

Additional File 1, Table S1. Composition experimental diets.

	CHOW	HF	HF/FO
Starch	363	147	147
Protein	211	201	201
Glucose	47	158	158
Fatty acids			
C14:0	0.5	12.2	16.1
C16:0	8.4	92.5	79.5
C16:1	0.7	11.5	18.0
C18:0	3.7	76.3	50.5
C18:1	13.7	133.2	101.0
C18:2	16.9	11.5	9.7
C18:3	1.9	2.9	15.2
C20-22	0.4	4.0	53.3

Values are given in g/kg.

Additional File 1, Table S2. Primer and probe sequences used for qPCR.

Gene	Sense	Antisense	Probe	Accession number
<i>Adiponectin (Adipoq)</i>	AGG ACA TCC TGG CCA CAA TG	CTT AGG ACC AAG AAG ACC TGC AT	CTC TCC AGG AGT GCC ATC TCT GCC A	NM_009605
<i>Acc1 (Acaca)</i>	CCA TCC AAA CAG AGG GAA CAT C	CTA CAT GAG TCA TGC CAT AGT GGT T	ACG CTA AAC AGA ATG TCC TTT GCC TCC AAC	NM_133360
<i>Angptl3</i>	CCC AGA GCA CAC AGA CCT	CAC CAC CAG CCA CCT GAG	AGC TGT CCC TTT GCT CTG TGA TTC CAT	NM_013913
<i>Angptl4</i>	AGA TCC AGC AAT TGT TCC AGA AG	AAG AGG TCT ATC TGG CTC TGA AGA TT	CCC AGC AGC AGA GAT ACC TAT CAA AGC AG	NM_020581
<i>Ap2 (Fabp4)</i>	CAC CAT CCG GTC AGA GAG TAC TT	TCT AGG GTT ATG ATG CTC TTC ACC T	CAT CGA ATT CCA CGC CCA GTT TGA	NM_024406
<i>Apoc1</i>	GGG CAG CCA TTG AAC ATA TCA	TTG CCA AAT GCC TCT GAG AAC	CCC GGG TCT TGG TCA AAA TTT CCT TC	NM_007469
<i>Apoc3</i>	CCA AGA CGG TCC AGG ATG C	ACT TGC TCC AGT AGC CTT TCA GG	CCA TCC AGC CCC TGG CCA CC	NM_023114
<i>Atgl (Pnpla2)</i>	AGC ATC TGC CAG TAT CTG GTG AT	CAC CTG CTC AGA CAG TCT GGA A	ATG GTC ACC CAA TTT CCT CTT GGC CC	NM_025802
<i>Cb1 (Cnr1)</i>	ACA AGC TTA TCA AGA CGG TGT TTG	TGC TCC TCA GAG CAT AGA TGA TG	CTC TGC CTG CTG AAC TCC ACC GTG	NM_007726
<i>Cd36 (Fat)</i>	GAT CGG AAC TGT GGG CTC AT	GGT TCC TTC TTC AAG GAC AAC TTC	AGA ATG CCT CCA AAC ACA GCC AGG AC	BC010262
<i>Cd68</i>	CAC TTC GGG CCA TGT TTC TC	AGG ACC AGG CCA ATG ATG AG	CAA CCG TGA CCA GTC CCT CTT GCT G	NM_009853

<i>C/ebpa (Cebpa)</i>	CCA AGA AGT CGG TGG ACA AGA A	AGG CGG TCA TTG TCA CTG GT	CGC AAC AAC ATC GCG GTG CG	NM_007678
<i>Cpt1a</i>	CTC AGT GGG AGC GAC TCT TCA	GGC CTC TGT GGT ACA CGA CAA	CCT GGG GAG GAG ACA GAC ACC ATC CAA C	NM_013495
<i>Faah</i>	CAG AAG CTG TGC TCT TTA CCT ACC	CAG ATA GGA GGT CAC ACA GTT GGT	CTT TGT TCA CTT CCC AGG CCT TTC CC	NM_010173
<i>Fas (Fasn)</i>	GGC ATC ATT GGG CAC TCC TT	GCT GCA AGC ACA GCC TCT CT	CCA TCT GCA TAG CCA CAG GCA ACC TC	NM_007988
<i>Fatp4 (Slc27a4)</i>	CCA GAC AAG GGT TTT ACA GAT AAG CT	ACC TGC TGT GCA CCA CAA TG	CGG GCA CCA CGG GGC TAC CC	NM_011989
<i>Gpihbp1</i>	GCG GAA CCG ACA AAG GTT AC	TGC CTC CCA CTG TCT TGA TG	CCA TGT GGT GTA CTG ATA CCT GCC AGC	NM_026730
<i>Hsl(Lipe)</i>	GAG GCC TTT GAG ATG CCA CT	AGA TGA GCC TGG CTA GCA CAG	CCA TCT CAC CTC CCT TGG CAC ACA C	NM_010719
<i>Lpl</i>	AAG GTC AGA GCC AAG AGA AGC A	CCA GAA AAG TGA ATC TTG ACT TGG T	CCT GAA GAC TCG CTC TCA GAT GCC CTA CA	NM_008509
<i>Napepld</i>	GGC CTT GGA GTC GAT TCT TCT	GTA TTT CAT AAA CCA CCT TGG TTC AT	AGG TCA AAA GGA CCA AAC CTT TTT CCA ATC TC	NM_178728
<i>Pepck (Pck1)</i>	GTG TCA TCC GCA AGC TGA AG	CTT TCG ATC CTG GCC ACA TC	CAA CTG TTG GCT GGC TCT CAC TGA CCC	NM_011044
<i>Pparγ2 (Pparg)</i>	CTA TGA GCA CTT CAC AAG AAA TTA CCA	CAC AGA GCT GAT TCC GAA GTT G	ACA CAG AGA TGC CAT TCT GGC CCA C	U09138
<i>Scd1</i>	ATG CTC CAA GAG ATC TCC AGT TCT	CTT CAC CTT CTC TCG TTC ATT TCC	CCA CCA CCA CCA TCA CTG CAC CTC	NM_009127

Srebp-1c (Srebf1)

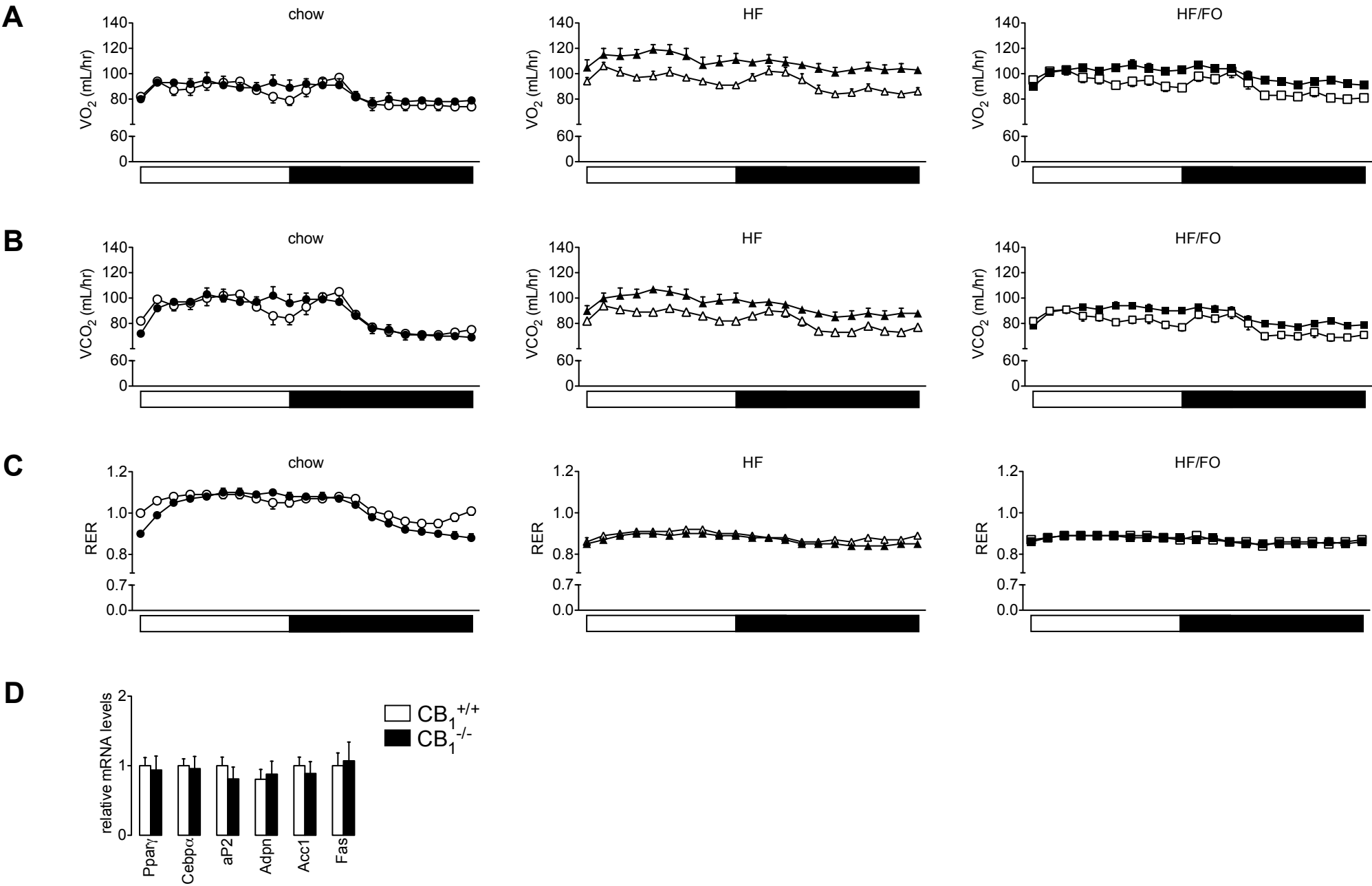
GGA GCC ATG
GAT TGC ACA
TT

CCT GTC TCA
CCC CCA GCA
TA

CAG CTC ATC
AAC AAC CAA
GAC AGT GAC
TTC C

AF286470

Additional File 1, Figure S1. (A) VO_2 , (B) VCO_2 and (C) RER values during light and dark phases. Open symbols, $CB_1^{+/+}$ mice; closed symbols, $CB_1^{-/-}$ mice. Values are given as means $\pm$ SEM for $n=5-7$. (D) Gene expression levels in epididymal fat tissue of 3-week old $CB_1^{-/-}$ and $CB_1^{+/+}$ mice receiving regular chow. Open bars, $CB_1^{+/+}$ mice; closed bars, $CB_1^{-/-}$ mice. Values are given as means $\pm$ SEM for $n=4-8$.



Additional File 1, Table S3. Detailed indirect calorimetry data of $CB_1^{+/+}$ and $CB_1^{-/-}$ mice fed chow, a HF or a HF/FO diet during 6 weeks.

	chow		HF		HF/FO	
	$CB_1^{+/+}$	$CB_1^{-/-}$	$CB_1^{+/+}$	$CB_1^{-/-}$	$CB_1^{+/+}$	$CB_1^{-/-}$
Values expressed per mouse						
Dark phase						
Carbohydrate oxidation (mg/hr)	128±7	128±6	76±2#	79±5#	68±3#	73±3#
Fat oxidation (mg/hr)	-11±2	-10±2	15±1#	19±2#	17±2#	19±2#
Energy expenditure (cal/hr)	455±16	465±20	481±9	554±23#*	470±13	506±9*
Light phase						
Carbohydrate oxidation (mg/hr)	93±6	79±3*	60±3#	57±5#	53±3#	56±4#
Fat oxidation (mg/hr)	-1±6	6±1*	17±1#	24±2#*	19±1#	22±2#
Energy expenditure (cal/hr)	397±13	401±16	436±12	509±18#*	419±16	464±10#*\$
Values expressed per gram lean body mass						
Dark phase						
Carbohydrate oxidation (mg/hr)	25±1	28±1	15±1#	17±1#	14±1#	15±0#
Fat oxidation (mg/hr)	-2.1±0.4	-2.1±0.4	3.0±0.3#	4.2±0.4#	3.5±0.3#	3.7±0.4#
Energy expenditure (cal/hr)	89±2	101±3*	97±5	121±7#*	96±3	106±3*
Light phase						
Carbohydrate oxidation (mg/hr)	18±1	17±1	12±1#	12±1#	11±1#	12±1#
Fat oxidation (mg/hr)	-0.2±0.4	1.2±0.3*	3.5±0.3#	5.3±0.4#*	3.9±0.4#	4.6±0.5#
Energy expenditure (cal/hr)	78±1	87±3*	88±5	111±5#*	86±3	97±2#*\$

Values are given as means $\pm$ SEM for $n=5-7$; # $p<0.05$ compared to chow group of the same genotype, \$ $p<0.05$ compared to HF group of the same genotype, * $p<0.05$ $CB_1^{-/-}$ vs. $CB_1^{+/+}$ (Student t-test).

General linear model analysis revealed overall effects for the following parameters ($p<0.05$):

Genotype: dark phase energy expenditure per mouse, light phase energy expenditure per mouse, normalized dark phase energy expenditure, normalized light phase energy expenditure, normalized light phase fat oxidation.

Chow versus HF: dark/light phase carbohydrate/fat oxidation per mouse, light phase carbohydrate/fat oxidation per mouse, dark/light phase energy expenditure per mouse, dark/light phase normalized carbohydrate/fat oxidation, dark/light phase normalized energy expenditure.

Chow versus HF/FO: dark/light phase carbohydrate/fat oxidation per mouse, light phase carbohydrate/fat oxidation per mouse, light phase energy expenditure per mouse, dark/light phase normalized carbohydrate/fat oxidation.