## **Supplemental Information**



**Figure S1. Leptin receptor expression in microglia and generation of animal model.** The expression of leptin receptor in microglia was examined by RT-PCR in primarily cultured microglia from neonatal mouse brain. The PCR products are shown on the gel (A). The Cre-loxP strategy to generate the mouse model is shown as (B). Body weight of female *LepR* fl<sup>+/+</sup> *Cx3cr1* Cre<sup>+/-</sup> mice did not differ from WT littermates at 10wk age (C). Data are presented by Mean ± SEM.



Figure S2. Gene expression of liver (A) and adipose tissue (B) of LepR fl<sup>+/+</sup> Cx3cr1 Cre<sup>+/-</sup> male mice. Data are presented by Mean  $\pm$  SEM; \*p<0.05



Figure S3. NPY and NeuN immunoreactivity in the PVN of *LepR* fl<sup>+/+</sup> *Cx3cr1* Cre<sup>+/-</sup> male mice. Neuropeptide Y (NPY) immunoreactivity (-ir) is not differed between *LepR* fl<sup>+/+</sup> *Cx3cr1* Cre<sup>+/-</sup> and WT (A-C). NeuN-ir positive cell number is decreased in the PVN (framed by white dashed line) of *LepR* fl<sup>+/+</sup> *Cx3cr1* Cre<sup>+/-</sup> male mice (D-F). Data are presented by Mean  $\pm$  SEM; \*\*\*p<0.001. Scale bar: 100um. III: Third ventricle.