

SUPPLEMENTARY TABLES

Supplementary Table 1. Lifespan data and statistics to Figure 3E–3G.

| Treatment | Number of worms | Death | censored | Median lifespan (days) | Compare to | P values |
|-----------------------------------|-----------------|-------|----------|------------------------|---------------------|----------|
| Experiment 1 | | | | | | |
| WT Ctrl | 88 | 81 | 7 | 20 | | |
| L-Carnitine | 95 | 88 | 7 | 22 | WT | 0.0022 |
| <i>skn-1(RNAi)</i> | 85 | 82 | 3 | 18 | | |
| <i>skn-1(RNAi)</i> , L-Carnitine | 76 | 72 | 4 | 18 | <i>skn-1(RNAi)</i> | 0.4645 |
| <i>daf-16(mu86)</i> | 85 | 82 | 3 | 18 | | |
| <i>daf-16(mu86)</i> , L-Carnitine | 72 | 68 | 4 | 18 | <i>daf-16(mu86)</i> | 0.2214 |
| Experiment 2 | | | | | | |
| WT Ctrl | 66 | 61 | 5 | 20 | | |
| L-Carnitine | 55 | 50 | 5 | 22 | WT | 0.0152 |
| <i>skn-1(RNAi)</i> | 48 | 48 | 0 | 18 | | |
| <i>skn-1(RNAi)</i> , L-Carnitine | 53 | 48 | 5 | 18 | <i>skn-1(RNAi)</i> | 0.5114 |
| <i>daf-16(mu86)</i> | 53 | 50 | 3 | 18 | | |
| <i>daf-16(mu86)</i> , L-Carnitine | 51 | 50 | 1 | 16 | <i>daf-16(mu86)</i> | 0.2513 |

Supplementary Table 2. Lifespan data and statistics to Figure 4D, 4E.

| Treatment | Number of worms | Death | censored | Median lifespan (days) | Compare to | P values |
|-----------------------------------|-----------------|-------|----------|------------------------|---------------------|----------|
| Experiment 1 | | | | | | |
| WT Ctrl | 92 | 87 | 5 | 20 | | |
| L-Carnitine | 96 | 90 | 6 | 22 | WT | 0.0003 |
| <i>daf-2(e2370)</i> | 83 | 75 | 8 | 36 | | |
| <i>daf-2(e2370)</i> , L-Carnitine | 88 | 80 | 8 | 36 | <i>daf-2(e2370)</i> | 0.8026 |
| <i>glp-1(e2144)</i> | 83 | 80 | 3 | 28 | | |
| <i>glp-1(e2144)</i> , L-Carnitine | 80 | 75 | 5 | 26 | <i>glp-1(e2144)</i> | 0.3893 |
| Experiment 2 | | | | | | |
| WT Ctrl | 75 | 67 | 8 | 20 | | |
| L-Carnitine | 75 | 69 | 6 | 22 | WT | 0.0014 |
| <i>daf-2(e2370)</i> | 59 | 49 | 10 | 36 | | |
| <i>daf-2(e2370)</i> , L-Carnitine | 69 | 60 | 9 | 34 | <i>daf-2(e2370)</i> | 0.6032 |
| <i>glp-1(e2144)</i> | 62 | 60 | 2 | 28 | | |
| <i>glp-1(e2144)</i> , L-Carnitine | 57 | 50 | 7 | 26 | <i>glp-1(e2144)</i> | 0.2398 |

Supplementary Table 3. Lifespan data and statistics to Figure 5F.

| Treatment | Number of worms | Death | censored | Median lifespan (days) | Compare to | P values |
|------------------------------------|-----------------|-------|----------|------------------------|---------------------|----------|
| Experiment 1 | | | | | | |
| WT Ctrl | 92 | 87 | 5 | 20 | | |
| <i>T08B1.1(RNAi)</i> | 86 | 83 | 3 | 20 | WT | 0.6642 |
| <i>daf-2(e2370)</i> | 84 | 78 | 7 | 34 | | |
| <i>daf-2(e2370), T08B1.1(RNAi)</i> | 87 | 83 | 4 | 32 | <i>daf-2(e2370)</i> | 0.0991 |
| <i>glp-1(e2144)</i> | 87 | 79 | 8 | 26 | | |
| <i>glp-1(e2144), T08B1.1(RNAi)</i> | 122 | 112 | 10 | 18 | <i>glp-1(e2144)</i> | <0.0001 |
| Experiment 2 | | | | | | |
| WT Ctrl | 69 | 62 | 7 | 20 | | |
| <i>T08B1.1(RNAi)</i> | 62 | 56 | 6 | 22 | WT | 0.9635 |
| <i>daf-2(e2370)</i> | 65 | 59 | 6 | 32 | | |
| <i>daf-2(e2370), T08B1.1(RNAi)</i> | 64 | 62 | 2 | 32 | <i>daf-2(e2370)</i> | 0.4459 |
| <i>glp-1(e2144)</i> | 68 | 62 | 6 | 26 | | |
| <i>glp-1(e2144), T08B1.1(RNAi)</i> | 66 | 59 | 7 | 22 | <i>glp-1(e2144)</i> | 0.0022 |

Supplementary Table 4. Lifespan data and statistics to Figure 5G.

| Treatment | Number of worms | Death | censored | Median lifespan (days) | Compare to | P values |
|-----------------------------------|-----------------|-------|----------|------------------------|-------------|----------|
| Experiment 1 | | | | | | |
| WT Ctrl | | 64 | 10 | 20 | | |
| <i>T08B1.1(RNAi)</i> | | 56 | 0 | 20 | WT | 0.8960 |
| L-Carnitine | | 83 | 9 | 22 | | |
| L-Carnitine, <i>T08B1.1(RNAi)</i> | | 89 | 0 | 18 | L-Carnitine | <0.0001 |
| Experiment 2 | | | | | | |
| WT Ctrl | | 54 | 8 | 20 | | 0.1370 |
| <i>T08B1.1(RNAi)</i> | | 73 | 6 | 20 | WT | |
| L-Carnitine | | 46 | 10 | 22 | | |
| L-Carnitine, <i>T08B1.1(RNAi)</i> | | 72 | 11 | 20 | L-Carnitine | 0.0002 |

Supplementary Table 5. Lifespan data and statistics to Supplementary Figure 1A.

| L-carnitine concentration (μ M) | Number of worms | Death | censored | Median lifespan (days) | Compare to | P values |
|--------------------------------------|-----------------|-------|----------|------------------------|------------|----------|
| 0 | 75 | 67 | 8 | 20 | | |
| 50 | 81 | 74 | 7 | 22 | 0 μ M | 0.2485 |
| 100 | 82 | 73 | 9 | 24 | 0 μ M | <0.0001 |
| 200 | 79 | 71 | 8 | 22 | 0 μ M | 0.0008 |
| 500 | 76 | 70 | 6 | 22 | 0 μ M | 0.0009 |