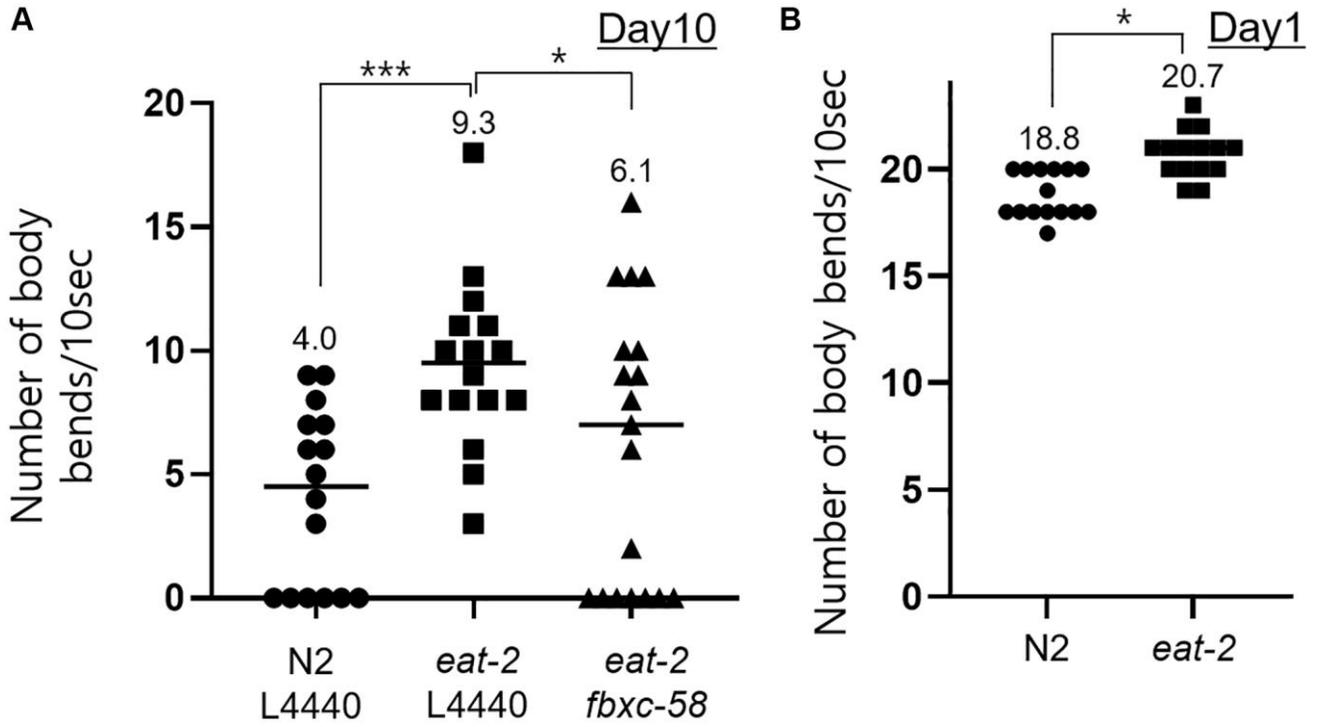
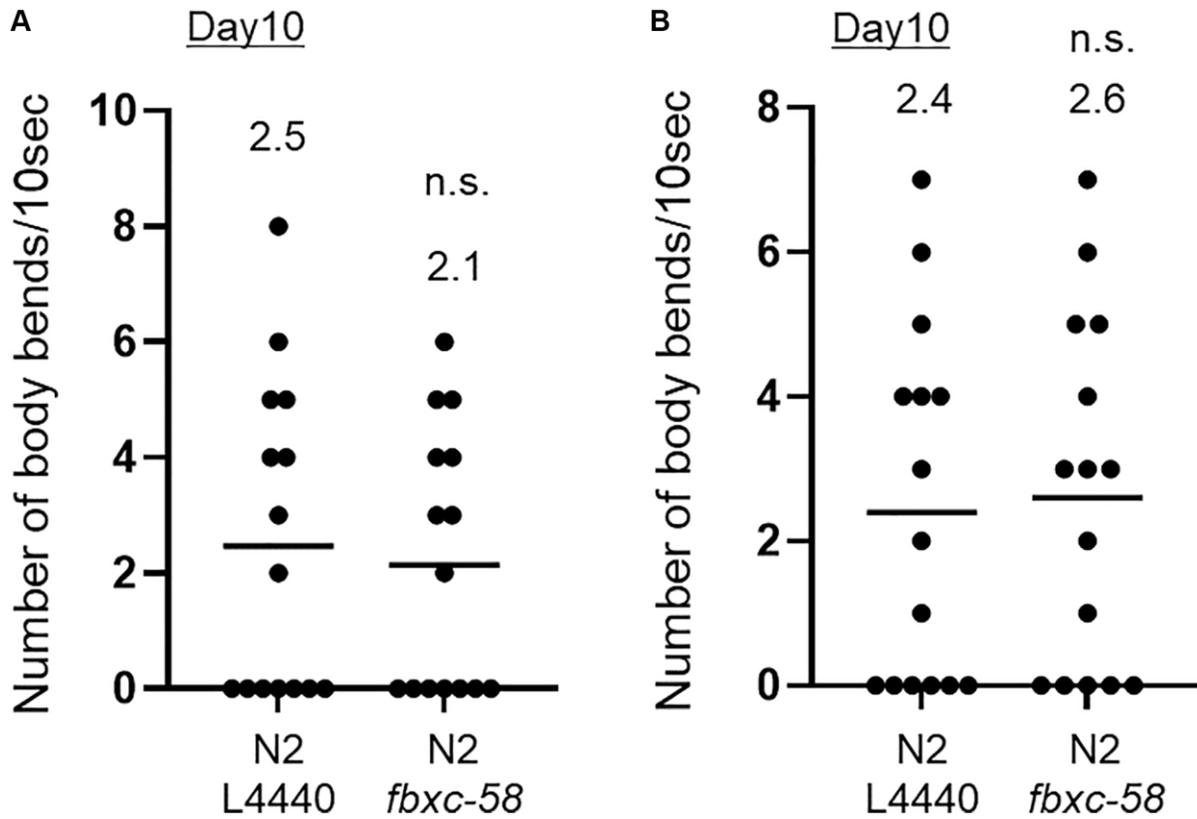


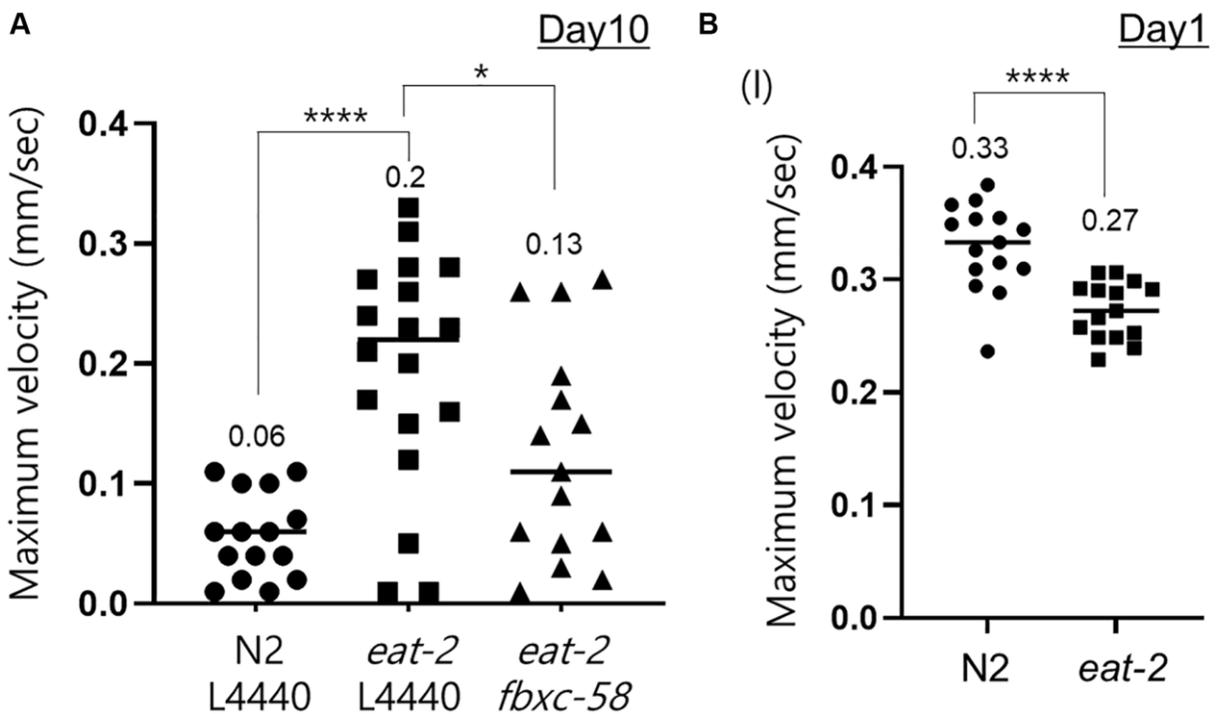
SUPPLEMENTARY FIGURES



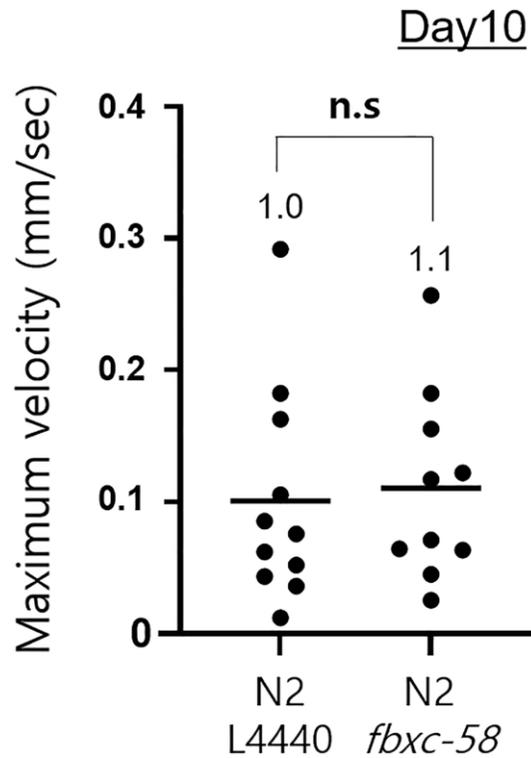
**Supplementary Figure 1. The number of body bends of worms.** (A) The number of body bends in N2 L4440 RNAi (N2 L4440) ( $n = 16$ ), *eat-2* L4440 RNAi (*eat-2* L4440) ( $n = 16$ ), and *eat-2 fbx-58* RNAi (*eat-2 fbx-58*) ( $n = 19$ ) at day 10 of adulthood. (B) The number of body bends in N2 ( $n = 31$ ) and *eat-2* mutant strains ( $n = 30$ ) at day 1 of adulthood. \* $p < 0.05$ , \*\*\* $p < 0.001$ ; unpaired  $t$  test.



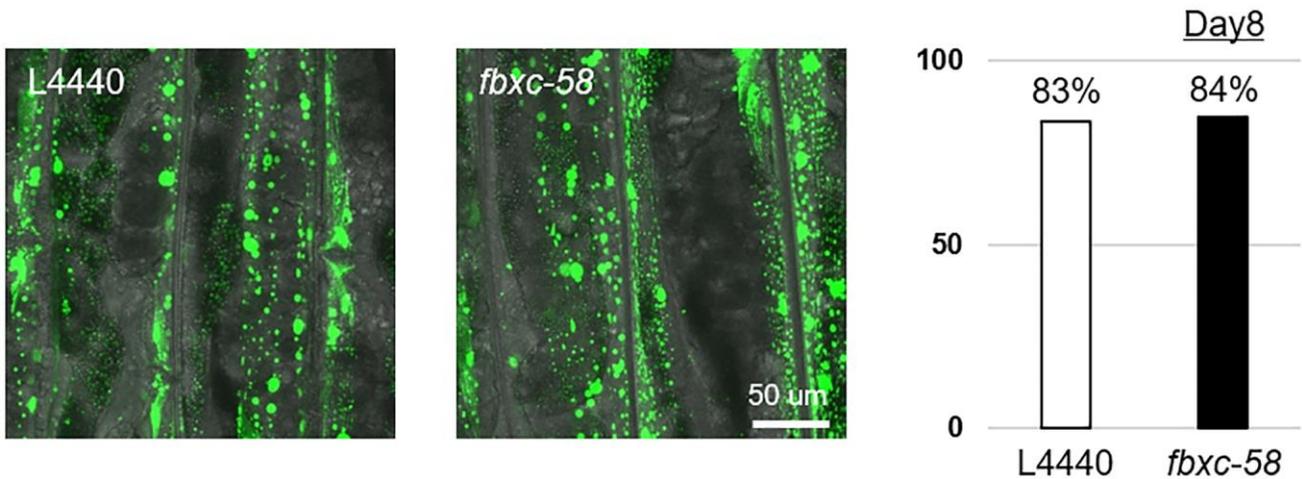
**Supplementary Figure 2. The number of body bends of worms.** Two independent experiments. (A) The number of body bends in N2 L4440 RNAi (N2 L4440) ( $n = 15$ ), N2 *fbxc-58* RNAi (N2 *fbxc-58*) ( $n = 15$ ) at day 10 of adulthood. (B) The number of body bends in N2 L4440 RNAi (N2 L4440) ( $n = 15$ ), N2 *fbxc-58* RNAi (N2 *fbxc-58*) ( $n = 15$ ) at day 10 of adulthood. Abbreviation: n.s.: not significant; unpaired  $t$  test.



**Supplementary Figure 3. Maximum velocity (MV) of worms.** (A) MVs in N2 L4440 RNAi (N2 L4440) ( $n = 15$ ), *eat-2* L4440 RNAi (*eat-2* L4440) ( $n = 18$ ), and *eat-2* *fbxc-58* RNAi (*eat-2* *fbxc-58*) ( $n = 15$ ) at day 10 of adulthood. (B) MVs in N2 ( $n = 15$ ) and *eat-2* mutant strains ( $n = 15$ ) at day 1 of adulthood. \* $p < 0.05$ , \*\*\*\* $p < 0.0001$ ; unpaired  $t$  test.



**Supplementary Figure 4. Maximum velocity (MV) of worms.** MVs in N2 L4440 RNAi (N2 L4440) ( $n = 11$ ) and N2 *fbxc-58* RNAi (N2 *fbxc-58*) ( $n = 10$ ) at day 10 of adulthood. Abbreviation: n.s.: not significant; unpaired *t* test.



**Supplementary Figure 5. Mitochondrial morphology.** (Left) Representative images of N2 L4440 RNAi (L4440) and N2 *fbxc-58* RNAi at day 8 of adulthood. (Right) Qualitative analysis of mitochondrial morphology in N2 L4440 RNAi (L4440) ( $n = 12$ ) and N2 *fbxc-58* RNAi ( $n = 13$ ) at day 8 of adulthood. Bars represent the proportion of worms with fragmented mitochondria. Mitochondrial morphology was examined in PD4251 that emits fluorescence from mitochondria due to GFP expressed in mitochondria.