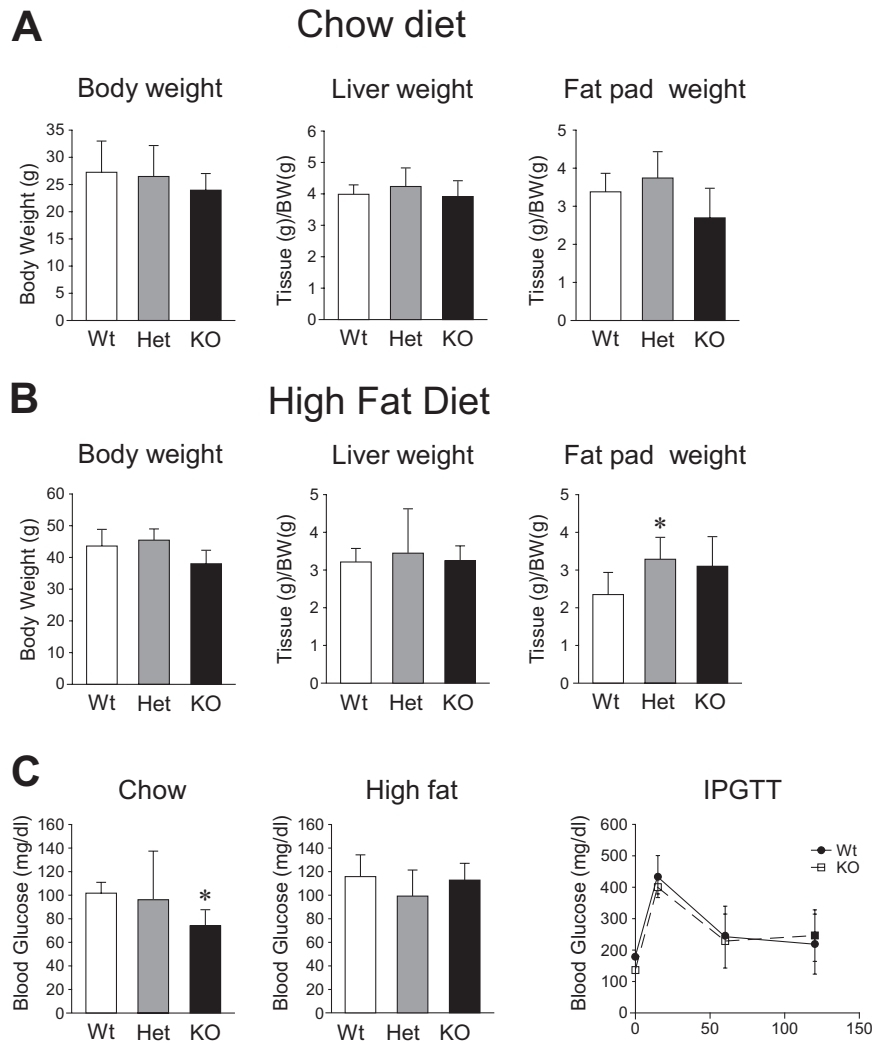


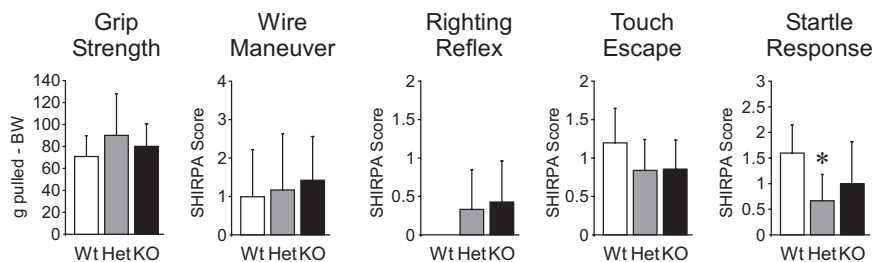
# Supporting Information

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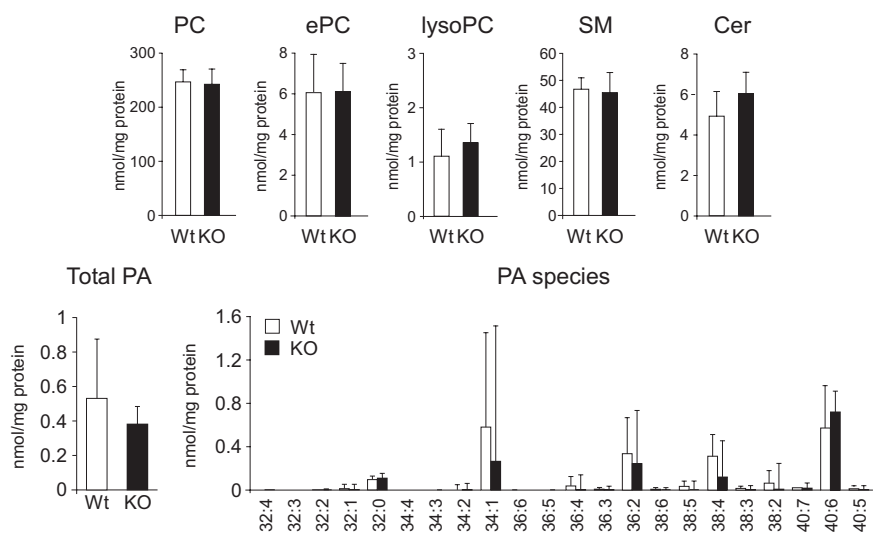
**Fig. S1.** Metabolic studies of lipin-2-deficient mice. (A) WT, *Lpin2*<sup>+/-</sup> [i.e., heterozygous (Het)] and *Lpin2*<sup>-/-</sup> (KO) mice were fed a chow diet until 12 wk of age. Liver and gonadal fat pad weights were expressed in proportion to body weight. (B) Mice were fed a high-fat diet for 4 wk beginning at 8 wk of age, and organ weights were determined upon dissection. Liver and gonadal fat pad weights were expressed in proportion to body weight. (C) Fasting blood glucose was measured before dissection for the cohorts described in A and B fed chow or high-fat diet, respectively. *Right*, Glucose tolerance test was performed on chow-fed WT and lipin-2-KO mice by i.p. injection of 2 mg glucose per gram body weight, and blood glucose levels measured before injection and thereafter at 15, 60, and 120 min ( $n = 4$  per genotype).

## Additional Behavioral Testing Data



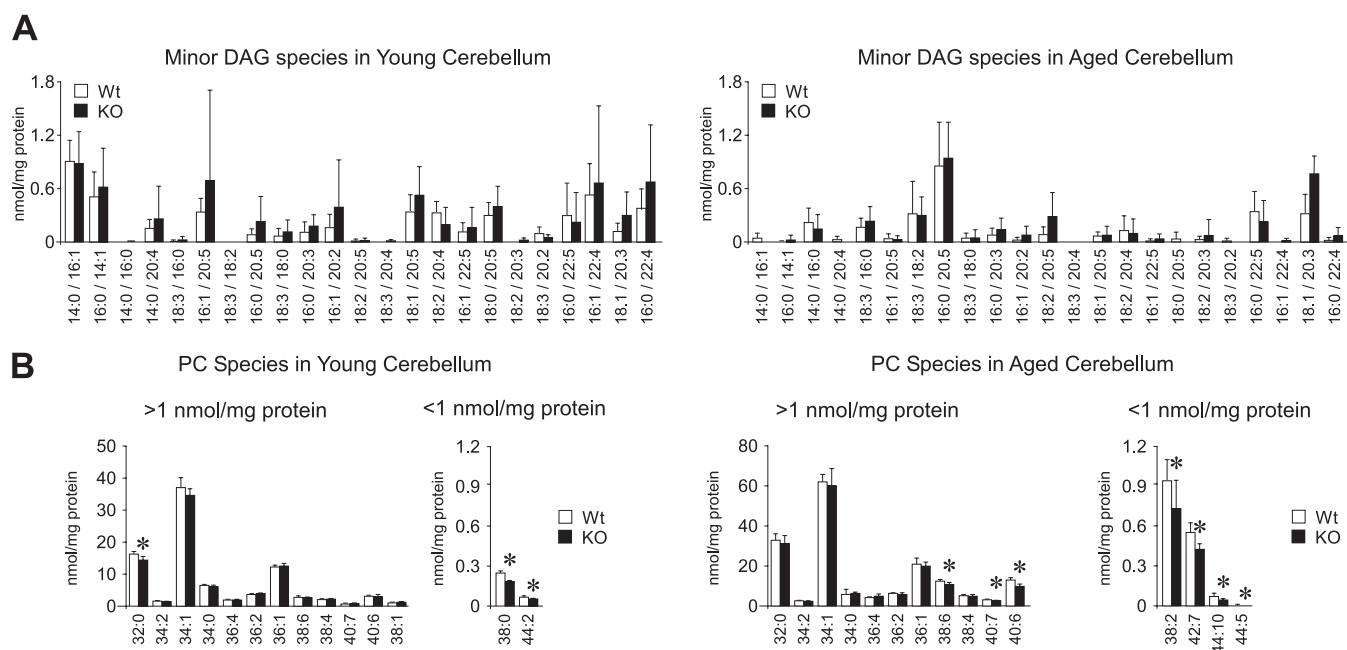
**Fig. S2.** Additional behavioral tests in lipin-2-KO mice. The indicated tests were performed on WT, heterozygous (Het), and lipin-2-KO mice ( $n \geq 5$  individuals per genotype; values represent mean  $\pm$  SD; \* $P < 0.05$  vs. WT).

## Cerebral Cortex



**Fig. S3.** Cerebral cortex phospholipid levels of WT and lipin-2-KO mice. Electrospray ionization MS analysis of phospholipid species extracted from cerebral cortex ( $n = 6$  to  $7$  per genotype). *Upper*, Total levels of phosphatidylcholine (PC), ether-linked PC (ePC), lysoPC, SM (sphingomyelin), and Cer (ceramides). *Lower*, Levels of total PA and the various molecular species of PA as total number of carbons:number of double bonds. Lipid values were normalized to cellular protein. Values represent mean  $\pm$  SD.

# Cerebellum



**Fig. S4.** Diacylglycerol (DAG) and PC species in cerebellum of young and aged WT and lipin-2-KO mice. Electrospray ionization MS analysis of DAG and PC species from young (2 mo of age,  $n = 5$  per genotype) and aged (10–12 mo of age,  $n = 6$  to 7 per genotype) mice. The molecular species are indicated as total number of carbons:number of double bonds. Lipid values were normalized to cellular protein. Values represent mean  $\pm$  SD (\* $P < 0.05$  vs. WT). Minor DAG species (mean,  $< 1$  nmol/mg protein) are shown. The following DAG species were completely undetectable: 18:1/22:6, 18:2/22:5, 18:3/22:4, 20:2/20:5, 20:3/20:4, 18:0/22:6, 18:1/22:5, 18:2/22:4, 20:2/20:4, 20:3/20:3, 18:0/22:5, 18:1/22:4, and 20:2/20:3.

**Table S1.** Plasma lipid levels of WT and lipin-2-KO mice maintained on chow or high-fat diet

Lipid	Chow		High-fat diet	
	WT	Lipin-2 KO	WT	Lipin-2 KO
Total cholesterol	144.4 $\pm$ 39.5	175.4 $\pm$ 32.1	193.0 $\pm$ 37.9	209.3 $\pm$ 61.2
HDL cholesterol	127.4 $\pm$ 32.6	160.0 $\pm$ 27.1	145.0 $\pm$ 29.7	154.0 $\pm$ 45.1
Triglycerides	69.2 $\pm$ 59.3	34.8 $\pm$ 12.7	66.0 $\pm$ 7.3	52.0 $\pm$ 7.2 *
Free fatty acids	36.0 $\pm$ 3.5	32.4 $\pm$ 6.9	30.2 $\pm$ 2.6	23.0 $\pm$ 1.8 *

Plasma lipids indicated were measured in mice maintained on a chow or high-fat diet for 4 wk and fasted 5 h before blood collection ( $n = 5$  per genotype). All values represent mean  $\pm$  SD.

\* $P < 0.05$  vs. WT.