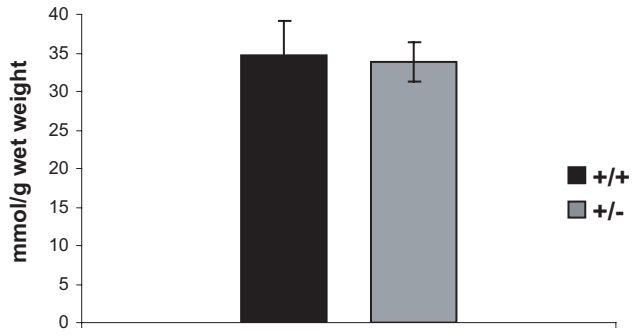


## **Supplementary information 2**

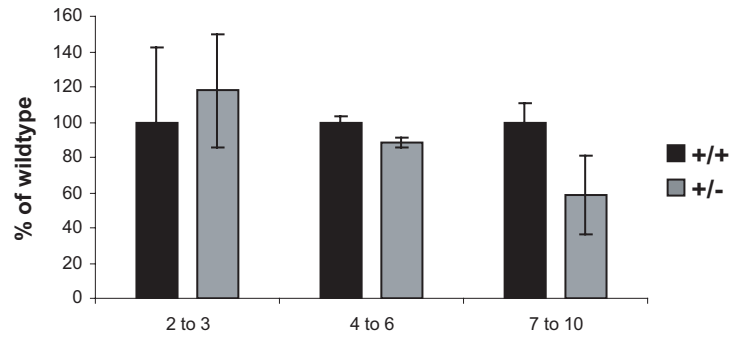
Phospholipid levels were measured in brains of three weeks old seladin-1 heterozygous and wildtype controls. Phospholipid concentrations were similar between the two genotypes ( $35\pm 9$  mmol/g wet weight and  $34\pm 5$  mmol/g wet weight in wildtype and heterozygous mice, respectively) (Suppl. Figure 2A). Moreover, no changes of phospholipid levels were observed in gradient fractions of seladin-1 heterozygous and wildtype brains (Suppl. Figure 2B). Cholesterol and desmosterol levels were further analyzed by GC/MS in the same flotation fractions. In agreement with data obtained by TLC cholesterol levels were reduced in the DRM-fractions of the seladin-1 heterozygous brains, whereas the desmosterol levels were not altered in these fractions (Suppl. Figure 2C). In seladin-1 overexpressing SH-SY5Y cells, cholesterol levels were increased in DRM fractions when compared to control cells, but no changes for desmosterol were observed between the two cultures (Suppl. Figure 2D).

**Supplementary Figure legend 2** Changes in seladin-1 expression levels do not affect the phospholipid and desmosterol content in DRMs. Phospholipid levels were not altered in brains of seladin-1 heterozygous mice (+/-) when compared to wildtype littermates (+/+) (A). Phospholipid measurements in pools of the gradient fractions (fractions 2 and 3, 4-6 and 7-10 were analyzed together) revealed no differences between seladin-1 wildtype and heterozygous mice (B). Determination of cholesterol and desmosterol concentrations by GC/MS revealed no differences between desmosterol levels whereas cholesterol levels changed with seladin-1 expression in DRM fractions (4-6) of heterozygous (+/-) and wildtype (+/+) brains (C) and seladin-1 overexpressing SH-SY5Y and control cells (D). Levels of phospholipids, cholesterol and desmosterol were set as 100% in wildtype mice (B,C) and in control cells (D) and the corresponding levels in the heterozygous mice and seladin-1 overexpressing cells were expressed accordingly. \* $P < 0.05$ .

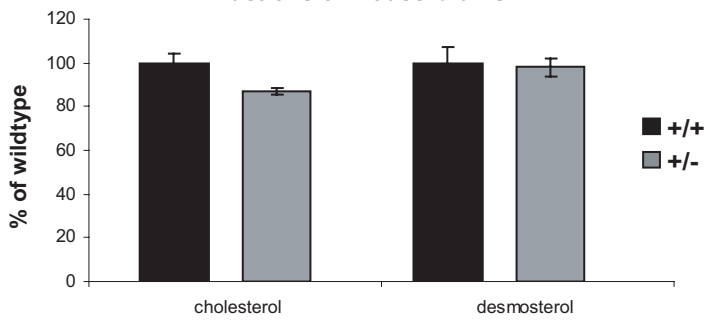
**A** phospholipid levels in mouse brains



**B** phospholipid levels in gradient fractions



**C** cholesterol and desmosterol in DRM fractions of mouse brains



**D** cholesterol and desmosterol in DRM fractions of cells

