SUPPLEMENTARY FIGURE LEGENDS

Supplementary Figure 1: Left, Q-PCR analysis showing relative amounts of endogenous TORC1 mRNA in brain, liver, white adipose, brown adipose, and skeletal muscle of wild-type mice. TORC1 mRNA amounts normalized to 18S ribosomal RNA. Right, effect of Ser151 de-phosphorylation on translocation of wild-type and S151A mutant TORC1. Immunocytochemical analysis of wild-type and S151A mutant TORC1 localization in NIH-3T3 cells. Exposure to FSK indicated. DAPI staining shown to visualize nuclei.

Supplementary Figure 2: Left, Immunohistochemical and in situ hybridization analysis of TORC1 gene expression in the brain. Staining of TORC1 in paraventricular, ventromedial, and arcuate nuclei of the hypothalamus as well as pyriform cortex and hippocampus indicated. TORC1 promoter activity evaluated by in situ hybridization analysis with the inserted β-galactosidase (β-Geo) gene cassette in TORC1-/- mice. Right, immunoblot showing relative TORC1 protein amounts in different brain regions of wild-type mice.

Supplementary Figure 3: Average mass of individual tissues compared with epididymal fat pad (EpWAT) in wild-type, TORC1 +/-, and TORC1 -/- male mice at 16-18 weeks of age ($P<.05$, n=3-7). HW/BW, ratio of heart weight to body weight.

Supplementary Figure 4: In situ hybridization and Q-PCR analysis of POMC, NPY, and AgRP expression in wild-type and TORC1 -/- hypothalamus. Top panel shows POMC expression in arcuate neurons.

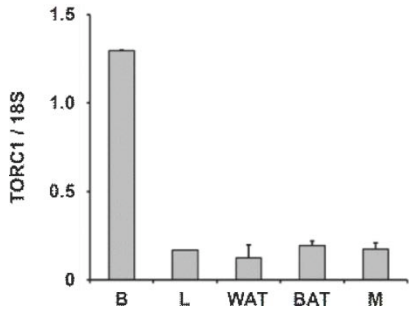
Supplementary Figure 5: Top left, relative effect of IP leptin (2μg/g) administration on nocturnal food intake in 12 week old *TORC1 -/-* and control littermates (*; *P*<0.05 compared to vehicle-treated wild-type mice; $^{\#}$, *P*<0.05 compared to leptin-treated wild-type mice; n=8-11). Top right, effect of IP-administered α-MSH analog MTII (2μg/g) on nocturnal food intake at 12 weeks of age (*; *P*<0.05 compared to vehicle-treated wild-type mice; $^{\$}$, *P*<0.05 compared to MTII-treated *TORC1 -/-* mice; n=4). Bottom left, immunohistochemical staining of P-STAT3 in hypothalamic sections from wild-type and *TORC1 -/-* mice at 16-17 weeks of age 1 hour following IP injection of vehicle or leptin. Bottom right, graph showing number of P-STAT3-positive nuclei identified in arcuate sections from vehicle or leptin treated wild-type and *TORC1 -/-* mice (*; *P*<0.05 compared to vehicle-treated wild-type mice; $^{\$}$, *P*<0.05 compared to vehicle-treated *TORC1 -/-* mice; n=3).

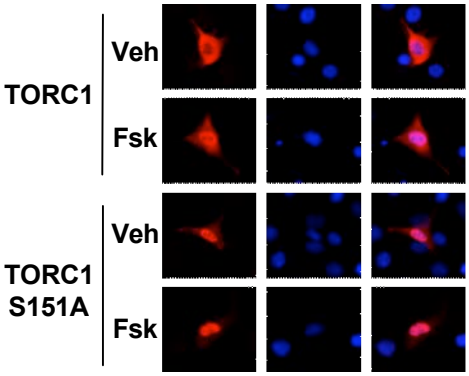
Supplementary Figure 6

Top, effect of IP glucose (2mg/kg) or control saline injection on hypothalamic TORC1 dephosphorylation in 4 hour fasted wild-type mice. Effect of glucose in cortex and amygdala shown for comparison. Bottom, immunofluorescence

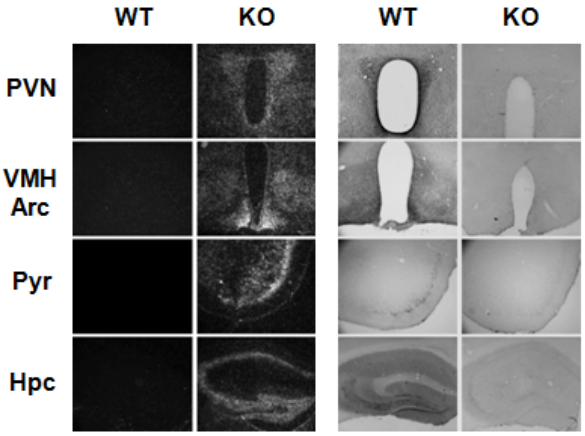
analysis of TORC1 intracellular localization in arcuate and hippocampal sections from ad libitum fed wild-type mice.

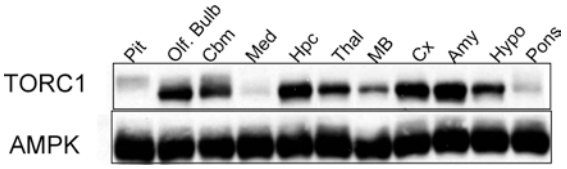
Supplementary Figure 1





Supplementary Figure 2

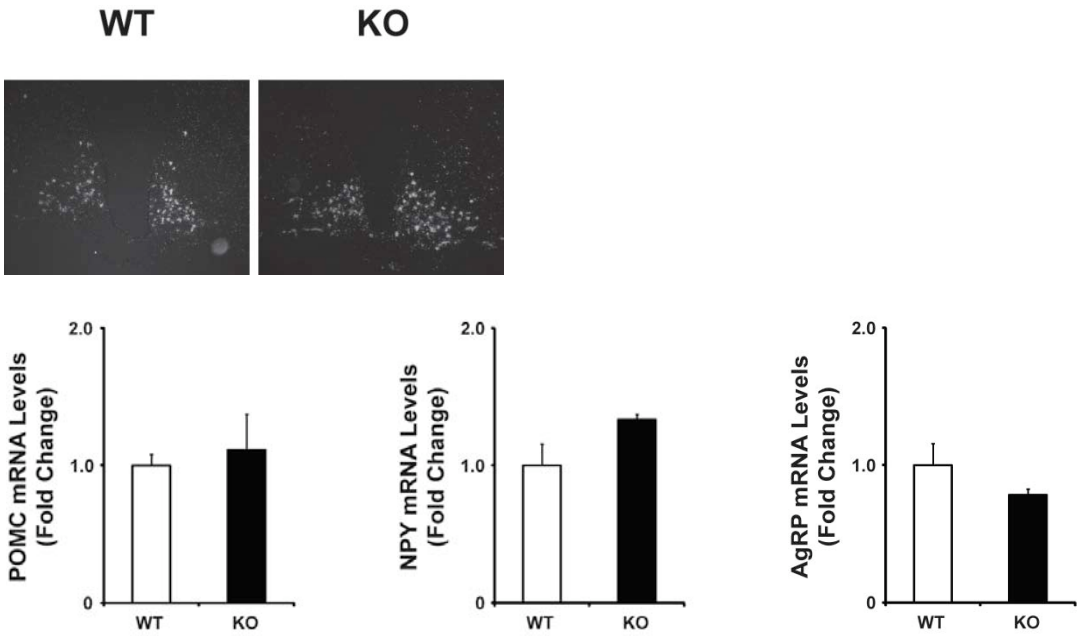




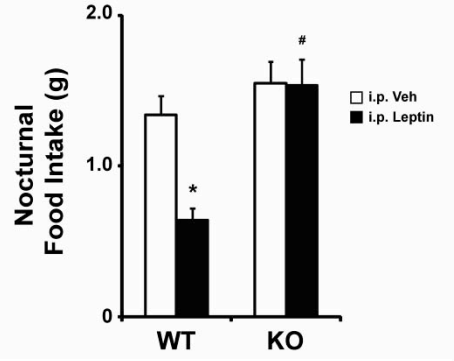
Supplementary Figure 3

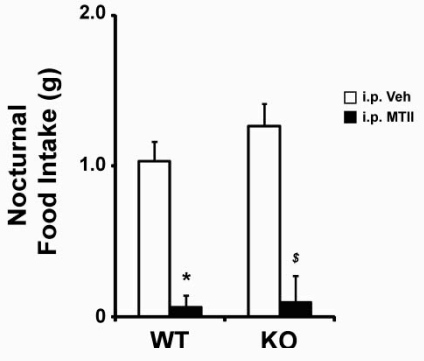
	WT	Het	KO
Heart (g) HW/BW	0.123 ± 0.004 0.0043 ± 0.0001	0.153 ± 0.008 0.0048 ± 0.0003	0.161 ± 0.014 0.0045 ± 0.0003
Liver (g)	1.45 ± 0.15	1.56 ± 0.05	1.81 ± 0.14
Pancreas (g)	0.352 ± 0.025	0.358 ± 0.034	0.375 ± 0.028
Spleen (g)	0.053 ± 0.009	0.048 ± 0.004	0.058 ± 0.004
Soleus (g)	0.012 ± 0.001	0.013 ± 0.001	0.012 ± 0.001
Testes (g)	0.169 ± 0.011	0.177 ± 0.016	0.164 ± 0.011
EpWAT (g)	0.374 ± 0.053	0.667 ± 0.194	1.011 ± 0.168

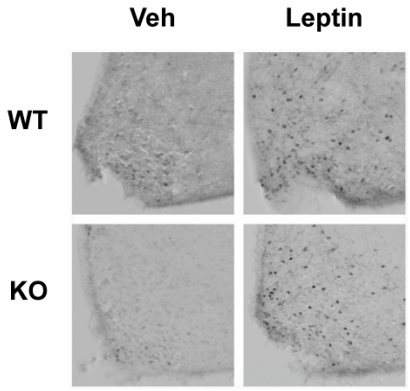
Supplementary Figure 4

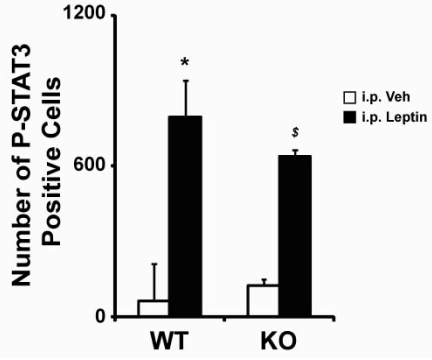


Supplementary Figure 5









Supplementary Figure 6