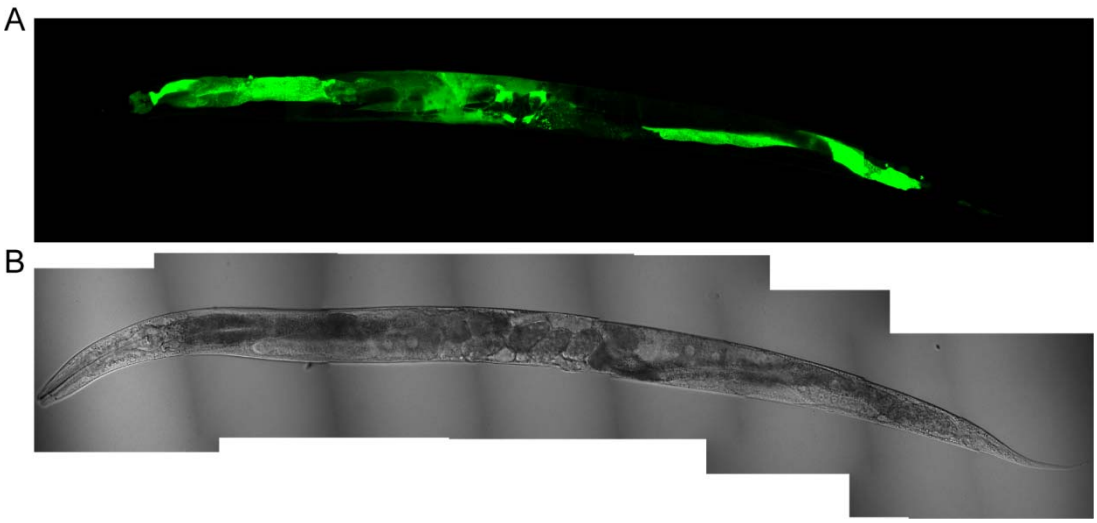

Figure S1. The expression of the gene *C13C4.5*. Transgenic animals were generated in which a 3-kb promoter of *C13C4.5* drives expression of GFP. P*C13C4.5::GFP* is mainly expressed in intestine and hypodermis.

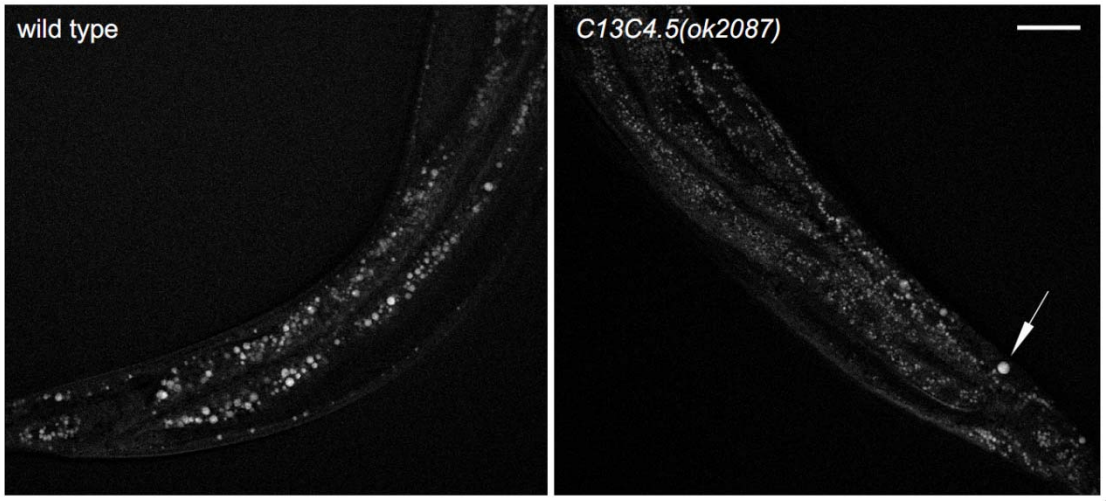

Figure S2. SRS signals of lipid droplets in distal intestine region of wild type and *C13C4.5(ok2087)*. Note that most lipid droplets from the mutant worms are much smaller than those of wild type. Occasionally one or more abnormal large lipid droplets with a size of approximately 4 μm were found in the tail hypodermis in mutants (arrow marked). Scale bar: 20 μm.

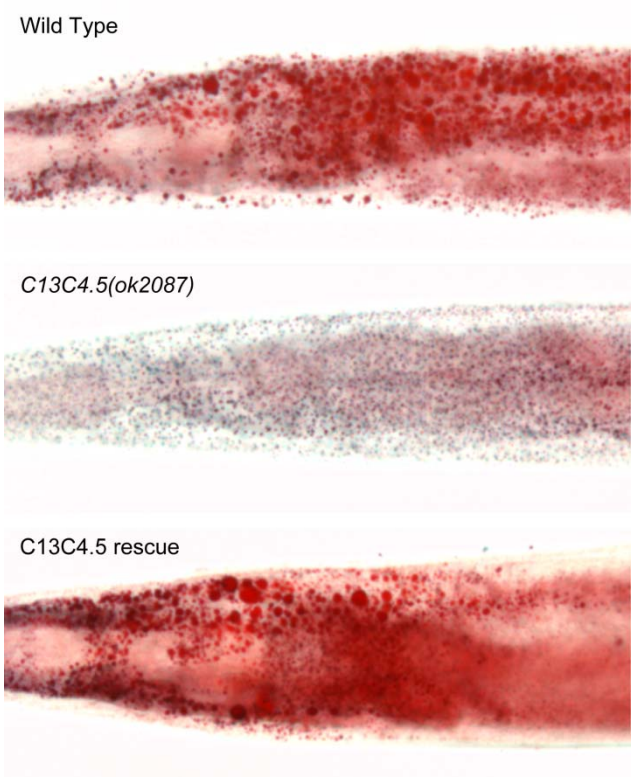

Figure S3. The analysis of a novel fat-mass regulatory gene, C13C4.5, based on oil Red O staining. Compared with wild type, C13C4.5-defective strain exhibits smaller lipid droplets which quite match the result of SRS microscopy. For further demonstration, we injected the construct P*C13C4.5:: C13C4.5::GFP* in mutant worms and found this phenotype could be rescued.

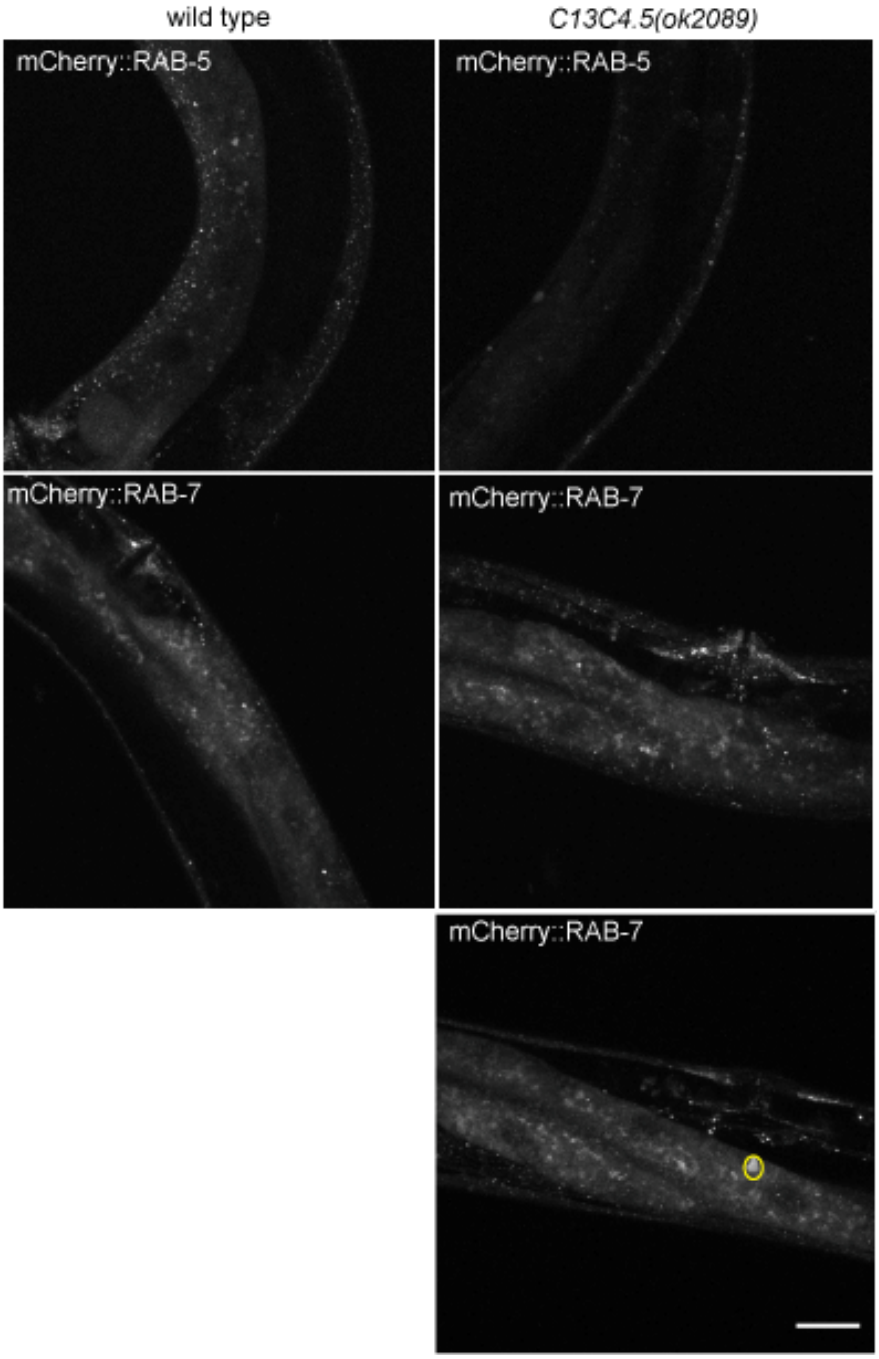

Figure S4. Influence of RAB-5 and RAB-7 positive membrane system in wild type and *C13C4.5(ok2087)*. Represent confocal image of Z-stacks with resolution of 1 micron were acquired for all samples. Note that the circular ring marked the enlarged late endosome. Scale bar: 20 µm.

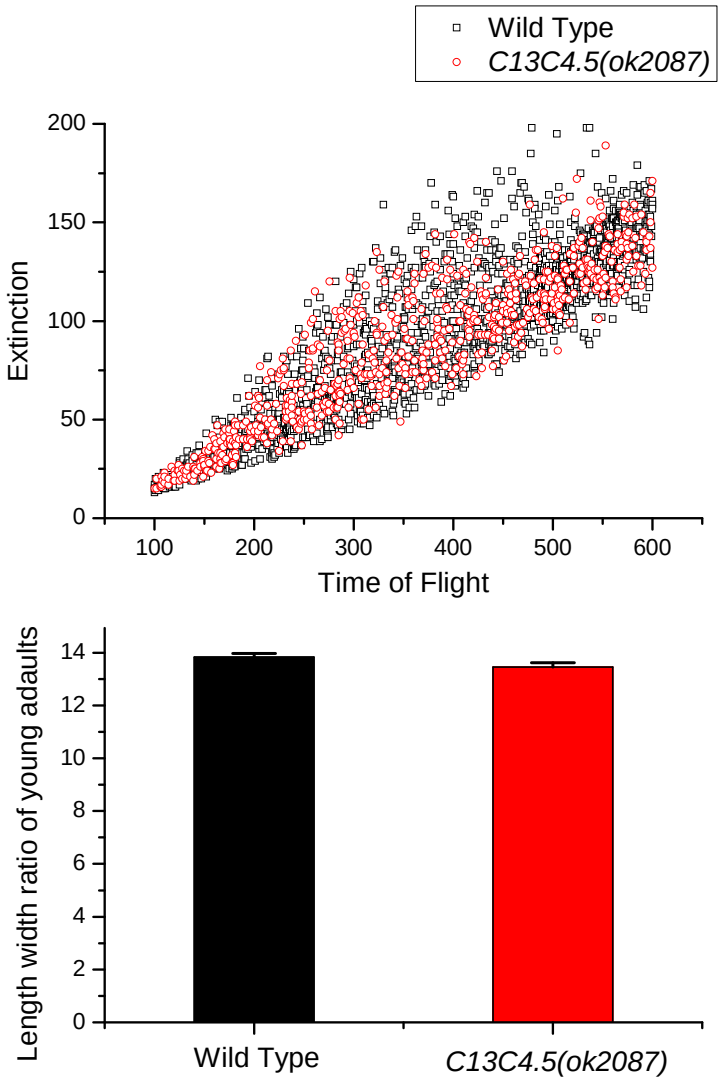

Figure S5. The correlation between length (Time of flight value) and width (Extinction value) exhibits no difference (red box: *C13C4.5(ok2089)* and black box: wild type) (above). Body proportion measurement of wild type and *C13C4.5(ok2089)* (below).