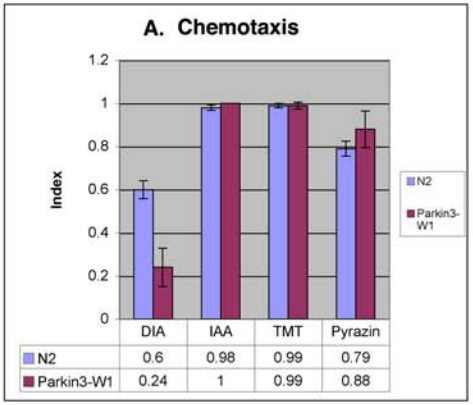
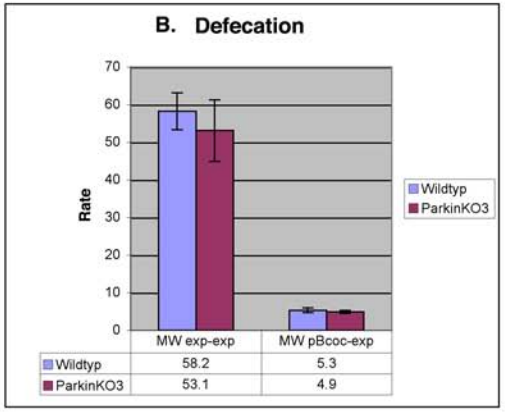
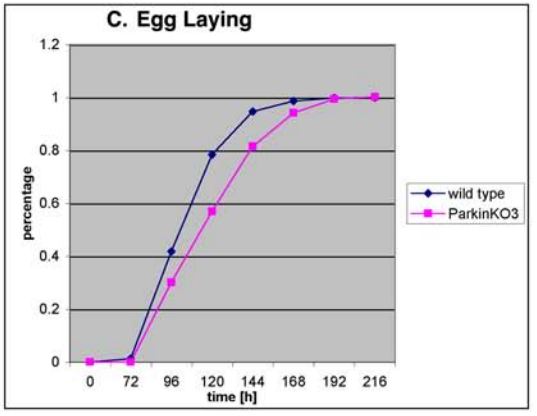
Supplemental Figure 1

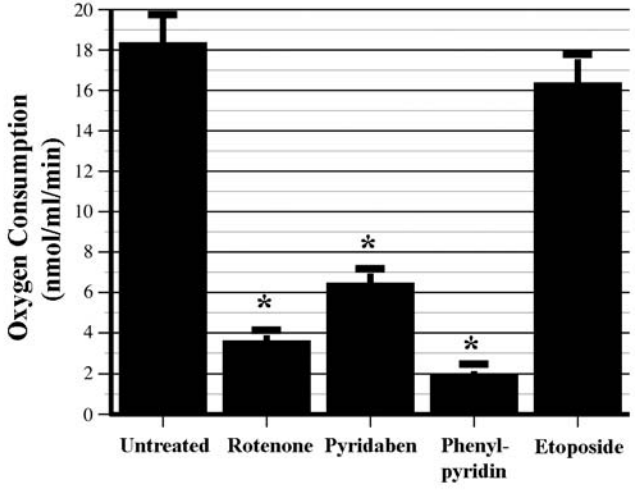






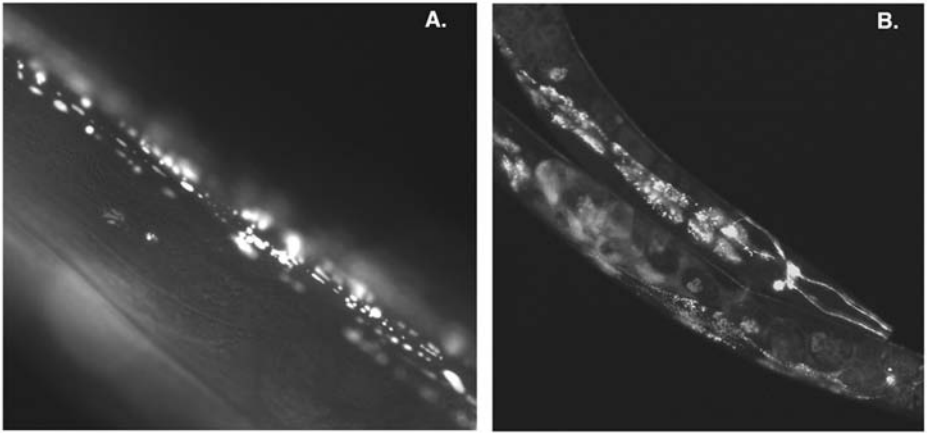
Supplemental Figure 1: **Functional analysis of K08E3.7 worm: defecation, egg laying and chemotaxis**. A.) Defecation rate provided in feces per minute. B.) Egg laying is provided in duration of time needed for production of 100 eggs. C.) Chemotactic response. Methods: For the chemotactic response, worms were placed on plates dotted with diacetyl (DIA, diluted 1:1000), isoamylalcohol (IAA; diluted 1:200 in ethanol), trimethylthiazol (TMT; diluted 1:1000 in ethanol) and pyrazin (10 mg/ml. The attractant was placed at the end of the plate just past a 1.5 cm diameter ring of sodium azide (1M). The worms were placed on the other side of the plate). The assay was performed for 90 min at room temperature with 50 worms, and worms that were attracted were killed in the sodium azide. At the end of the assay chloroform was put on top of the dish, the dish was inverted to cover the dish which killed all remaining worms. The worms number of worms in the sodium azide area and out of the area were counted. The chemotaxis index is defined as A-B/A+B, where A is the +attractant, and B is just carrier (ethanol). count only the worms within 1.5 cm on a 10 cm plate. The response of the K08E3.7 KO worm was unchanged except for diacetyl.

Supplemental Fig. 2



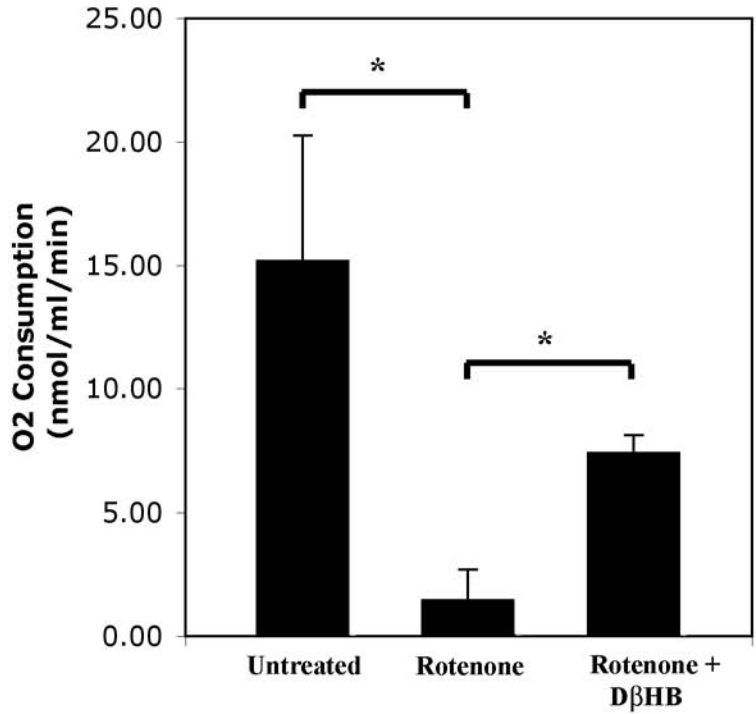
Supplemental Figure 2: **Complex I inhibitors, but not etoposide, inhibit respiration**. *C. elegans* were incubated for 1 hr with differing complex I inhibitors (roteonone, 50 mM; pyridaben, 25 μM; phenylpyridin, 10 mM) or etoposide (50 μM) and respiration was measured. Each of the complex I inhibitors significantly decreased respiration, while etoposide did not exhibit a significant effect on respiration. $P<0.001$ c ompared to control.

Supplemental Figure 3



Supplemental Figure 3. ***C. elegans*** **expressing GFP targeted to the mitochondria** show robust fluorescence in the mitochondrial after treatment with rotenone for either 1 day (A, 40X magnification) or 4 days (B, 10X magnification).

Supplemental Fig. 4



Supplemental Figure 4: **DβHB partially protects *C. elegans* from inhibition of respiration by rotenone**. *C. elegans* were incubated with rotenone (50 μM) ± DβHB (10 mM) for 1 hr and respiration was monitored. *C. elegans* treated with rotenone + DβHB showed significantly mored respiratory activity than worms treated with rotenone alone. $P<0.05$.