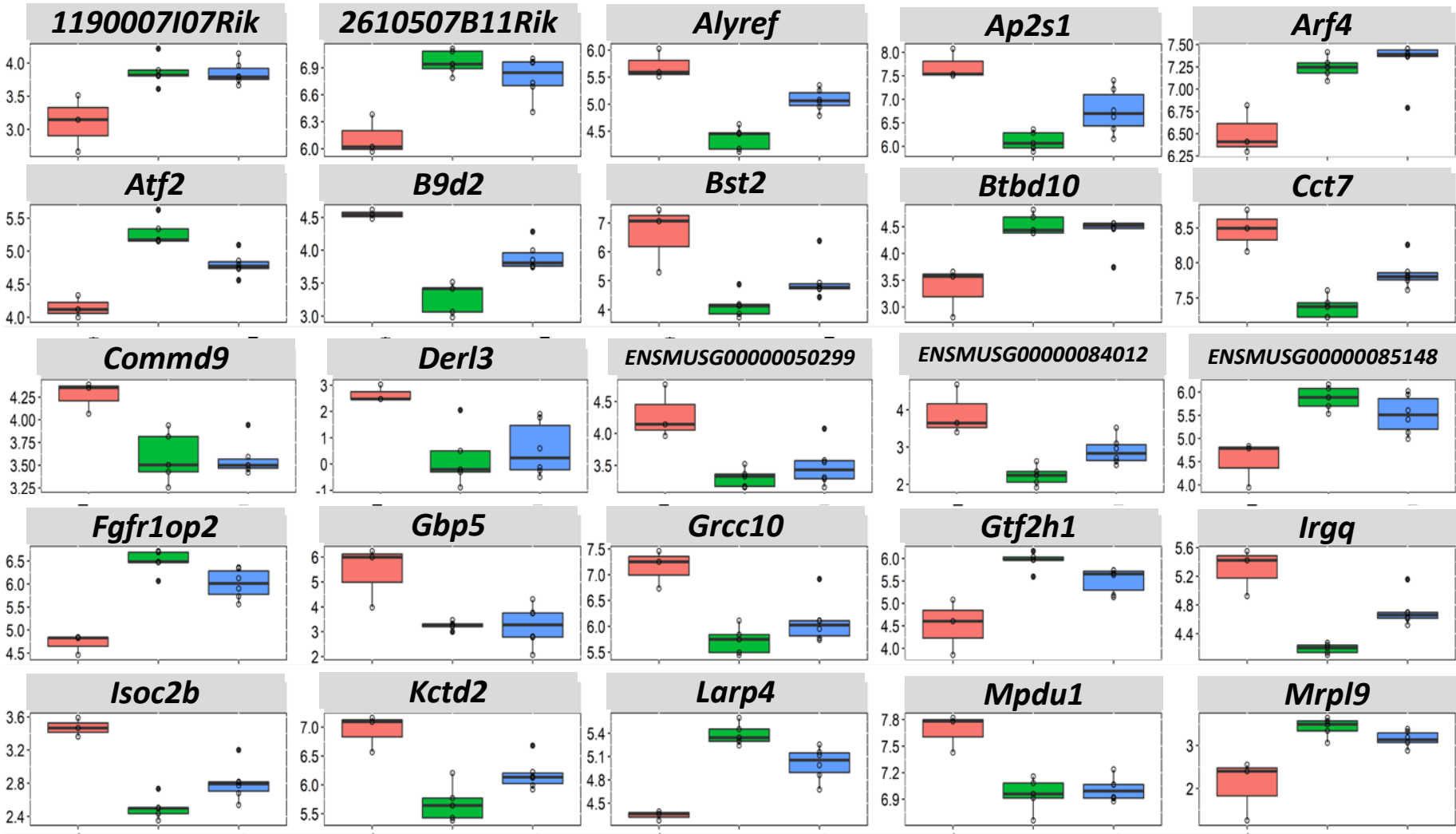
cluster		
Show all	Hide all	
adipocyte	39934	
ASPC	51227	
b_cell	1202	
dendritic_cell	1572	
endothelial	5596	
female_epithelial	9587	
LEC	1176	
macrophage	57848	
male_epithelial	3847	
mast_cell	311	
mesothelium	14947	
monocyte	7607	
neutrophil	47	
nk_cell	674	
pericyte	597	
SMC	263	
t_cell	1286	

Lama4 Expression

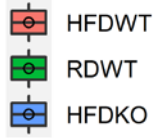


Supplementary Figure S4a

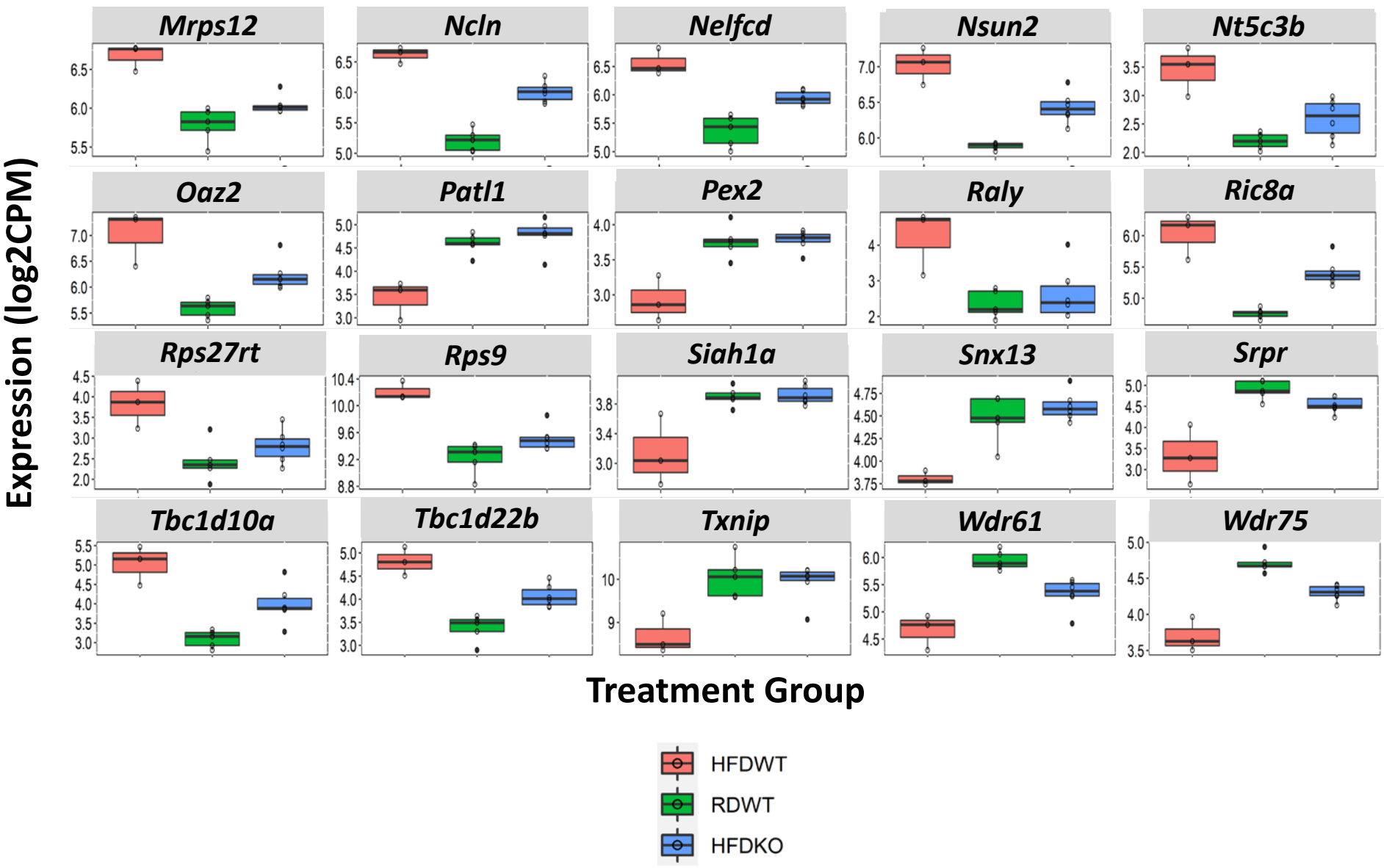
Expression (log2CPM)



Treatment Group



Supplementary Figure S4b



Supplementary Table S1

gene	Function	peroxisome	ribosome	protein targeting	DNA damage	RNA regulation	G-protein regulation	protein regulation
Fgfr1op2	wound healing							
Larp4	regulation of mRNA translation, associates with ribosomal subunit							
Srpr	nascent protein targeting to ER							
Btbd10	Akt activation via inhibition of dephosphorylation by PPP2CA							
Pex2	Peroxisome biogenesis							
Grcc10	required for corpus callosum development							
Gt2h1	general and transcription-coupled nucleotide excision repair of damaged DNA							
2610507B11Rik	unknown function							
Mrpl9	mitochondrial ribosome component, associated with peroxisome biogenesis disorder							
Atf2	transcriptional activator of genes involved in anti-apoptosis, cell growth and DNA-damage response							
Ncln	ribosome-associated translocon complex component, regulation of protein complex stability							
Tbc1d22b	GTPase activating protein for Rab family proteins, intracellular protein transport							
Mrps12	component of ribosome							
B9d2	regulation of cilogenesis							
Mpdu1	regulation of lipid-linked oligosaccharides and glycosylphosphatidylinositol synthesis							
Tbc1d10a	GTPase activating protein for Rab27A, retrograde protein transport from endosome to Golgi							
Nsun2	methylation of cytosine to promote TRNA stability and prevent MRNA decay							
Nt5c3b	involved in exonucleolytic catabolism of deadenylated MRNA							
Ric8a	G-alpha protein activator, regulation of GPCR activity including basement membrane organization							
Irgq	GTP binding activity							
Snx13	regulation of G protein signaling, involved in intracellular trafficking							
Alyref	nuclear located molecular chaperone, regulation of BZIP proteins, nuclear export of MRNA							
NA	unknown function							
Rps9	ribosomal protein, component of 40S subunit							
Isoc2b	involved in protein stabilization							
Comm9	involved in sodium ion transport, act upstream of or within cholesterol homeostasis, NFkB regulation							
Cct7	molecular chaperone, part of TCP1 complex, involved in folding of nascent proteins including actin and tubulin							
Derf3	degradation of misfolded glycoproteins in ER, functional component of ERAD							
NA	unknown function							
Kctd2	involved in proteasome mediated protein catabolism							
Txnip	inhibitor of thioredoxin, regulation of cellular redox signaling and oxidative stress and ER stress							
Wdr75	RNA binding, regulation of ribosomal RNA processing and RNAPOL1 transcription							
Raly	RNA binding protein, transcriptional cofactor of cholesterol biosynthetic genes in liver							
Nelfc4	repressor of RNAPol II mediated transcriptional elongation, component of NELF complex							
Ap2s1	clathrin associated, involved in protein transport							
NA	lncRNA, unknown function							
Oaz2	negative regulator of ornithine decarboxylase activity and intracellular polyamine biosynthesis							
Wdr61	component of PAF and SKI complexes, transcriptional regulation including RNA surveillance							
Bst2	antiviral activity via tethering nascent virions to infected cell membranes							
Rps27rt	component of 40S ribosome, regulation of rRNA processing							
Gbp5	component of TRAFAC class GTPases, activator of NLRP3 inflammasome assembly							
Pat1	RNA binding protein involved in deadenylation-dependent decapping of mRNAs leading to their degradation							
Siah1a	E3 ligase mediates ubiquitination and proteosomal degradation of target proteins							
1190007J07Rik	unknown function							
Arf4	GTP-binding protein, activator of cholera toxin, involved in protein trafficking							