Factor XIII-A transglutaminase deficient mice show signs of metabolically healthy obesity on high fat diet

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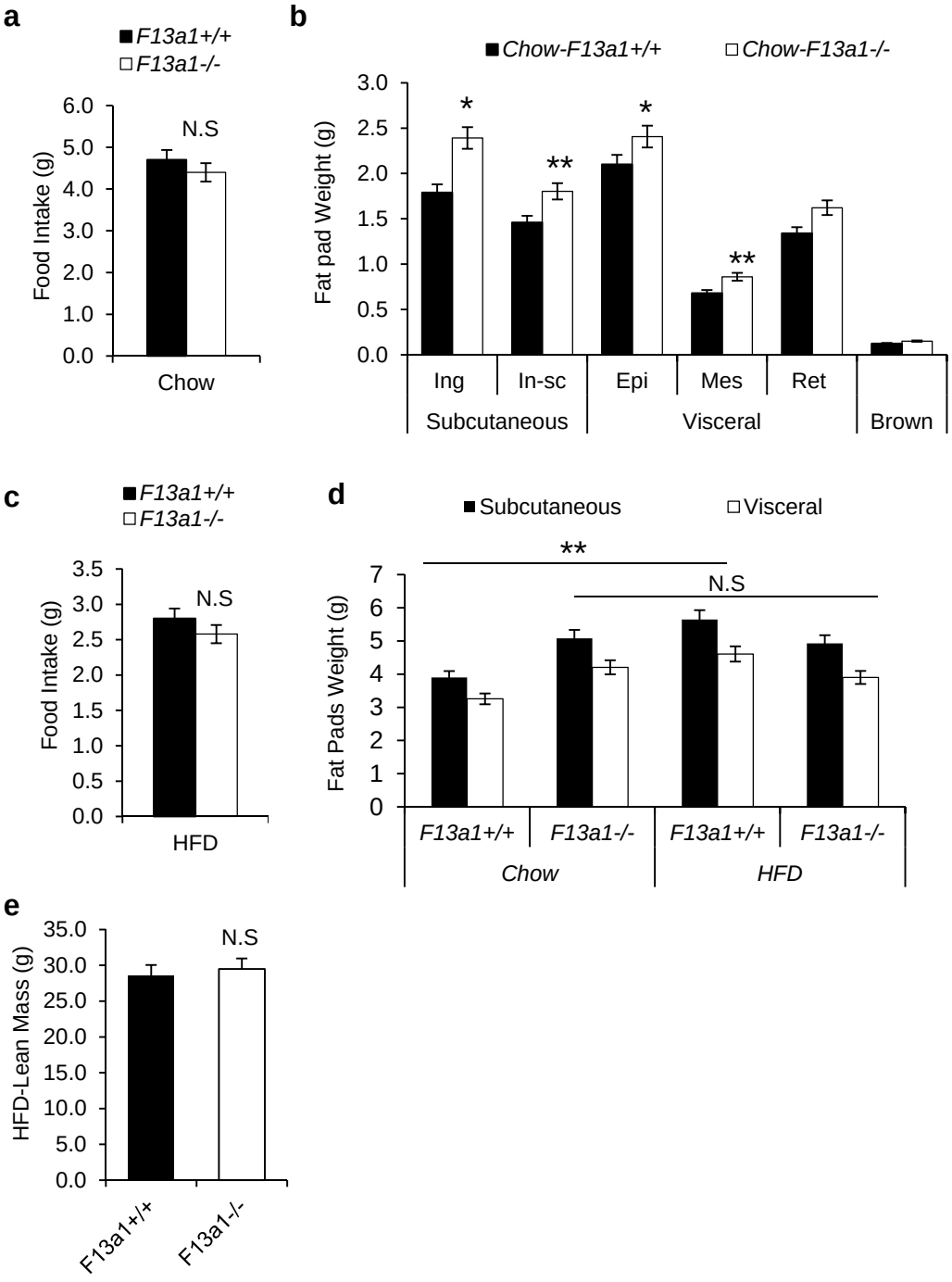
Supplemental Information
Figure S1



Supplemental Information
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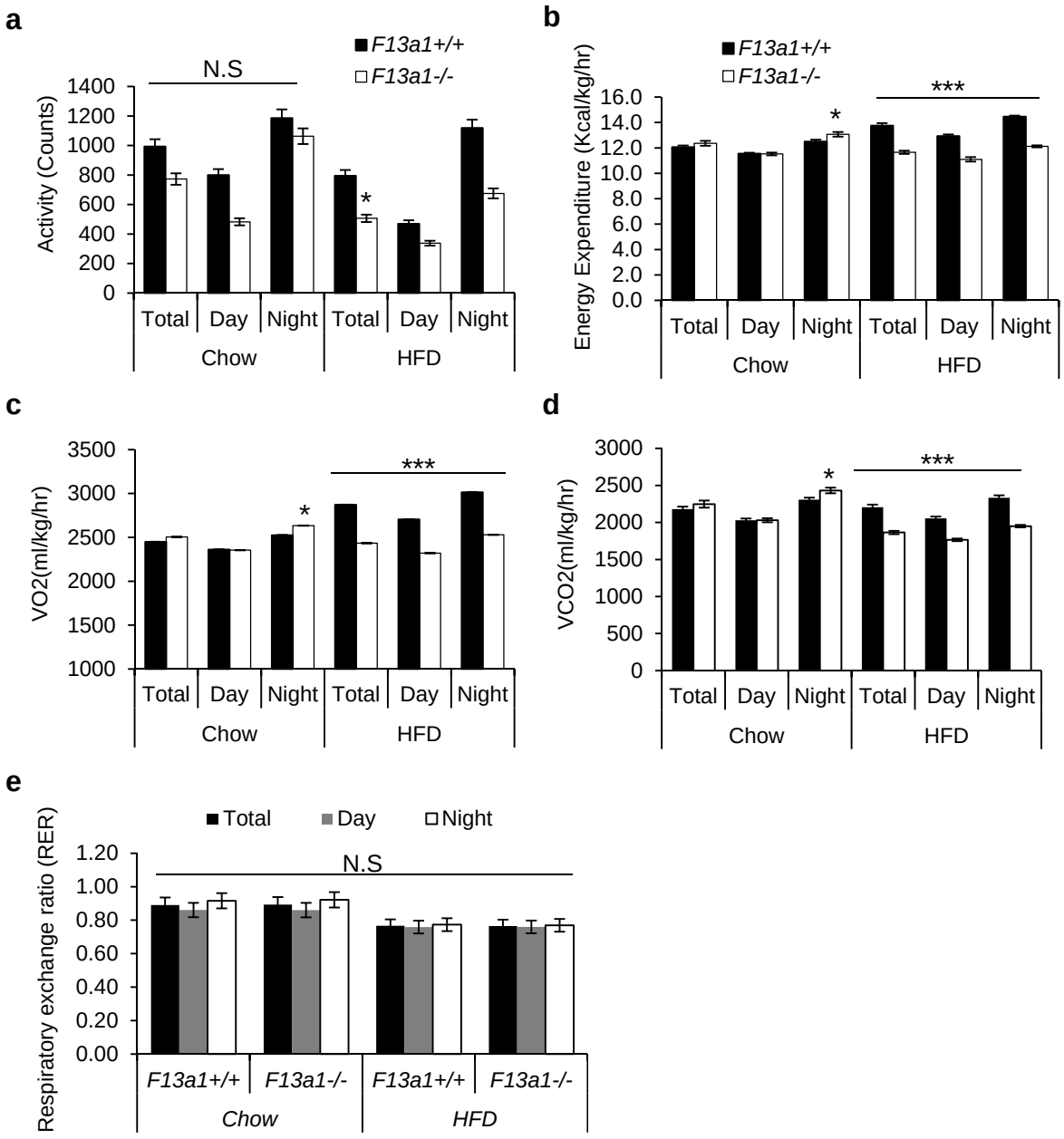

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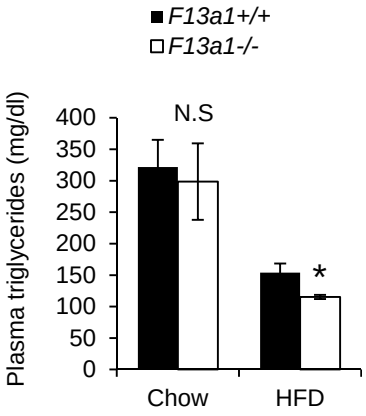

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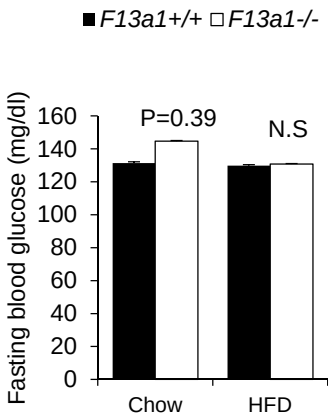

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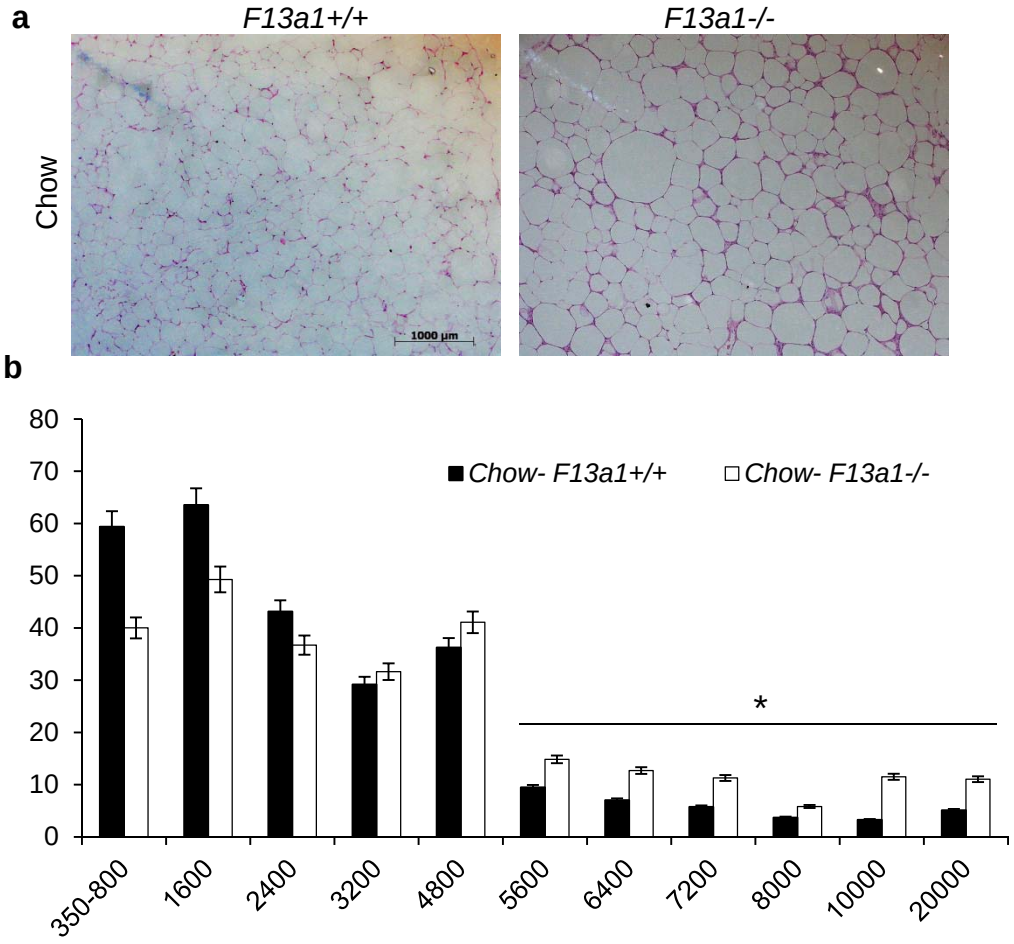
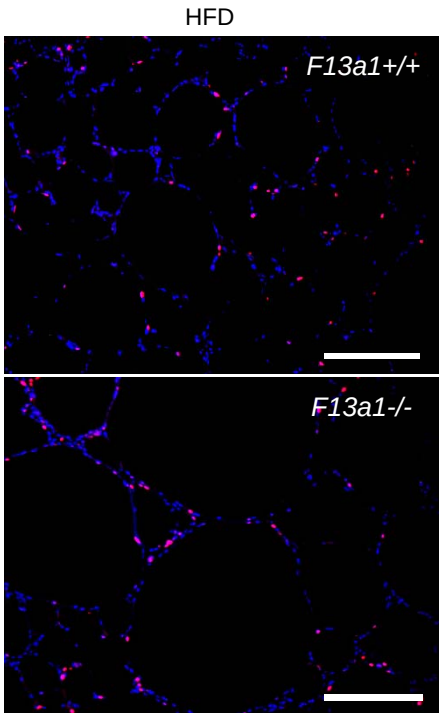


Supplemental Information
Figure S6

a



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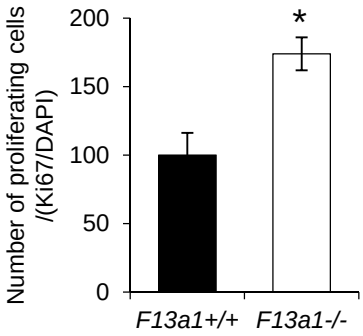
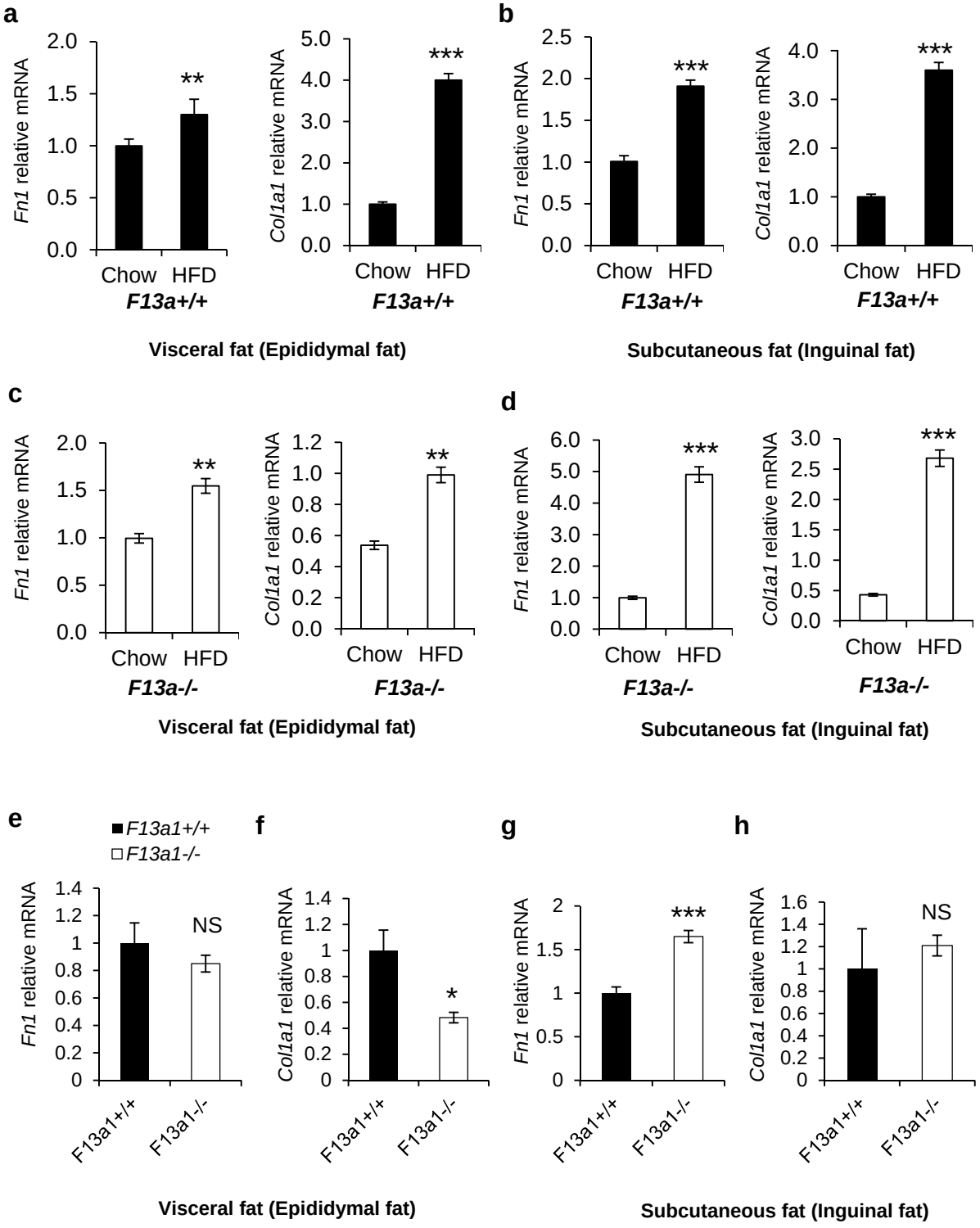
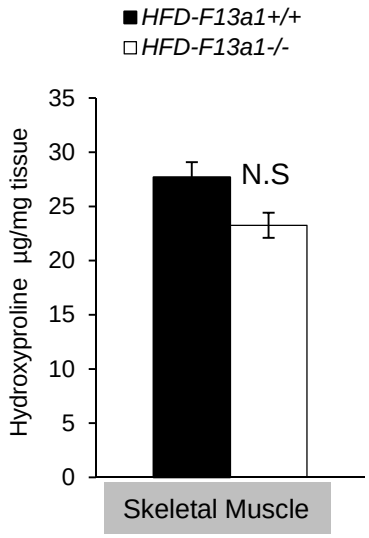


Supplemental Information
Figure S7



Supplemental Information
Figure S8



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Supplementary figure legends

Figure S1. Increased fat pad weight in *F13a1-/-* mice fed on chow diet. (a) Food intake of *F13a1-/-* and *F13a1+/+* mice on chow diet (n=4 mice/group). **(b)** Individual fat pad's weight of *F13a1-/-* and *F13a1+/+* mice fed chow diet. Subcutaneous fat: inguinal (Ing) and inter-scapular (In-sc); Visceral: epididymal (Epi), mesenteric (Mes) and Retroperitoneal (Ret) fat pads; and brown fat (n=10-16 mice/group). **(c)** Food intake of *F13a1-/-* and *F13a1+/+* mice on HFD (n=4 mice/group). **(d)** Subcutaneous and visceral fat pad weight from *F13a1-/-* and *F13a1+/+* mice on chow and HFD; *F13a1-/-* mice do not show redistribution of fat mass on both chow and HDF (data is collected from Figures S1b and 1d). **(e)** HFD Lean Mass measured by EchoMRI (n=4 mice/group). No changes are observed. All error bars represent SEM; *p<0.05; **p<0.01; N.S-Not Significant.

Figure S2. Reduced activity and energy expenditure of *F13a1-/-* mice on HFD. Metabolic cage measurements were taken during the day (light) and night (dark) cycles over the course of four days. **(a)** Total activity (ambulatory and rearing) was reduced in *F13a1-/-* mice on HFD. **(b)** Energy expenditure was reduced in *F13a1-/-* mice on HFD**. (c)** Oxygen consumption (VO2) was significantly lower in *F13a1-/-* mice on HFD. **(d)** Carbon dioxide production (VCO2) was significantly lower in *F13a1-/-* mice on HFD. **(e)** Gas exchange data used to calculate the respiratory exchange ratio (RER=VO2/VCO2). All error bars represent SEM. (n=4 mice/group) *p<0.05; **p<0.01; ***p<0.001, N.S-Not Significant.

Figure S3. Plasma triglyceride levels on chow and HFD. Plasma triglyceride levels of *F13a1-/-* and *F13a1+/+* mice on HFD are significantly lower in *F13a1-/-* compared to control mice. All error bars represent SEM; (n=4 mice/group); *p<0.05, , N.S-Not Significant.

Figure S4. Fasting blood glucose levels are not affected. Blood glucose levels are measured after 6 h fast (7:00 am-1:00 pm). No significant differences are seen between *F13a1-/- and F13a1+/+* mice on chow or HFD. All error bars represent SEM. (n=8 mice/group) N.S-Not Significant.

Figure S5. Larger adipocytes in WAT of *F13a1-/-* mice on chow. (a) Hematoxylin and Eosin (H&E) stained sections of epididymal fat pad. Scale bar equals 1000 µm **(b)** Frequency distribution of adipocytes in mice on chow diet; the frequency of larger adipocytes was increased in *F13a1-/-* mice. Error bars represent SEM. (n=4 mice/group) *p<0.05.

Figure S6. Increased cell proliferation in WAT of *F13a1-/-* mice on HFD. (a) Immunofluroscence staining of the epididymal fat pad of *F13a1-/-* and *F13a1+/+* mice on HFD for Ki67 (red) and nuclei/DAPI (blue). Proliferating cells shown in pink nuclei (merge of Ki67 and DAPI). Scale bar equals 200 µm. **(b)** Graph represents quantification of proliferating cells, number of Ki67 positive cells (nuclei) normalized to the total number of DAPI. Error bars represent SEM. (n=4 mice/group) *p<0.05.

Figure S7. mRNA expression of *Fn1* and *Col1a1* in epididymal and inguinal fat pads on HFD. (a) *Fn1* and *Col1a1* mRNA levels in epididymal fat pad on chow and HFD of *F13a1+/+* mice. **(b)** *Fn1* and *Col1a1* mRNA levels in inguinal fat pad on chow and HFD of *F13a1+/+* mice. **(c)** *Fn1* and *Col1a1* mRNA levels in epididymal fat pad on chow and HFD of *F13a1-/-* mice. **(d)** *Fn1* and *Col1a1* mRNA levels in inguinal fat pad on chow and HFD of *F13a1-/-* mice. **(e)** *Fn1*

mRNA levels in epididymal fat pad of *F13a1*+/+ and *F13a1-/-* mice on HFD. **(f)** *Col1a1* mRNA levels in epididymal fat pad of *F13a1*+/+ and *F13a1-/-* mice on HFD. **(g)** *Fn1* mRNA levels in inguinal fat pad of *F13a1*+/+ and *F13a1-/-* mice on HFD. **(h)** *Col1a1* mRNA levels in inguinal fat pad of *F13a1*+/+ and *F13a1-/-* mice on HFD. All error bars represent SEM; (n=4 mice/group); *p<0.05.

Figure S8. The collagen content of skeletal muscle was not affected in *F13a1-/-* mice on HFD. Hydroxyproline assay of total protein extracts from skeletal muscle of *F13a1-/-* and *F13a1*+/+ mice on HFD. (n=4 mice/group). Error bars represent SEM; N.S-Not Significant.