Supplemental Figures for:

Disruption of mitochondrial dynamics increases stress resistance through activation of multiple stress response pathways

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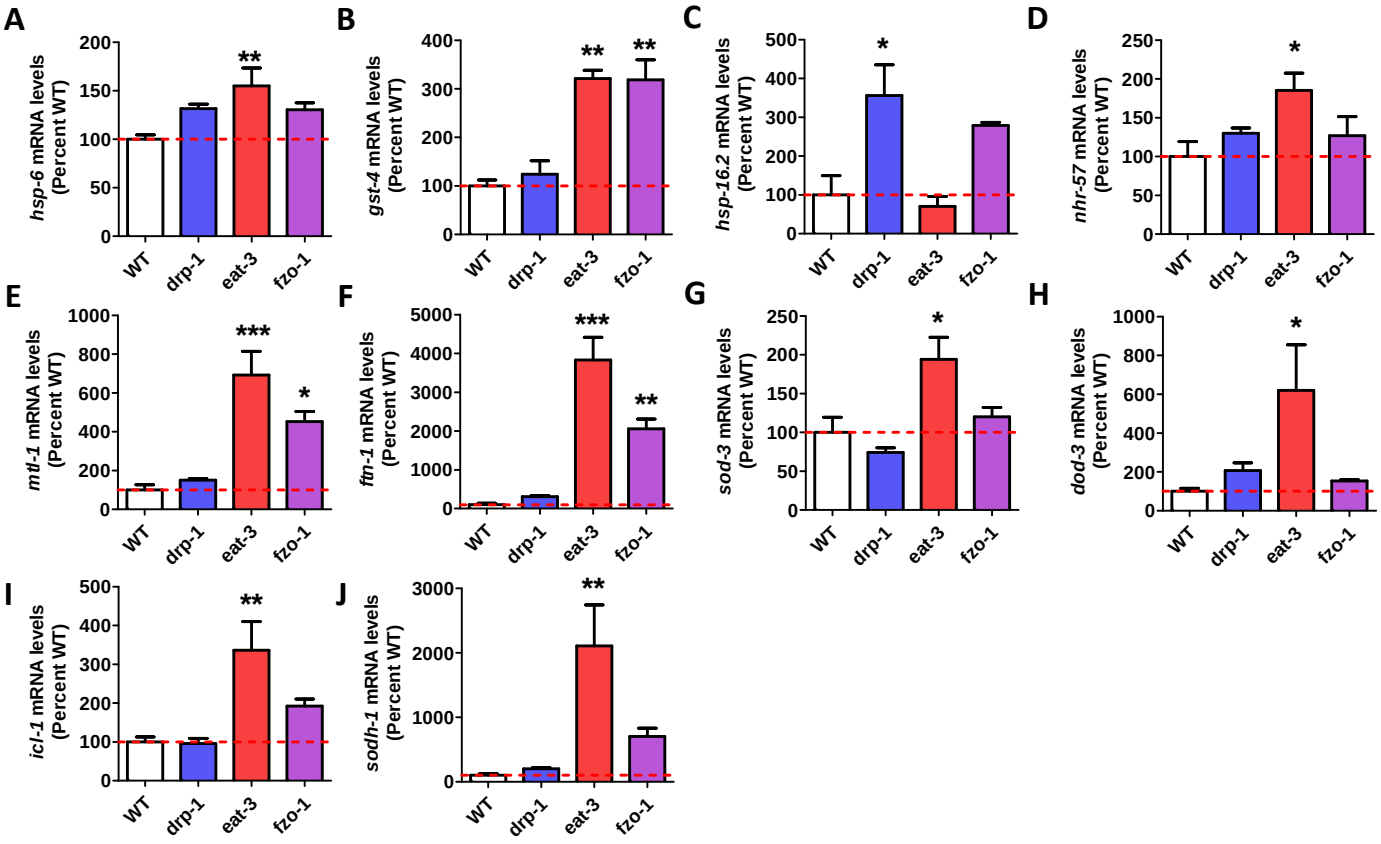
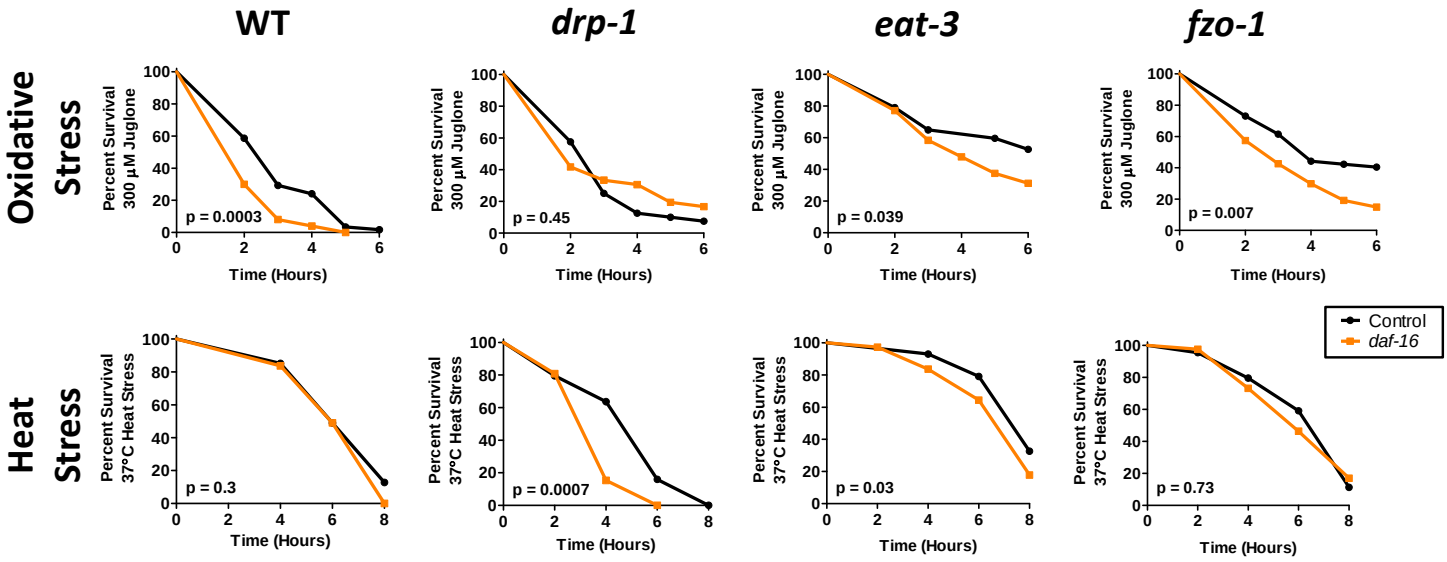


Supplemental Fig. S1 Disruption of mitochondrial fusion genes results in upregulation of genes involved in stress response pathways. To examine the activation of stress response pathways in mitochondrial fission and fusion mutants, quantitative real-time RT-PCR was used to measure the levels of transcriptional targets of different stress response pathways in day 1 pre-fertile young adult animals. **A.** *hsp-6* levels were used to measure the activation of the mitochondrial unfolded protein response. **B.** *gst-4* levels were used to measure the activation of the SKN-1-mediated oxidative stress response. **C.** *hsp-16.2* levels were used to measure the activation of the heat shock response (note worms were not induced with heat stress). **D.** *nhr-57* levels were used to measure the activation of the HIF-1-mediated hypoxia response. Activation of the DAF-16-mediated stress response was measured by examining the levels of **E.** *mtl-1,* **F.** *ftn-1,* **G.** *sod-3,* **H.** *dod-3,* **I.** *icl-1,* and **J.** *sodh-1.* With the exception of *hsp-16.2, eat-3* fusion mutants showed a significant upregulation of all of these stress response genes. *fzo-1* worms also exhibited upregulation of many stress response genes. Error bars represent SEM. Significance indicates difference from wild-type worms. **p*<0.05, ***p*<0.01, ****p*<0.001



Supplemental Fig. S2 DAF-16 is required for increased resistance to oxidative stress in mitochondrial fusion mutants. To determine the extent to which activation of the DAF-16 mediated stress response pathway contributes to the increased resistance to stress in the mitochondrial fission and fusion mutants, *drp-1, eat-3* and *fzo-1* worms were crossed to *daf-16(mu86)* null mutants. Sensitivity to oxidative stress was assessed by exposing worms to 300 µM juglone, while sensitivity to heat stress was assessed at 37°C. Loss of DAF-16 significantly increased sensitivity to both oxidative and heat stress in *eat-3* worms, and significantly increased sensitivity to oxidative stress in *fzo-1* worms. Black line indicates control worms (WT, *drp-1, eat-3, fzo-1*). Orange line indicates worms with *daf-16* mutants *(daf-16, drp-1;daf-16, eat-3;daf-16, fzo-1;daf-16*)