

Supplemental Figures and Figure Legends

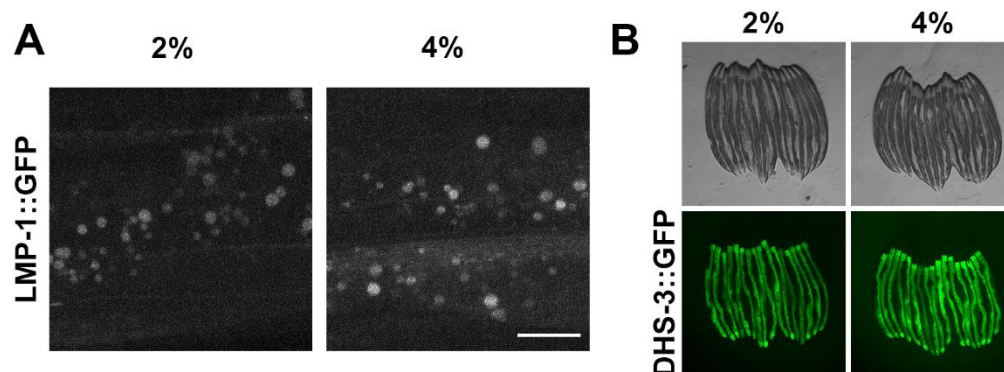


Fig. S1. Growth on stiff substrates has no impact on lysosomes or lipid droplets. (A) Representative max projection fluorescent images of lysosomes by visualization of *Imp-1::GFP*. Images were captured on a Leica Stellaris system using optimized z-slices. **(B)** Representative fluorescent images of lipid droplets by visualization of *DHS-3::GFP*. For A-B, animals were grown on empty vector (EV) RNAi bacteria from L1 and imaged at day 1 of adulthood. Scale bar is 10 μ m. Data is representative of 3 independent trials.

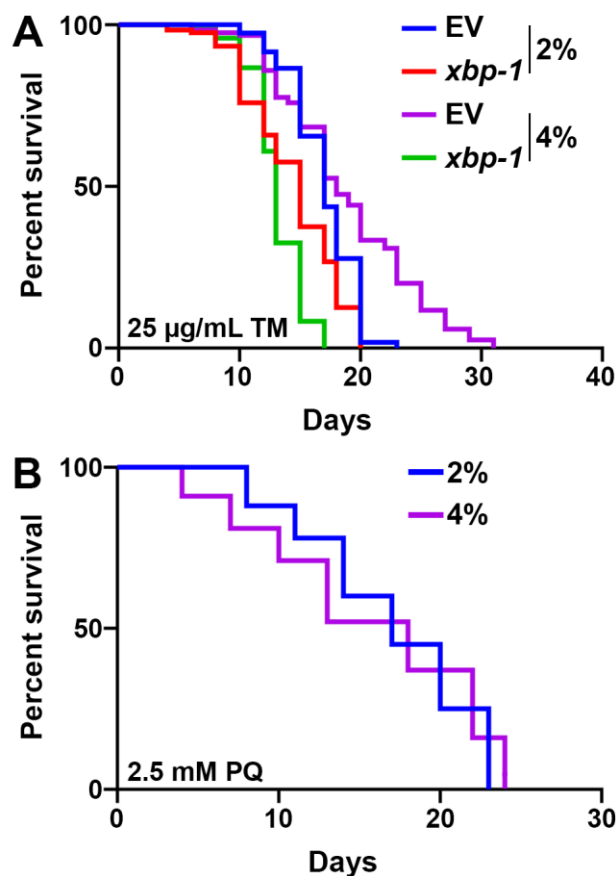


Fig. S2. Growth on stiff substrates increases ER stress resilience. (A) N2 wild-type animals grown on empty vector (EV) or *xbp-1* RNAi on either control (2%) or stiff (4%) agar plates from L1. Animals were transferred onto the same RNAi and agar concentration plates containing 25 µg/mL tunicamycin (TM). Lifespans were scored every 2 days. Data is representative of 3 replicates and statistical analysis is available in **Table S1**. **(B)** N2 wild-type animals grown on EV RNAi on either control (2%) or stiff (4%) agar plates from L1. Animals were moved to plates containing 2.5 mM paraquat (PQ) at day 1 of adulthood and survival was scored every 2 days. Data is representative of 3 replicates and statistical analysis is available in **Table S1**.

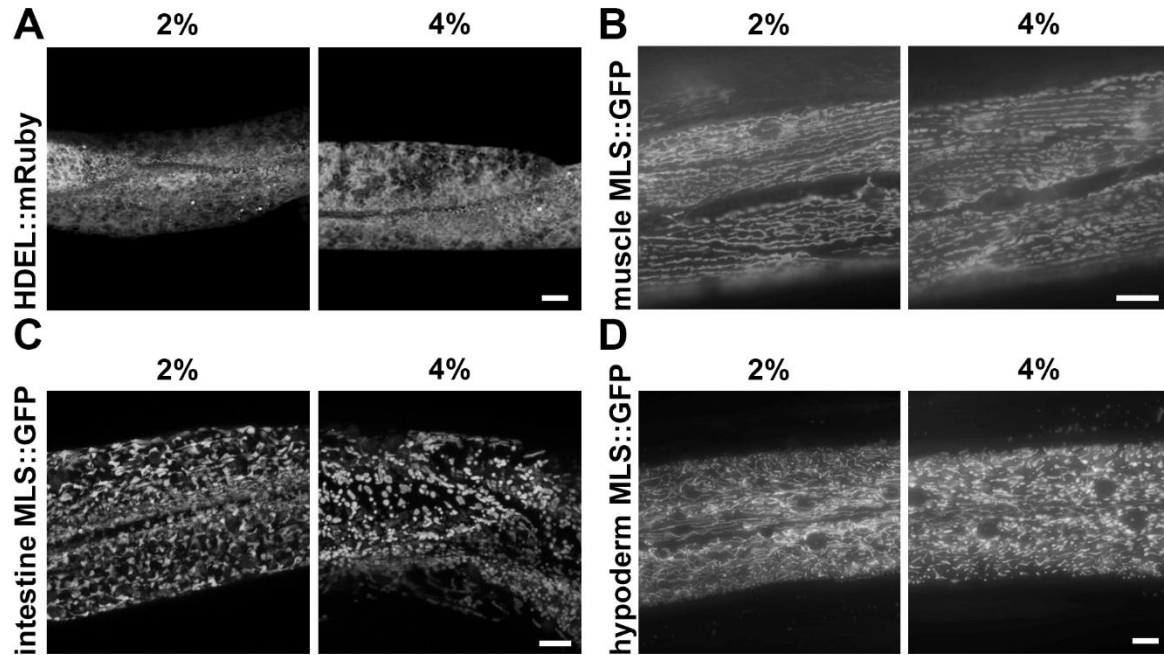


Fig. S3. Growth on stiff substrates does not impact ER or mitochondrial structure. (A)

Representative max projection fluorescent images of the endoplasmic reticulum in the intestine by visualization of *vha-6p::HDEL::mRuby*. Images were captured on a Leica Stellaris system using optimized z-slices. Animals were grown on empty vector (EV) bacteria from L1. Animals were moved onto 25 $\mu\text{g}/\text{mL}$ tunicamycin containing plates at L4 and imaged at day 1 of adulthood. **(B)** Representative fluorescent images of body wall muscle mitochondria (*myo-3p::MLS::GFP*) are shown. Animals were grown on empty vector (EV) RNAi from L1. Single-slice images were captured on a Leica THUNDER Imager. Scale bar is 10 μm . **(C)** Representative max-projection fluorescent images of intestinal mitochondria (*gly-19p::MLS::GFP*) are shown. Animals were grown on empty vector (EV) RNAi from L1. Z-stack images were captured on a Leica THUNDER Imager using system-optimized z-slices. Scale bar is 10 μm . **(D)** Representative max-projection fluorescent images of hypodermal mitochondria (*col-19p::MLS::GFP*) are shown. Animals were grown on empty vector (EV) RNAi from L1. Z-stack images were captured on a Leica Stellaris using system-optimized z-slices. Scale bar is 10 μm .

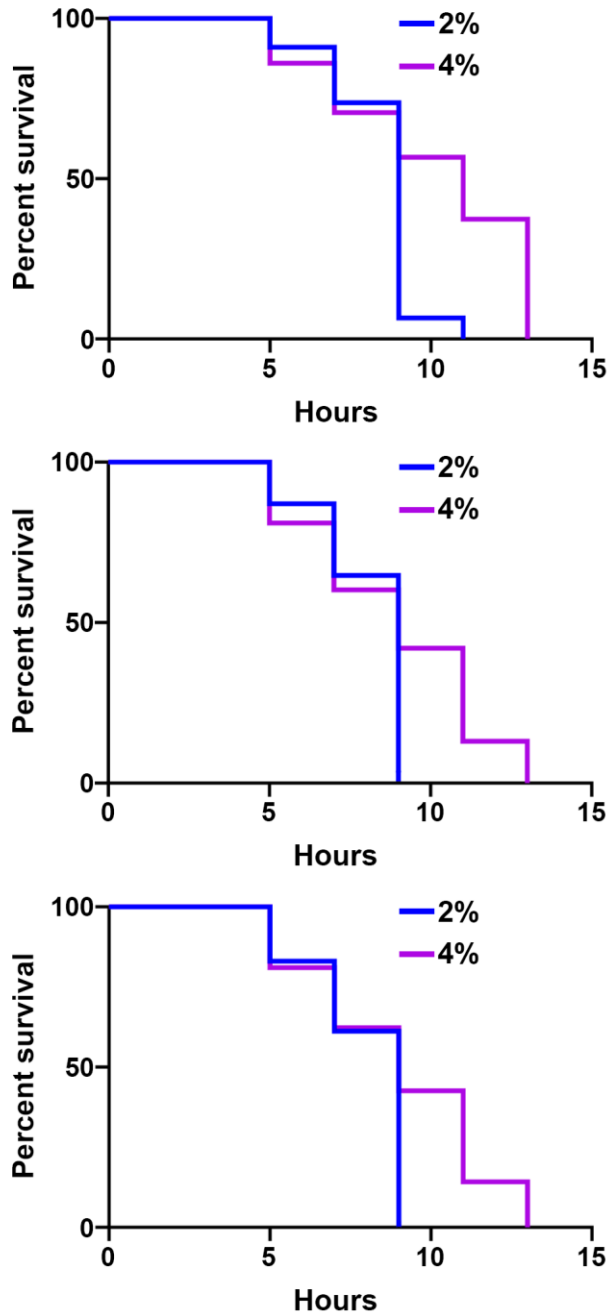


Fig. S4. Growth on stiff substrates results in a mild increase in thermotolerance. N2 wild-type animals grown on EV RNAi on either control (2%) or stiff (4%) agar plates from L1. Animals were moved to 34°C at day 1 of adulthood and survival was scored every 2 hours. All three biological replicates are shown to highlight differences in maximal thermotolerance, despite similarities in median thermotolerance in some replicates. All statistics are available in **Table S1**.