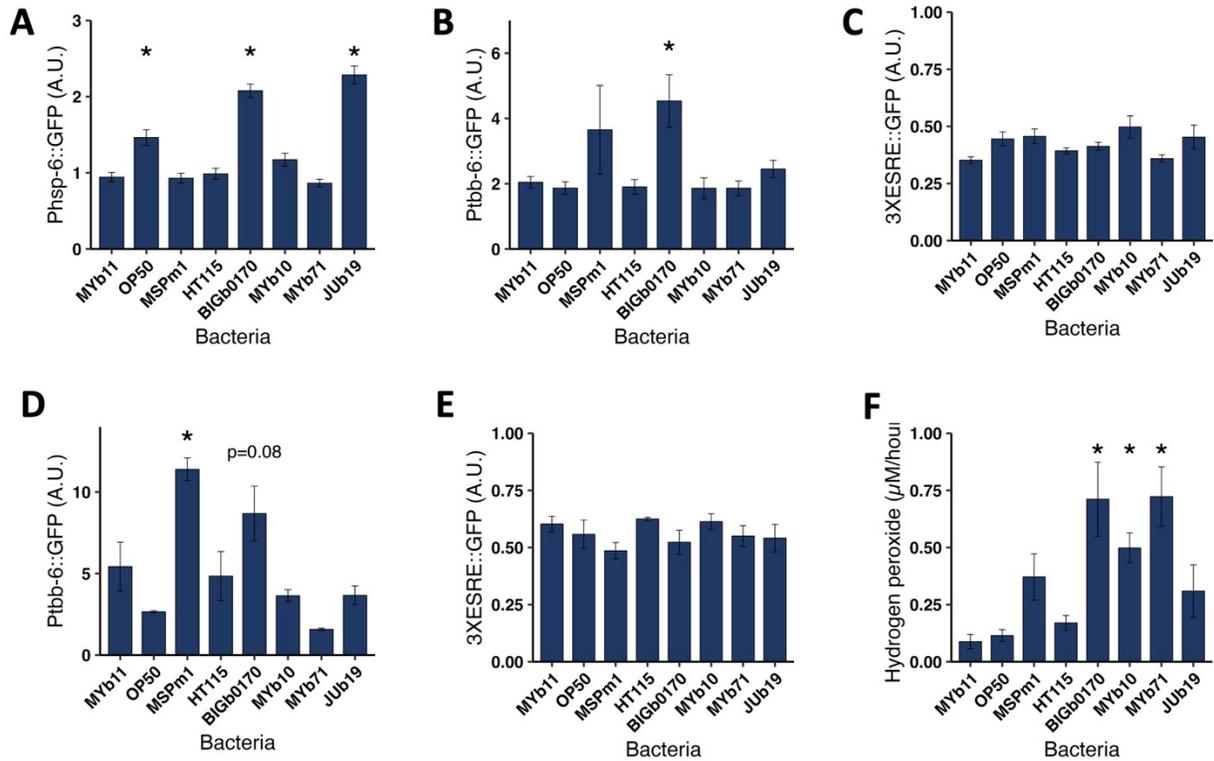


1

2 **Supplementary Figure 1.** A) Length and B) volume of *C. elegans* grown on CeMbio
 3 strains after 72 hours. N = 2-3 biological replicates p = 0.001. C) Mitochondrial to
 4 nuclear copy number ratio in the PE255 ATP reporter strain, n = 4 biological replicates,
 5 p = 0.4. D) In vivo whole-body ATP levels in PE327 strain that is germline deficient
 6 when raised on 25°C, n = 3 biological replicates, bacteria p = 0.001. E) Mitochondrial to
 7 nuclear copy number ratio in the PE327 ATP reporter strain, n= 3 biological replicates, p
 8 = 0.9. Data shown represent the average \pm standard error. * indicates p < 0.05 from
 9 Dunnett's posthoc analysis to MYb11.



10

11 **Supplemental Figure 2. Gut microbiota activates mitochondrial stress responses**

12 **in *C. elegans*.** Mitochondrial stress responses were measured *C. elegans* grown on

13 selected CeMbio strains after 24 and 72 hours. A) Mitochondrial unfolded protein

14 response (mtUPR) after 24 hours on bacteria, B) Mitochondrial MAPK (MAPK^{mt}) using

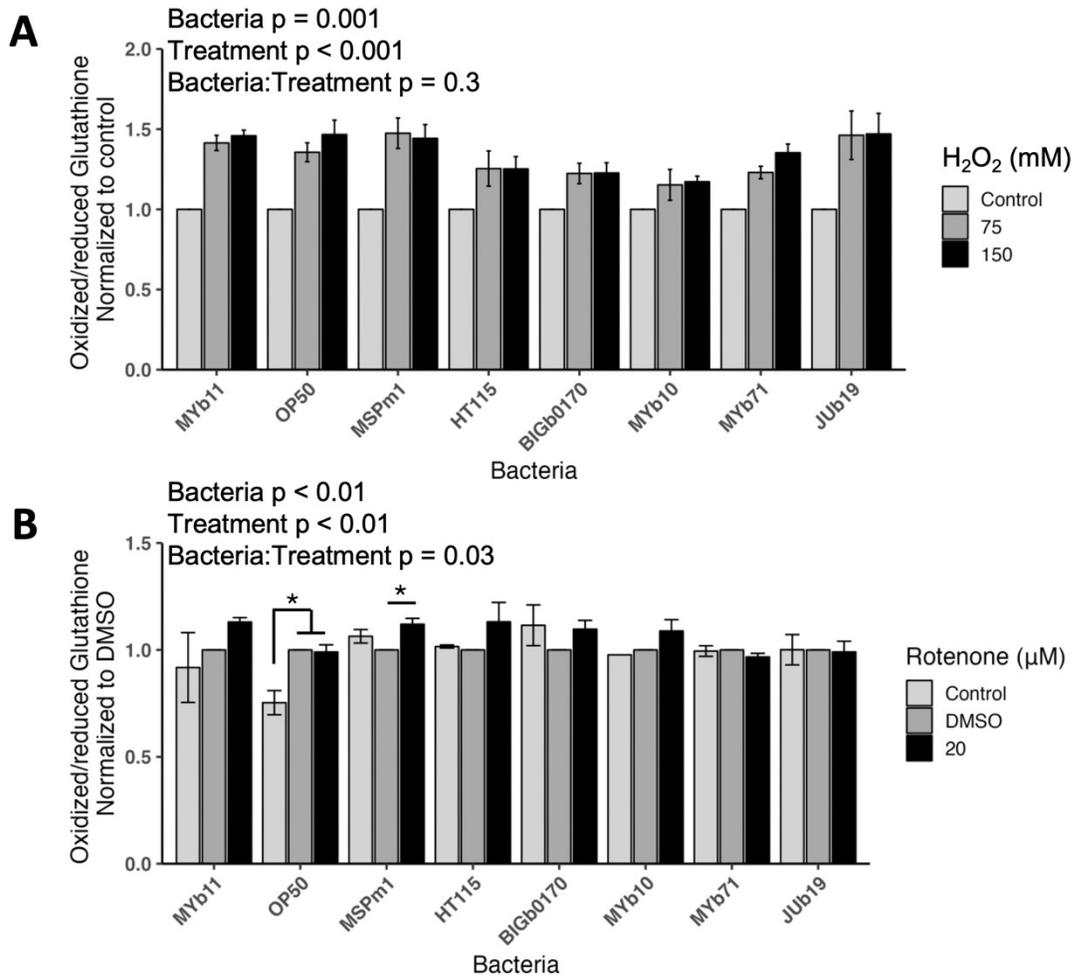
15 the reporter strain SLR115 after 24 hours, and C) Ethanol and stress response element

16 (ESRE) in reporter strain WY703 after 24 hours. D) MAPK^{mt} after 72 hours, E) ESRE

17 after 72 hours. F) Bacterial hydrogen peroxide production measured by amplex red after

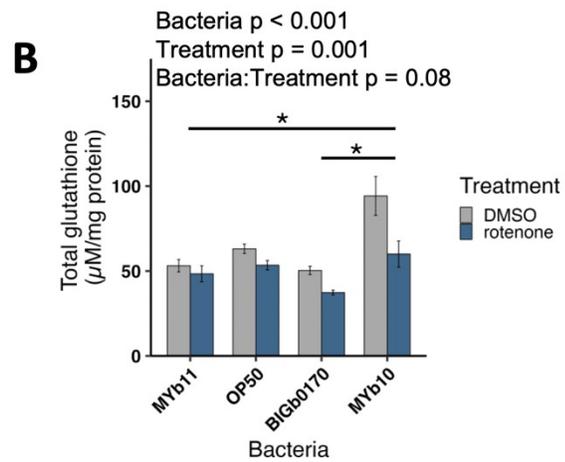
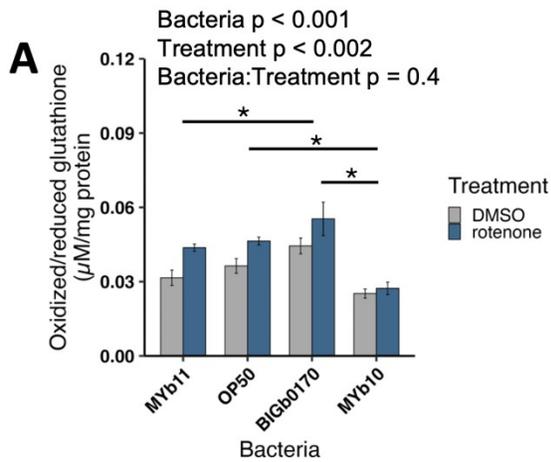
18 24 hours. n= 3 biological replicates, * represents p < 0.05. Data shown represent the

19 average ± standard error.



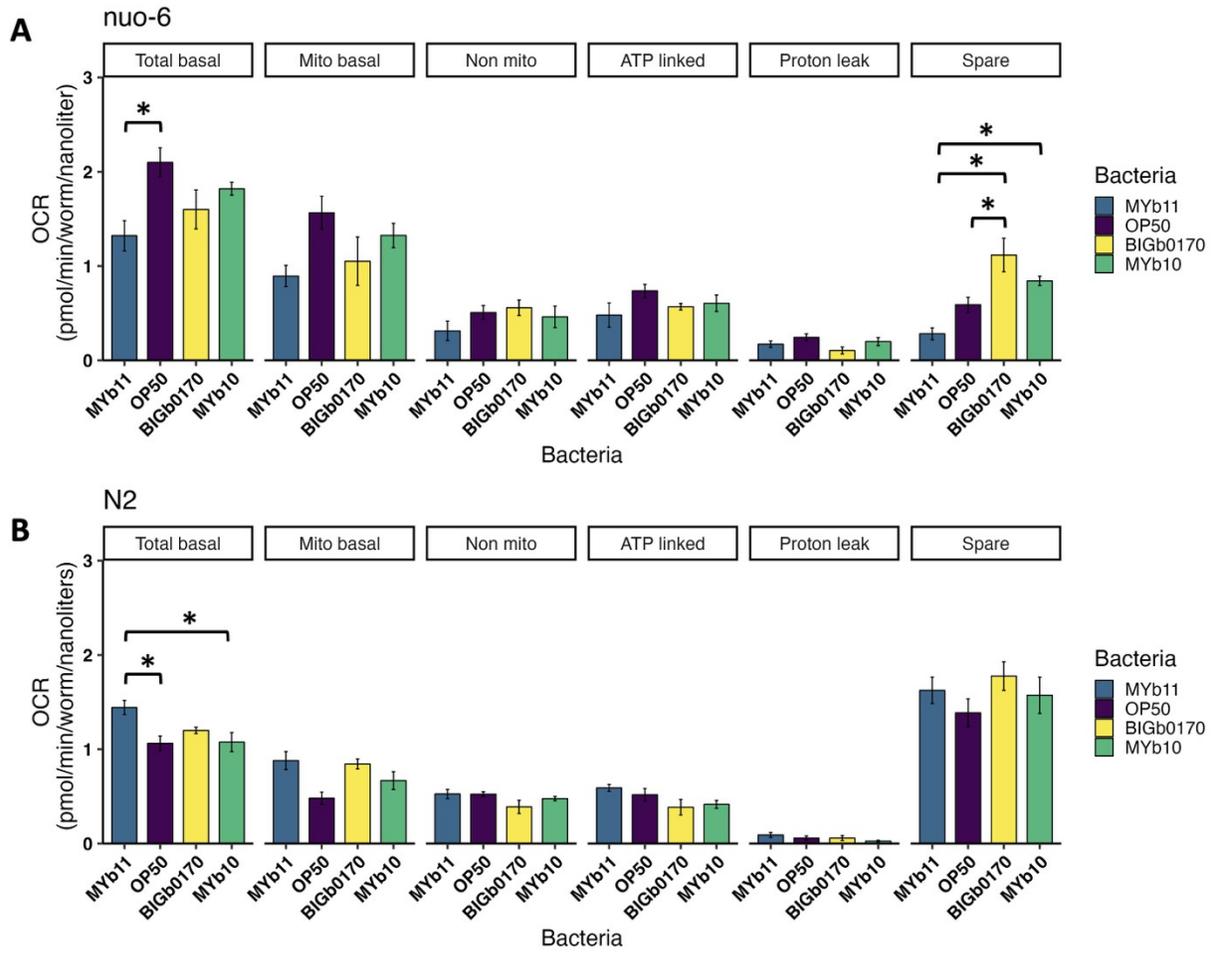
20

21 **Supplemental Figure 3. Gut microbiota does not differentially impact redox state**
 22 **after H₂O₂ and rotenone exposure.** Oxidized to reduced glutathione measurements
 23 after exposure to A) 20 μM rotenone for 4 hours, normalized to DMSO controls, and B)
 24 H₂O₂ for 30 minutes, normalized to controls. N = 3 biological replicates, * represents p <
 25 0.05. Data shown represent the average ± standard error.



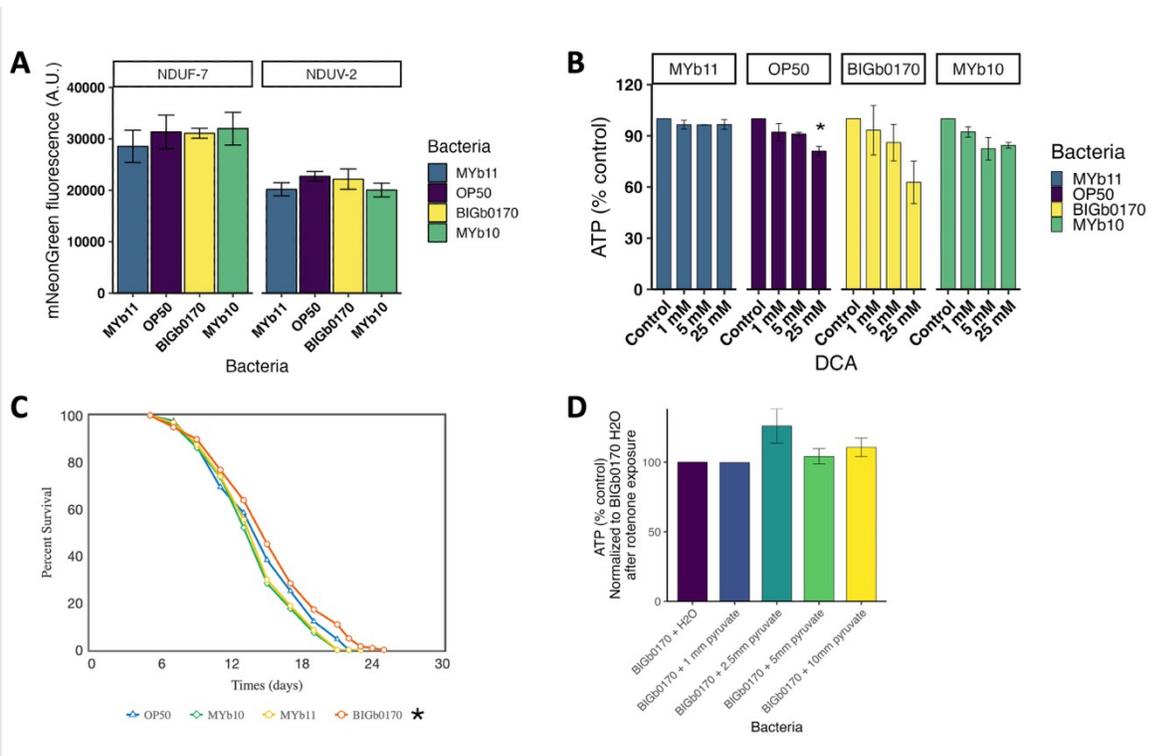
26

27 **Supplemental Figure 4.** A) Oxidized to reduced glutathione levels and B) total
 28 glutathione (oxidized + reduced glutathione) in *C. elegans* grown on the selected
 29 bacteria measured in the targeted mitochondrial metabolite panel. N = 3 biological
 30 replicates, * represents $p < 0.05$. Data shown represent the average \pm standard error.



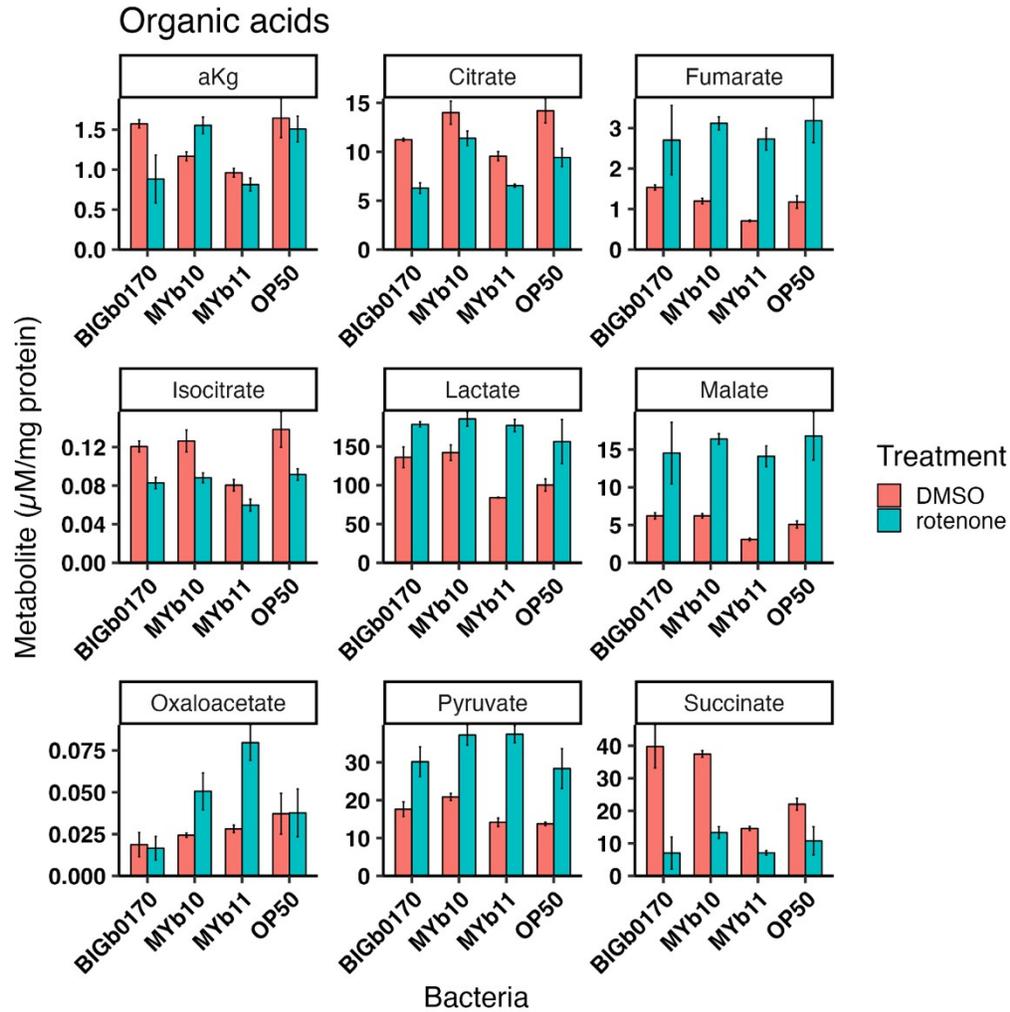
31

32 **Supplemental Figure 5.** Mitochondrial respiration of A) *nuo-6* and B) *N2* wildtype
 33 nematodes raised on selected bacteria after 72 hours. N= 3-4 biological replicates, *
 34 indicates $p < 0.05$. Data shown represent the average \pm standard error.



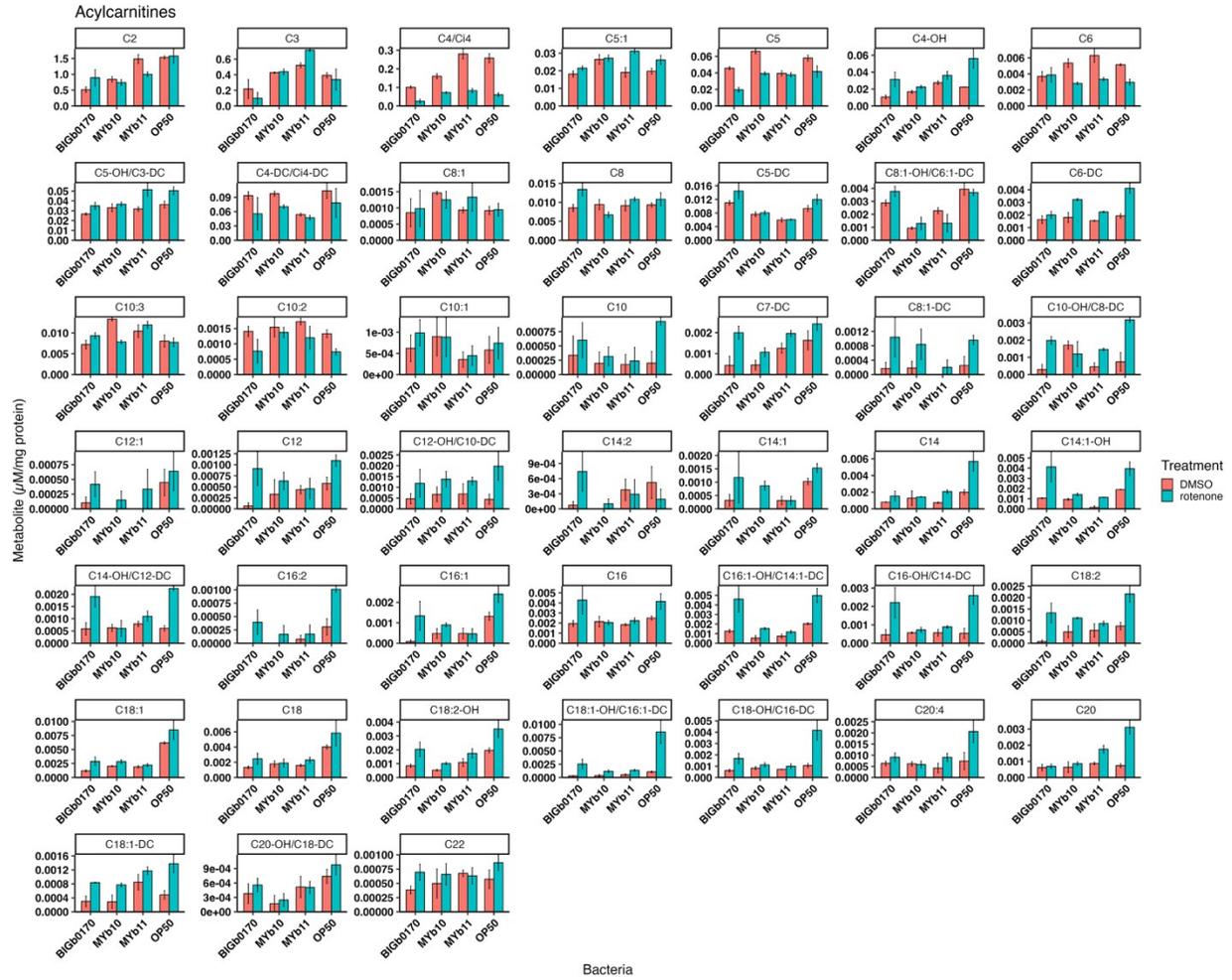
35

36 **Supplemental Figure 6.** A) Complex I protein measurements in *C. elegans* raised on
 37 selected bacteria after 72 hours using Crispr-tagged subunits NDUF-7 and NDUV-2 in
 38 complex I. N = 3 biological replicates. B) ATP levels after exposure to dichloroacetate
 39 (DCA) for 1 hour. Results are normalized to their DMSO controls n= 2 biological
 40 replicates. C) Lifespan of nematodes grown on selected CeMbio strains, n= 3 biological
 41 replicates with 100 nematodes per replicate. Figure and statistical analyses were done
 42 in OASIS2. D) ATP levels of *C. elegans* raised on BIGb0170 bacteria supplemented
 43 with sodium pyruvate after exposure to 20 μ M rotenone for one hour. Results are
 44 normalized to BIGb0170 + H₂O control. N = 1-3 biological replicates. * indicates p <
 45 0.05. Data shown represent the average \pm standard error.



46

47 **Supplemental Figure 7.** Organic acid levels in *C. elegans* grown on selected CeMbio
 48 bacteria and exposed to bacteria and 20 μM rotenone for 24 hours. N= 3 biological
 49 replicates. Data shown represent the average \pm standard error.



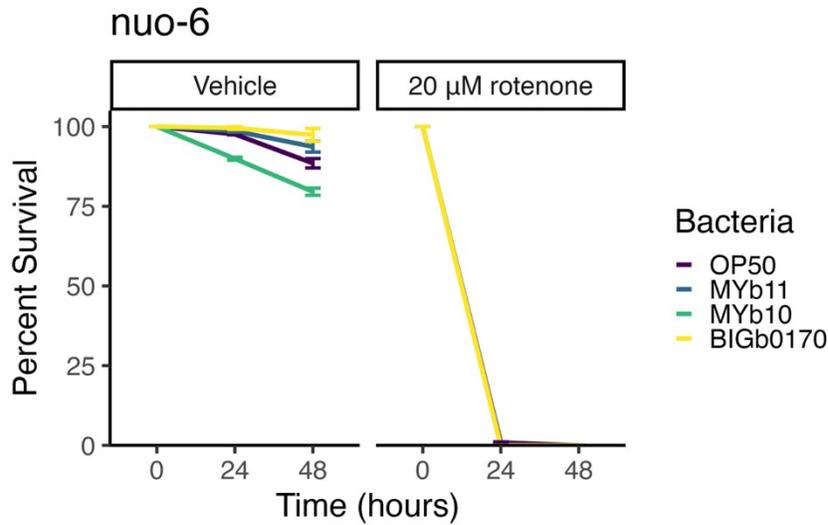
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51 **Supplemental Figure 8.** Acylcarnitine levels in *C. elegans* grown on selected CeMbio
 52 bacteria and exposed to bacteria and 20 μ M rotenone for 24 hours. N= 3 biological
 53 replicates. Data shown represent the average \pm standard error.



54

55 **Supplemental Figure 9.** Amino acid and biogenic amine levels in *C. elegans* grown on
 56 selected CeMbio bacteria and exposed to bacteria and 20 µM rotenone for 24 hours. N=
 57 3 biological replicates. Data shown represent the average ± standard error.



58

59 **Supplemental Figure 10. *C. elegans* with a mutation in complex I (*nuo-6*) do not**
60 **show bacterial sensitivity to rotenone.** A) *nuo-6* nematodes were exposed to bacteria
61 and 20 μ M rotenone continuously for 48 hours and assessed every 24 hours for
62 lethality, n = 1 biological replicate. Data shown represent the average \pm standard error.