SUPPLEMENTARY DATA

Supplementary Table 1. Antibodies Used for Western blots.

Name	Source (catalog number)	Dilution
XBP1	Santa Cruz (sc-7160)	1:1,000
IRE1α	Cell Signaling (3294)	1:1,000
CREB	Dr. Marc Montminy (Salk)	1:10,000
Adiponectin	Sigma (A6354)	1:10,000
GRP78	Santa Cruz (sc-1051)	1:1,000
PDI	Assay Design (SPA-890)	1:5,000
DsbA-L	PhosphoSolutions (465-DsbA-L)	1:10,000
ERp44	Cell signaling (2886)	1:1,000
HSP90	Santa Cruz (sc-7947)	1:10,000
p-Ser473 AKT	Cell Signaling (9271)	1:2,000
AKT	Cell Signaling (9272)	1:5,000
Goat anti-mouse IgG HRP	BioRad (170-6516)	1:10,000

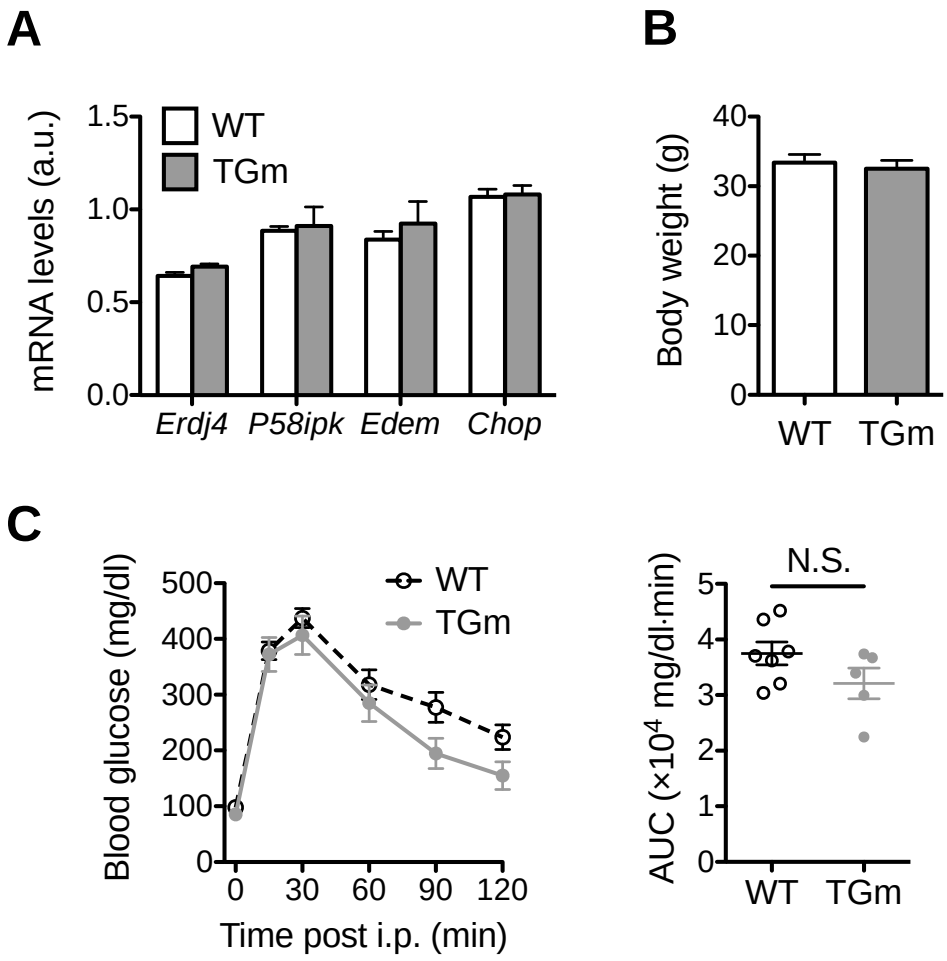
SUPPLEMENTARY DATA

Supplementary Table 2. Primer Sequences Used for RT-PCR, qPCR and ChIP.

	Gene	**Forward**	**Reverse**
RT-PCR	*HA-Xbp1s*	ATTACGCCATGGAATTCTGC	GGACCGGGTACCATGAGC
	L32	GAGCAACAAGAAAACCAAGCA	TGCACACAAGCCATCTACTCA
qPCR	*Xbp1*	ACATCTTCCCATGGACTCTG	TAGGTCCTTCTGGGTAGACC
	Xbp1s	GAGTCCGCAGCAGGTG	TCCAGAATGCCCAAAAGG
	Xbp1u	GAAGAGAACCACAAACTCCAGC	GCAGAGGTGCACATAGTCTGAG
	Tnfa	TCAGCCGATTTGCTATCTCATA	AGTACTTGGGCAGATTGACCTC
	Grp78	TGTGGTACCCACCAAGAAGTC	TTCAGCTGTCACTCGGAGAAT
	Pdia6	TGGTTCCTTTCCTACCATCACT	ACTTTCACTGCTGGAAAACTGC
	DsbA-L	GCCCATGTGGATGGTAAAAC	GAAGTAAAGGCAGGCACAGC
	Erp44	AGAATTCCATCACGGACCTG	ACGTAAGCCTCTGCTGGTGT
	Ero1l	CGGACCAAGTTATGAGTTCCA	TCAGAGAGATTCTGCCCTTCA
	Chop	ATATCTCATCCCCAGGAAACG	TCTTCCTTGCTCTTCCTCCTC
	Adipoq	GGAACTTGTGCAGGTTGGAT	GCTTCTCCAGGCTCTCCTTT
	aP2	AGCATCATAACCCTAGATGG	TCACGCCTTTCATAACACAT
ChIP	*Grp78*	ATTGGTGGCCGTTAAGAATG	TGAAGTCGCTACTCGTTGGA
	Pdia6	GGTCCACGTTTGCCTTACTC	TCCTCCTCCTCACATGAACC
	Erp44	CACAGGGCTTACTGGGAAAG	CCTCTCACGCCCTCACTTC
	3’UTR	GAGCTGGAGCAAGAGTCCAC	TGGGAATGCAGAATTTAAGG

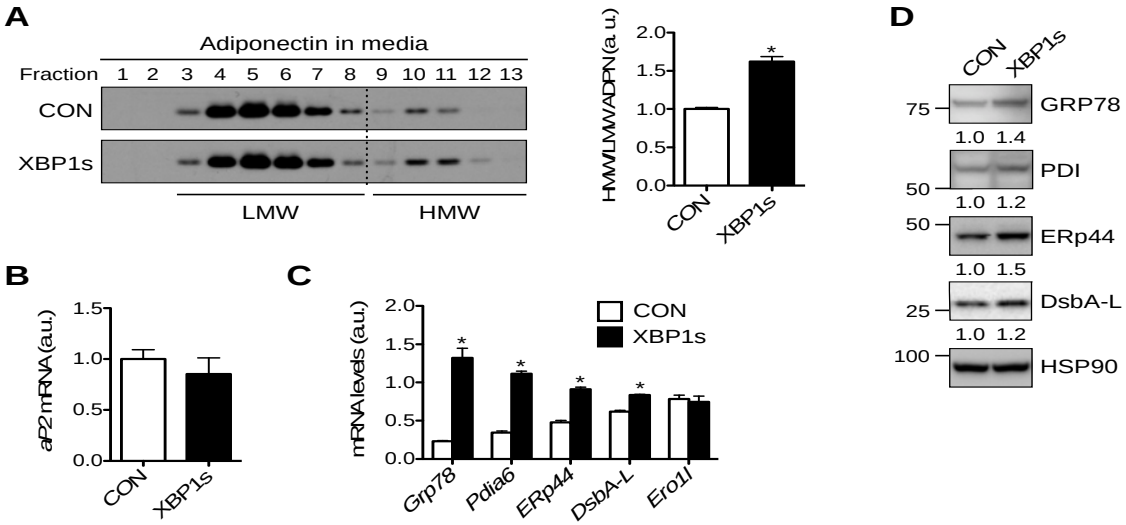
SUPPLEMENTARY DATA

Supplementary Figure 1. Gene expression and glucose tolerance test in moderate adipocyte XBP1s transgenic mice. *A*: qPCR analysis of XBP1s target gene *Erdj4*, *P58ipk* and *Edem*, and non-target gene *Chop* in WAT of WT (n = 6) and TGm mice (n = 3). *B*: Body weights of 37-week-old WT (n = 7) and TGm (n = 5) male mice. *C*: Glucose tolerance test. Blood glucose concentrations of mice in (*B*) were measured at indicated time points post i.p. 2 g glucose/kg body weight. Right, area under the curve (AUC) analysis. Data are mean ± s.e.m. N.S., not significant by Student's *t* test.

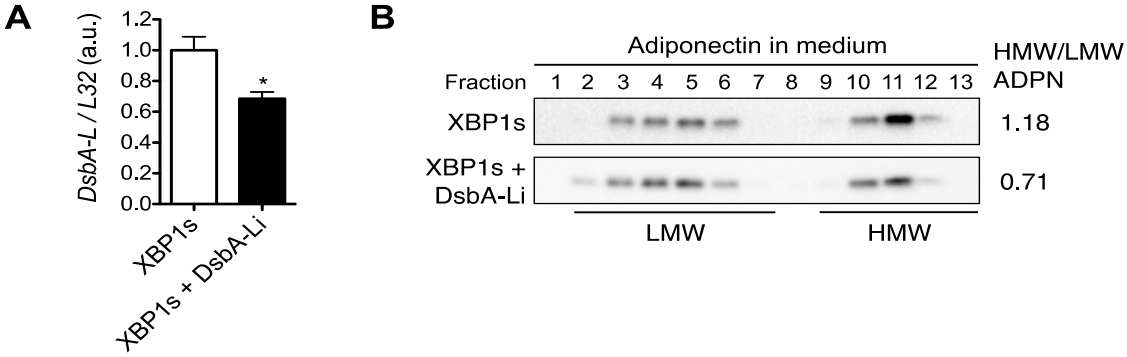


SUPPLEMENTARY DATA

Supplementary Figure 2. Overexpression of XBP1s promotes adiponectin multimerization in 3T3-L1 adipocytes. Fully differentiated 3T3-L1 adipocytes were transfected with GFP (CON) or XBP1s plasmids by electroporation. 24 h later, cells and medium were collected for further analyses. *A*: Representative Western blot analysis of adiponectin complexes secreted by 3T3-L1 adipocytes following sucrose gradient fractionation. Right: quantitation of the ratio of HMW to LMW adiponectin from three independent experiments. *B*: Q-PCR analysis of *aP2* expression, normalized to ribosomal gene *L32*. *C*: Q-PCR analysis in 3T3-L1 adipocytes transfected with GFP (CON) or XBP1s. Gene expression was normalized to ribosomal gene *L32*. Data are mean ± s.e.m. **p* < 0.05 by Student's *t* test. a.u., arbitrary unit. *D*: Western blot analysis in 3T3-L1 adipocytes transfected with GFP (CON) or XBP1s



Supplementary Figure 3. Knockdown of *DsbA-L* attenuates the effect of XBP1s on adiponectin multimerization in 3T3-L1 adipocytes. 3T3-L1 adipocytes at day 7 were transfected with XBP1s or XBP1s together with DsbA-L RNAi (DsbA-Li) plasmids by electroporation. 48 h later, cells and medium were collected for further analyses. *A*: *DsbA-L* mRNA levels determined by qPCR. Bars represent mean ± s.e.m. **p* < 0.05 by Student's *t* test. *B*: Western blot analysis of adiponectin complexes secreted by 3T3-L1 adipocytes following sucrose gradient fractionation. Quantitation of HMW/LMW adiponectin shown on the right of the blots.



SUPPLEMENTARY DATA

Supplementary Figure. 4. Transient knockdown of *Xbp1* has no effect on adiponectin multimerization in 3T3-L1 adipocytes. 3T3-L1 adipocytes at day 7 were transfected with control RNAi (CONi) or XBP1 RNAi (XBP1i) plasmids for 24 h by electroporation; cells and medium were collected for further analyses. *A*: Western blots of nuclear extracts (of cells treated with Tg for 6 h) or total cell lysates (cells were untreated). Bottom: quantitation of protein levels normalized to HSP90. *, a non-specific band. *B*: Representative Western blot analysis of adiponectin complexes secreted by 3T3-L1 adipocytes following sucrose gradient fractionation (three repeats). Quantitation of triplicates from one experiment shown below. Bars represent mean ± s.e.m. *$p < 0.05$ by Student's *t* test.