

## Supplementary Figures for Ishii et al.

### Obesity-promoting and anti-thermogenic effects of neutrophil gelatinase-associated lipocalin in mice

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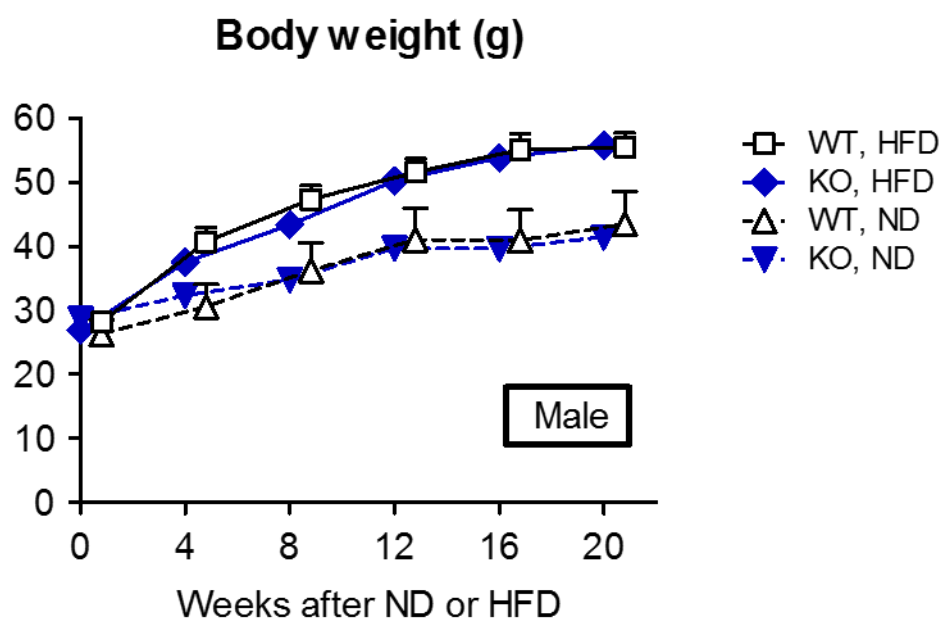
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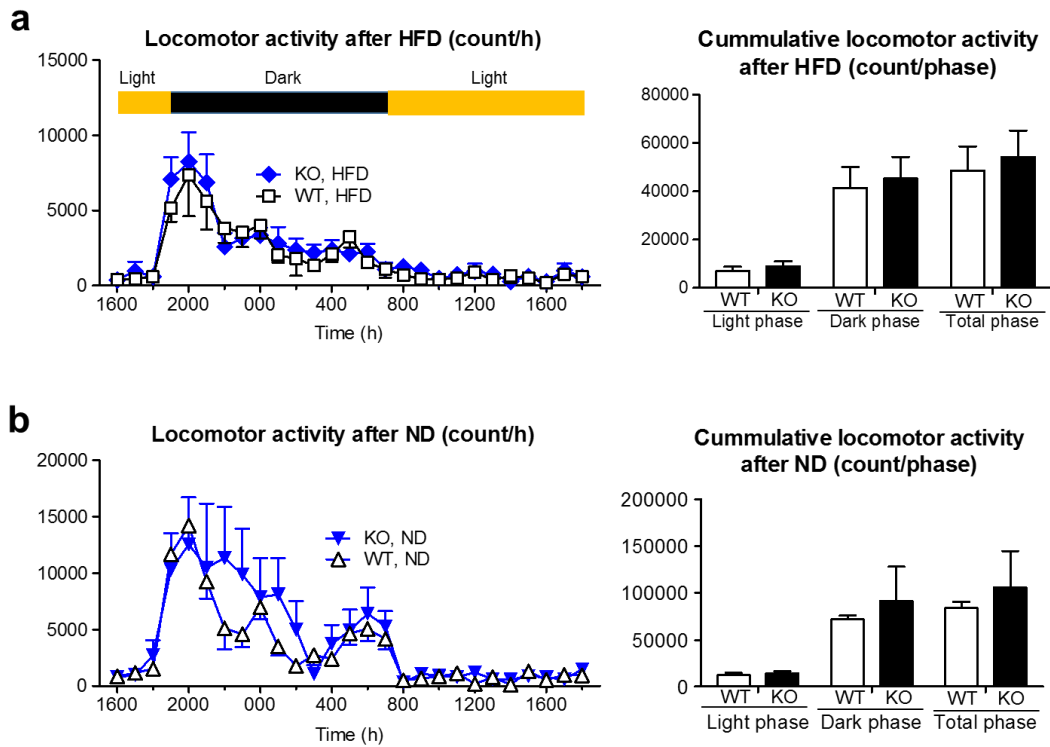
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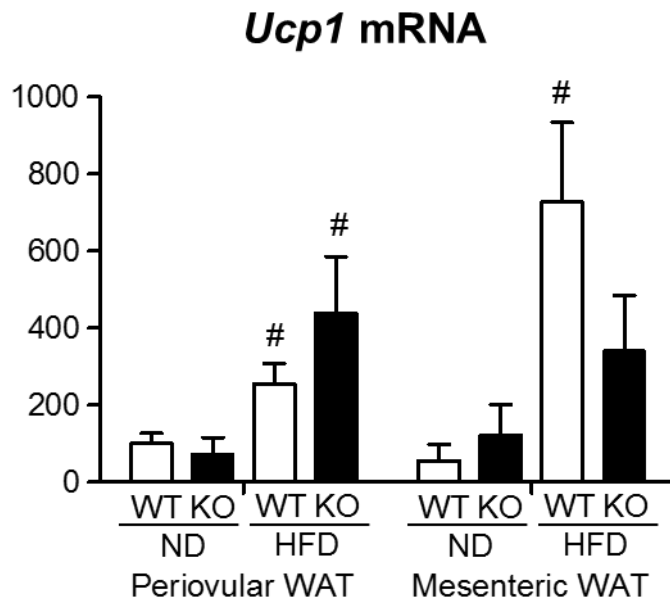
**Supplementary Figure S1. Body weights of *Lcn2* KO and WT male mice treated with ND or HFD since 8 weeks of age.**

Body weights were significantly elevated after 4 weeks of treatment in all 4 groups compared to 0 week, respectively ( $P < 0.05$ ,  $n = 4-8$ ).



**Supplementary Figure S2. Locomotor activity of *Lcn2* KO and WT female mice.**

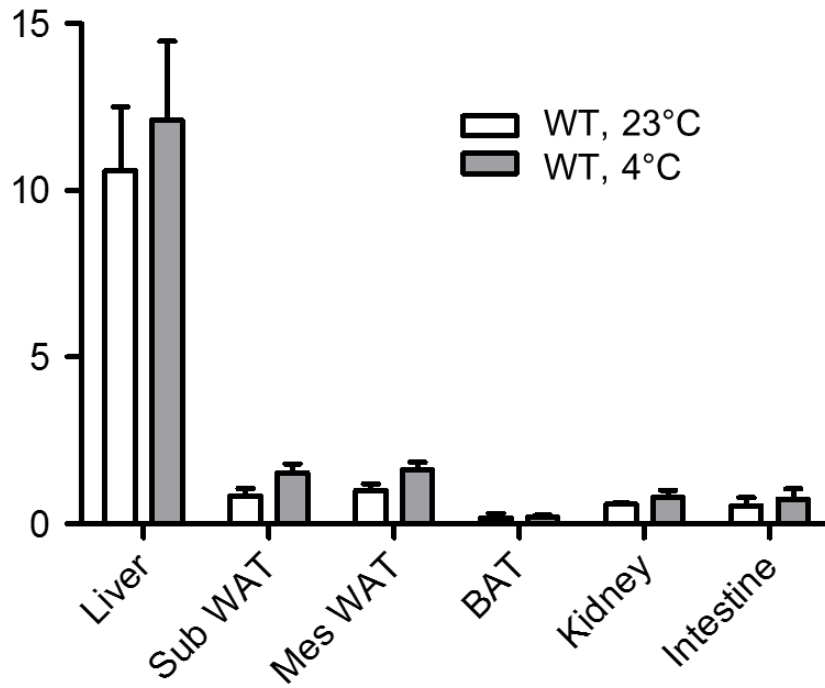
After 24 weeks of (a) HFD or (b) ND treatment, hourly (left) and cumulative (right) locomotor activities were examined (n = 4).



**Supplementary Figure S3. Gene expression of beige marker *Ucp1* in WAT of *Lcn2* KO and WT mice after ND or HFD feeding.**

After 24 weeks of HFD or ND treatment, *Ucp1* mRNA expression was examined in periovascular and mesenteric WAT (n = 4-5). Gene expression level was normalized for 18S ribosomal RNA expression. The level in periovascular WAT of WT mice given ND was defined as 100(%). #P < 0.05 vs ND.

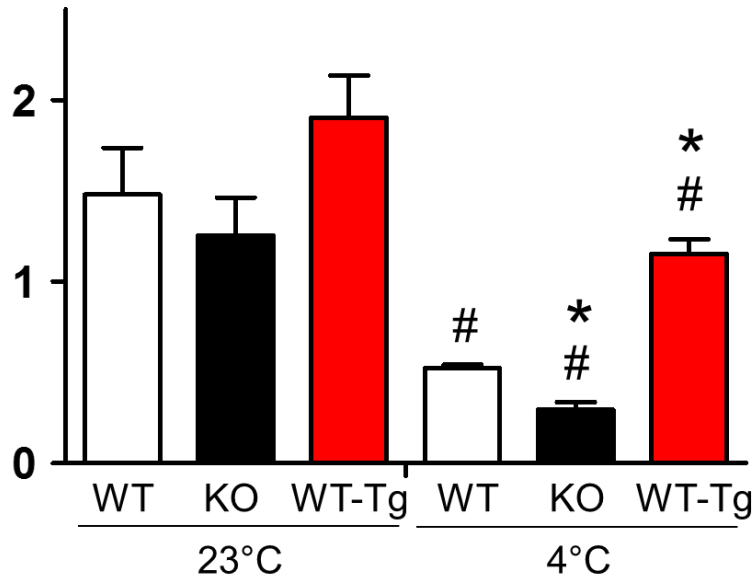
### *Lcn2* mRNA



**Supplementary Figure S4. *Lcn2* mRNA expression in organs of WT mice after cold exposure.**

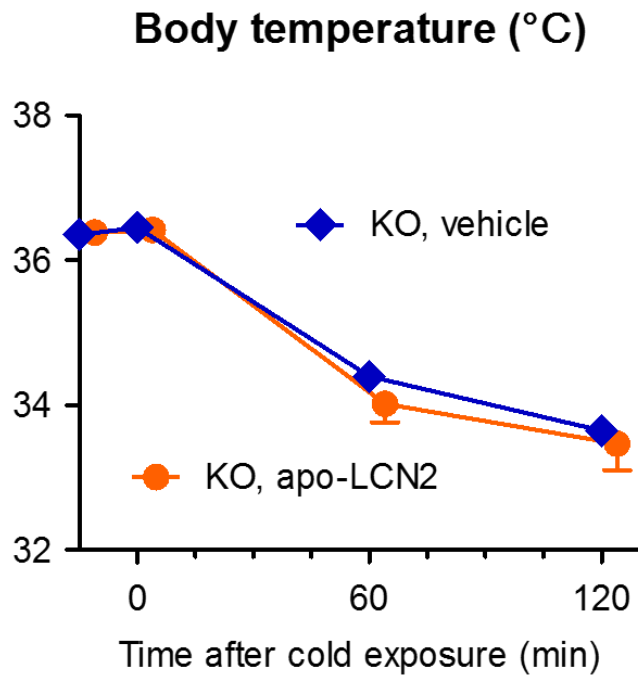
*Lcn2* mRNA expression levels at 4 hours after 4°C or 23°C treatment (n = 4). The level in Mes WAT at 23°C was defined as 1.0.

## BAT noradrenaline ( $\mu\text{g/g}$ tissue)

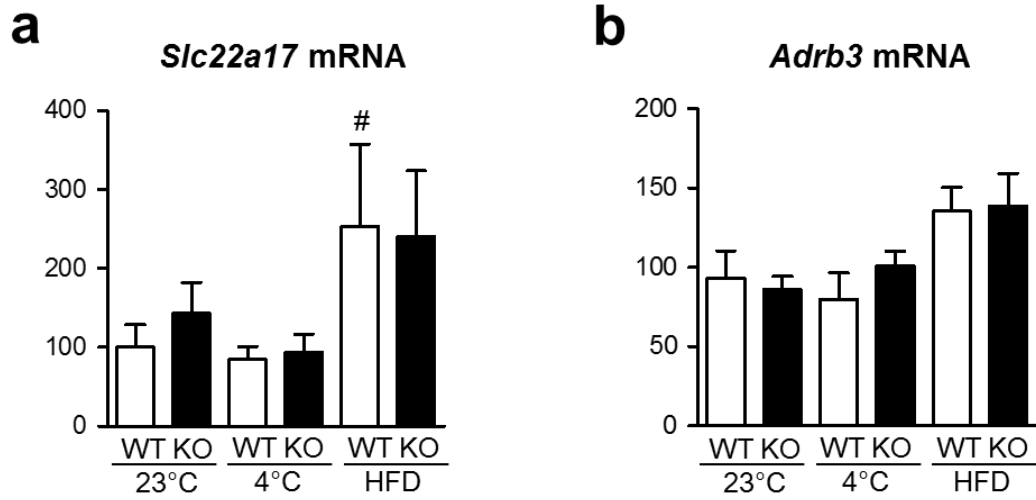


Supplementary Figure S5. Noradrenaline content in BAT after 4 h cold exposure in *Lcn2* KO, WT and WT-Tg mice (n = 5).

#P < 0.05 vs 23°C. \*P < 0.05 vs WT.



Supplementary Figure S6. Effects of apo-LCN2 (siderophore-free and iron-free LCN2) upon cold tolerance in *Lcn2* KO mice (n = 6).



**Supplementary Figure S7. *Slc22a17* and *Adrb3* mRNA expression in BAT of *Lcn2* KO and WT mice after cold exposure or HFD treatment**

BAT was collected after 4 h of cold exposure or 24 weeks of HFD (n = 4-6). The level in WT BAT at 23°C given ND was defined as 100(%). #P < 0.05 vs 23°C.