# Appendix

## Lipid metabolism controls the threshold effect associated with longevity of mitochondrial mutants

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**Appendix Table S1. Individual lifespan assays divided by experiments.**

| OP50 | | | | | |
|---|---|---|---|---|---|
| **Exp** | **Strain** | **Dead (Censored)** | **Median** | **Max** | ***p* value** |
| **1** | wt | 61(101) | 28 | 36 | - |
| | *gas-1(fc21)* | 135(307) | 21 | 30 | <0.0001[a] |
| | *nuo-6(qm200)* | 51(553) | 35 | 51 | <0.0001[a] |
| | | | | | <0.0001[b] |
| | *gas-1(fc21); cest-2.2O/E* | 115(197) | 28 | 42 | 0.6300[a] |
| | | | | | <0.0001[b] |
| | *cest-2.2O/E* | 102(103) | 26 | 37 | 0.3100[a] |
| | *cest-2.2(lf)* | 90(99) | 25 | 35 | 0.0007[a] |
| **2** | wt | 91(115) | 27 | 35 | - |
| | *gas-1(fc21)* | 80(163) | 21 | 27 | <0.0001[a] |
| | *nuo-6(qm200)* | 74(235) | 33 | 51 | <0.0001[a] |
| | | | | | <0.0001[b] |
| | *gas-1(fc21); cest-2.2O/E* | 143(180) | 28 | 48 | <0.0001[a] |
| | | | | | <0.0001[b] |
| | *cest-2.2O/E* | 88(87) | 28 | 37 | 0.1400[a] |
| | *cest-2.2(lf)* | 119(92) | 25 | 38 | 0.4927[a] |
| **3** | wt | 49(94) | 27 | 32 | - |
| | *gas-1(fc21)* | 129(176) | 23 | 32 | <0.0001[a] |
| | *gas-1(fc21); cest-2.2O/E* | 196(216) | 31 | 50 | 0.0025[a] |
| | | | | | <0.0001[b] |
| | *cest-2.2O/E* | 80(119) | 29 | 34 | 0.0022[a] |
| **4** | wt | 96(143) | 27 | 40 | - |
| | *gas-1(fc21)* | 152(332) | 21 | 31 | <0.0001[a] |
| | *gas-1(fc21); cest-2.2O/E* | 133(302) | 29 | 50 | 0.0130[a] |
| | | | | | <0.0001[b] |
| | *cest-2.2O/E* | 108(127) | 29 | 35 | 0.4400[a] |
| | *cest-2.2(lf)* | 81(133) | 27 | 33 | 0.0005[a] |
| **5** | wt | 123(46) | 26 | 32 | - |
| | *gas-1(fc21)* | 150(45) | 22 | 30 | <0.0001[a] |
| | *gas-1(fc21); cest-2.2O/E* | 115(70) | 30 | 39 | <0.0001[a] |
| | | | | | <0.0001[b] |
| **6** | wt | 130(7) | 26 | 34 | - |
| | *gas-1(fc21); cest-2.2O/E* | 110(28) | 30 | 46 | <0.0001[a] |
| **7** | wt | 180(7) | 26 | 35 | - |
| | *gas-1(fc21); cest-2.2O/E* | 137(41) | 30 | 47 | <0.0001[a] |
| **8** | wt | 122(15) | 27 | 34 | - |
| | *cest-2.2(lf)* | 174(22) | 24 | 31 | <0.0001[a] |

| | | | | | |
|---|---|---|---|---|---|
| **9** | wt | 59(209) | 24 | 30 | - |
| | *gas-1(fc21)* | 107(213) | 19 | 24 | <0.0001[a] |
| | *gas-1(fc21); cest-2.2O/E* | 157(156) | 28 | 38 | 0.0002[a] |
| | | | | | <0.0001[b] |
| | *gas-1(fc21); cest-2.2O/E; cest-2.2(lf)* | 138(123) | 26 | 34 | 0.3530 [a] |
| | | | | | <0.0001[b] |
| | | | | | 0.0003[c] |
| **10** | wt | 35(71) | 25 | 27 | - |
| | *gas-1(fc21)* | 107(212) | 20 | 27 | <0.0001[a] |
| | *gas-1(fc21); cest-2.2O/E* | 229(174) | 29 | 41 | <0.0001[a] |
| | | | | | <0.0001[b] |
| | *gas-1(fc21); cest-2.2O/E; cest-2.2(lf)* | 111(53) | 25 | 39 | 0.0022[a] |
| | | | | | <0.0001[b] |
| | | | | | <0.0001[c] |
| **11** | *nuo-6(qm200)* | 53(301) | 30 | 47 | - |
| | *nuo-6(qm200); cest-2.2O/E* | 70(282) | 30 | 45 | 0.4931[d] |
| **12** | *mev-1(kn1)* | 40(180) | 17 | 21 | - |
| | *mev-1(kn1); cest-2.2O/E* | 81(154) | 18 | 25 | 0.0091[e] |
| **13** | *mev-1(kn1)* | 62(95) | 18 | 22 | - |
| | *mev-1(kn1); cest-2.2O/E* | 67(59) | 20 | 26 | 0.0003[e] |
| **14** | *nuo-6(qm200)* | 92(121) | 30 | 45 | - |
| | *nuo-6(qm200); cest-2.2O/E* | 106(228) | 30 | 46 | 0.6644[d] |

[a]*p* value compared to wild type
[b]*p* value compared to *gas-1(fc21)*
[c]*p* value compared to *gas-1(fc21); cest-2.2O/E*
[d]*p* value compared to *nuo-6(qm200)*
[e]*p* value compared to *mev-1(kn1)*

| **HT115** | | | | | |
|---|---|---|---|---|---|
| **Exp** | **Strain** | **Dead (Censored)** | **Median** | **Max** | ***p* value** |
| **15** | *nuo-6(qm200)* - C RNAi | 109(491) | 33 | 48 | - |
| | *nuo-6(qm200) - cest-2.2* RNAi | 109(421) | 31 | 46 | 0.0170[g] |
| **16** | *nuo-6(qm200)* - C RNAi | 64(345) | 32 | 46 | - |
| | *nuo-6(qm200) - cest-2.2* RNAi | 135(251) | 28 | 42 | 0.0006[g] |
| **17** | *nuo-6(qm200)* - C RNAi | 168(508) | 29 | 53 | - |
| | *nuo-6(qm200) - cest-2.2* RNAi | 182(509) | 27 | 43 | <0.0001[g] |
| **18** | wt - C RNAi | 121(134) | 25 | 35 | - |
| | wt - *cest-2.2* RNAi | 135(174) | 22 | 29 | <0.0001[f] |
| **19** | wt - C RNAi | 47(81) | 25 | 32 | - |
| | wt - *cest-2.2* RNAi | 85(95) | 23 | 32 | 0.0006[f] |

| | | | | | |
|---|---|---|---|---|---|
| | wt - C RNAi | 77(123) | 29 | 35 | - |
| | wt - *nhr-49* RNAi | 57(152) | 20 | 22 | <0.0001[f] |
| | wt - *nhr-80* RNAi | 101(107) | 18 | 25 | <0.0001[f] |
| | wt - *acs-2* RNAi | 79(131) | 27 | 32 | 0.0020[f] |
| | wt - *ech-1.1* RNAi | 45(136) | 22 | 25 | <0.0001[f] |
| | wt - *fat-5* RNAi | 73(133) | 22 | 32 | <0.0001[f] |
| | *gas-1(fc21)* - C RNAi | 114(301) | 18 | 29 | <0.0001[f] |
| | *gas-1(fc21) - nhr-49* RNAi | 121(268) | 18 | 25 | <0.0001[f] |
| | | | | | 0.0051[h] |
| | *gas-1(fc21) - nhr-80* RNAi | 89(374) | 18 | 25 | <0.0001[f] |
| | | | | | 0.6847[h] |
| | *gas-1(fc21) - acs-2* RNAi | 87(393) | 18 | 29 | <0.0001[f] |
| | | | | | 0.2407[h] |
| | *gas-1(fc21) - ech-1.1* RNAi | 90(356) | 20 | 27 | <0.0001[f] |
| | | | | | 0.4300[h] |
| **20** | *gas-1(fc21) - fat-5* RNAi | 94(351) | 18 | 25 | <0.0001[f] |
| | | | | | 0.0018[h] |
| | *gas-1(fc21); cest-2.2O/E* - C RNAi | 182(283) | 34 | 47 | <0.0001[f] |
| | | | | | <0.0001[h] |
| | *gas-1(fc21); cest-2.2O/E - nhr-49* RNAi | 130(300) | 20 | 29 | <0.0001[f] |
| | | | | | 0.0633[h] |
| | | | | | <0.0001[i] |
| | *gas-1(fc21); cest-2.2O/E - nhr-80* RNAi | 180(199) | 25 | 39 | 0.2404[f] |
| | | | | | <0.0001[h] |
| | | | | | <0.0001[i] |
| | *gas-1(fc21); cest-2.2O/E - acs-2* RNAi | 164(207) | 29 | 43 | 0.0332[f] |
| | | | | | <0.0001[h] |
| | | | | | <0.0001[i] |
| **20** | *gas-1(fc21); cest-2.2O/E - fat-5* RNAi | 230(192) | 25 | 39 | 0.3867[f] |
| | | | | | <0.0001[h] |
| | | | | | <0.0001[i] |
| | *gas-1(fc21)* - C RNAi | 160(193) | 19 | 31 | - |
| | *gas-1(fc21) - nhr-49* RNAi | 154(157) | 19 | 25 | <0.0001[h] |
| | *gas-1(fc21) - nhr-80* RNAi | 75(98) | 19 | 31 | 0.5982[h] |
| | *gas-1(fc21) - acs-2* RNAi | 170(162) | 19 | 28 | 0.8647[h] |
| **21** | *gas-1(fc21) - ech-1.1* RNAi | 107(158) | 19 | 31 | 0.8375[h] |
| | *gas-1(fc21) - fat-5* RNAi | 141(145) | 19 | 28 | 0.0018[h] |
| | *gas-1(fc21); cest-2.2O/E* - C RNAi | 152(216) | 28 | 40 | <0.0001[h] |
| | *gas-1(fc21); cest-2.2O/E - nhr-49* RNAi | 174(252) | 21 | 32 | <0.0001[h] |
| | | | | | <0.0001[i] |

| | | | | | |
|---|---|---|---|---|---|
| **21** | *gas-1(fc21); cest-2.2O/E - nhr-80* RNAi | 170(230) | 21 | 38 | <0.0001[h] |
| | | | | | <0.0001[i] |
| | *gas-1(fc21); cest-2.2O/E - acs-2* RNAi | 216(212) | 25 | 40 | <0.0001[h] |
| | | | | | <0.0001[i] |
| | *gas-1(fc21); cest-2.2O/E - ech-1.1* RNAi | 142(132) | 23 | 36 | <0.0001[h] |
| | | | | | <0.0001[i] |
| | *gas-1(fc21); cest-2.2O/E - fat-5* RNAi | 178(206) | 20 | 38 | <0.0001[h] |
| | | | | | <0.0001[i] |
| **22** | wt - C RNAi | 47(86) | 26 | 35 | - |
| | wt - *nhr-49* RNAi | 50(102) | 19 | 22 | <0.0001[f] |
| | wt - *nhr-80* RNAi | 77(69) | 19 | 28 | <0.0001[f] |
| | wt - *acs-2* RNAi | 32(75) | 26 | 30 | 0.0020[f] |
| | wt - *ech-1.1* RNAi | 63(89) | 26 | 35 | 0.0017[f] |
| | wt - *fat-5* RNAi | 43(66) | 19 | 23 | <0.0001[f] |
| | *gas-1(fc21); cest-2.2O/E* - C RNAi | 70(106) | 33 | 42 | <0.0001[f] |
| | *gas-1(fc21); cest-2.2O/E - ech-1.1* RNAi | 90(44) | 26 | 37 | 0.4896[f] |
| | | | | | <0.0001[i] |
| **23** | wt - C RNAi | 96(56) | 23 | 39 | - |
| | wt - *mdh-2* RNAi | 115(55) | 19 | 30 | <0.0001[f] |
| | wt - *acox-1* RNAi | 60(82) | 21 | 28 | 0.0111[f] |
| | wt - *pck-1* RNAi | 86(63) | 21 | 39 | 0.7716[f] |
| | *gas-1(fc21)* - C RNAi | 143(150) | 19 | 28 | <0.0001[f] |
| | *gas-1(fc21) - mdh-2* RNAi | 183(48) | 23 | 33 | 0.2113[f] |
| | | | | | <0.0001[h] |
| | *gas-1(fc21) - acox-1* RNAi | 97(134) | 19 | 28 | <0.0001[f] |
| | | | | | 0.0083[h] |
| | *gas-1(fc21) - pck-1* RNAi | 143(150) | 19 | 26 | <0.0001[f] |
| | | | | | 0.0747[h] |
| | *gas-1(fc21); cest-2.2O/E* - C RNAi | 93(157) | 28 | 39 | <0.0001[f] |
| | | | | | <0.0001[h] |
| | *gas-1(fc21); cest-2.2O/E - mdh-2* RNAi | 149(150) | 21 | 37 | 0.3549[f] |
| | | | | | 0.8060[h] |
| | | | | | <0.0001[i] |
| | *gas-1(fc21); cest-2.2O/E - acox-1* RNAi | 165(139) | 23 | 39 | 0.1376[f] |
| | | | | | <0.0001[h] |
| | | | | | <0.0001[i] |
| | *gas-1(fc21); cest-2.2O/E - pck-1* RNAi | 131(115) | 26 | 41 | <0.0001[f] |
| | | | | | <0.0001[h] |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | 0.2134[i] |
| **24** | wt - C RNAi | 35(86) | 25 | 32 | - |
| | wt - *mdh-2* RNAi | 74(44) | 19 | 28 | <0.0001[f] |
| | wt - *acox-1* RNAi | 39(110) | 26 | 31 | 0.6865[f] |
| **24** | wt - *pck-1* RNAi | 33(74) | 24 | 31 | 0.5763[f] |
| | *gas-1(fc21)* - C RNAi | 121(137) | 17 | 28 | <0.0001[f] |
| | *gas-1(fc21) - mdh-2* RNAi | 146(35) | 24 | 34 | 0.5446[f] |
| | | | | | <0.0001[h] |
| | *gas-1(fc21) - acox-1* RNAi | 68(241) | 19 | 26 | <0.0001[f] |
| | | | | | 0.0135[h] |
| | *gas-1(fc21) - pck-1* RNAi | 117(186) | 19 | 30 | <0.0001[f] |
| | | | | | 0.0043[h] |
| | *gas-1(fc21); cest-2.2O/E* - C RNAi | 56(93) | 28 | 36 | 0.0021[f] |
| | | | | | <0.0001[h] |
| | *gas-1(fc21); cest-2.2O/E - mdh-2* RNAi | 123(131) | 19 | 34 | 0.0051[f] |
| | | | | | <0.0001[h] |
| | | | | | <0.0001[i] |
| | *gas-1(fc21); cest-2.2O/E - acox-1* RNAi | 87(149) | 24 | 34 | 0.9280[f] |
| | | | | | <0.0001[h] |
| | | | | | <0.0001[i] |
| | *gas-1(fc21); cest-2.2O/E - pck-1* RNAi | 122(101) | 24 | 36 | 0.9843[f] |
| | | | | | <0.0001[h] |
| | | | | | <0.0001[i] |
| **25** | *gas-1(fc21)* - C RNAi | 123(117) | 19 | 28 | - |
| | *gas-1(fc21) - mdh-2* RNAi | 265(46) | 22 | 28 | <0.0001[h] |
| | *gas-1(fc21) - acox-1* RNAi | 106(143) | 18,5 | 28 | 0.0922[h] |
| | *gas-1(fc21) - pck-1* RNAi | 99(128) | 18,5 | 28 | 0.06[h] |
| | *gas-1(fc21); cest-2.2O/E* - C RNAi | 108(185) | 27 | 40 | <0.0001[h] |
| | *gas-1(fc21); cest-2.2O/E - pck-1* RNAi | 103(101) | 25 | 40 | <0.0001[h] |
| | | | | | 0.0214[i] |
| **26** | wt - C RNAi | 68(82) | 27 | 31 | - |
| | wild-type - *mdh-2* RNAi | 79(51) | 20 | 31 | <0.0001[f] |
| | wild-type - *acox-1* RNAi | 44(107) | 23 | 31 | 0.0722[f] |
| | wild-type - *pck-1* RNAi | 24(58) | 27 | 31 | 0.9329[f] |
| **27** | wt - C RNAi | 151(40) | 23 | 32 | - |
| | wt - *vit-1* RNAi | 147(14) | 25 | 35 | <0.0001[f] |
| | wt - *cest-2.2* RNAi | 92(84) | 21 | 32 | 0.0061[f] |
| | *gas-1(fc21)* - C RNAi | 169(54) | 19 | 30 | <0.0001[f] |
| | *gas-1(fc21) - vit-1* RNAi | 159(45) | 19 | 34 | <0.0001[f] |
| | | | | | 0.6386[h] |
| | *gas-1(fc21); cest-2.2O/E* - C RNAi | 118(121) | 27 | 40 | <0.0001[f] |

| | | | | | |
|---|---|---|---|---|---|
| | | | | | <0.0001[h] |
| | *gas-1(fc21); cest-2.2O/E* - *vit-1* RNAi | 108(19) | 21 | 36 | 0.1427[f] |
| | | | | | <0.0001[h] |
| | | | | | 0.003[i] |
| | *gas-1(fc21); cest-2.2O/E* - *cest-2.2* RNAi | 151(104) | 28 | 36 | <0.0001[f] |
| | | | | | <0.0001[h] |
| | | | | | 0.164[i] |
| **28** | wt - C RNAi | 245(6) | 25 | 36 | - |
| | wt - *cest-2.2* RNAi | 222(6) | 23 | 35 | 0.0031[f] |
| | *gas-1(fc21); cest-2.2O/E* - C RNAi | 115(111) | 27 | 46 | <0.0001[f] |
| | *gas-1(fc21); cest-2.2O/E* - *cest-2.2* RNAi | 103(58) | 22 | 36 | 0.0002[f] |
| | | | | | <0.0001[i] |
| **29** | wt - C RNAi | 112(7) | 25 | 34 | - |
| | wt - *cest-2.2* RNAi | 225(9) | 23 | 31 | 0.0016[f] |
| | *gas-1(fc21); cest-2.2O/E* - C RNAi | 126(121) | 27 | 44 | 0.0005[f] |
| | *gas-1(fc21); cest-2.2O/E* - *cest-2.2* RNAi | 191(57) | 24 | 36 | 0.3296[f] |
| | | | | | 0.0038[i] |
| **30** | wt - C RNAi | 189(20) | 25 | 34 | - |
| | wt - *cco-1* RNAi | 101(45) | 31 | 40 | <0.001[f] |
| | *cest-2.2(lf)* - C RNAi | 182(59) | 23 | 32 | <0.0001[f] |
| | *cest-2.2(lf)* - *cco-1* RNAi | 123(66) | 28 | 33 | 0.0198[f] |
| | | | | | <0.001[j] |
| | | | | | <0.0001[k] |
| **31** | wt - C RNAi | 47(81) | 25 | 32 | - |
| | wt - *cco-1* RNAi | 81(57) | 28 | 40 | <0.0001[f] |
| | *cest-2.2(lf)* - *C RNAi* | 78(73) | 21 | 28 | <0.0001[f] |
| | *cest-2.2(lf)* - *cco-1* RNAi | 49(69) | 24 | 36 | 0.7090[f] |
| | | | | | 0.0002[j] |
| | | | | | 0.0004[k] |
| **32** | wt - C RNAi | 70(80) | 23 | 31 | - |
| | wt - *vit-1* RNAi | 78(102) | 23 | 31 | 0.0433[f] |
| | *gas-1(fc21); cest-2.2O/E* - C RNAi | 65(355) | 31 | 42 | <0.0001[f] |
| | *gas-1(fc21); cest-2.2O/E* - *vit-1* RNAi | 94(266) | 27 | 35 | <0.0001[f] |
| | | | | | <0.0001[i] |
| **33** | *gas-1(fc21)* - C RNAi | 107(193) | 18 | 29 | - |
| | *gas-1(fc21)* - *vit-1* RNAi | 45(255) | 18 | 26 | 0.0499[h] |
| **34** | wt - C RNAi | 110(10) | 25 | 33 | - |
| | wt - *cco-1* RNAi | 150(21) | 32 | 43 | <0.0001[f] |
| | *cest-2.2(lf)* - C RNAi | 121(13) | 23 | 31 | - |

| | | | | | |
|---|---|---|---|---|---|
| | *cest-2.2(lf)* - *cco-1* RNAi | 97(24) | 26 | 37 | <0.0001[j] |
| **35** | wt - C RNAi | 101(18) | 23 | 31 | - |
| | wt - *cco-1* RNAi | 120(30) | 32 | 41 | <0.0001[f] |
| | *cest-2.2(lf)* - EV | 127(29) | 21 | 32 | - |
| | *cest-2.2(lf)* - *cco-1* RNAi | 94(24) | 26 | 36 | <0.0001[j] |
| **36** | *gas-1(fc21)* - C RNAi | 138(150) | 18 | 27 | - |
| | *gas-1* - *cest-2.2* RNAi | 231(136) | 18 | 27 | 0.1019[h] |
| **37** | *gas-1(fc21); cest-2.2O/E* - C RNAi | 163(242) | 27 | 44 | - |
| | *gas-1(fc21); cest-2.2O/E - acs-2* RNAi | 103(283) | 23 | 36 | <0.0001[i] |
| **37** | *gas-1(fc21); cest-2.2O/E - acox-1* RNAi | 141(180) | 25 | 41 | 0.0069[i] |
| | *gas-1(fc21); cest-2.2O/E - ech-1.1* RNAi | 176(210) | 25 | 39 | 0.0003[i] |
| | *gas-1(fc21); cest-2.2O/E - nhr-49* RNAi | 200(195) | 20 | 29 | <0.0001[i] |
| | *gas-1(fc21); cest-2.2O/E - nhr-80* RNAi | 118(182) | 23 | 37 | <0.0001[i] |
| **38** | *gas-1(fc21)* - C RNAi | 148(228) | 18 | 28 | - |
| | *gas-1* - *cest-2.2* RNAi | 180(199) | 18 | 28 | 0.0450[h] |
| **39** | *gas-1(fc21)* - C RNAi | 131(32) | 19 | 30 | - |
| | *gas-1* - *cest-2.2* RNAi | 112(75) | 19 | 28 | 0.2068[h] |
| **40** | *isp-1(qm150)* - C RNAi | 145(555) | 35 | 51 | - |
| | *isp-1(qm150)* - *cest-2.2* RNAi | 117(383) | 36 | 53 | 0.8258[l] |
| **41** | *isp-1(qm150)* - C RNAi | 270(317) | 35 | 49 | - |
| | *isp-1(qm150)* - *cest-2.2* RNAi | 309(567) | 34 | 53# | 0.979[l] |
| **42** | *sod-2(ok1030)* - C RNAi | 77(50) | 26 | 39 | - |
| | *sod-2(ok1030)* - *cest-2.2* RNAi | 52(160) | 25 | 33 | 0.7054[m] |
| **43** | *sod-2(ok1030)* - C RNAi | 197(25) | 25 | 39 | - |
| | *sod-2(ok1030)* - *cest-2.2* RNAi | 167(9) | 23 | 33 | 0.818[m] |

[f]*p* value compared to wild type empty vector (C RNAi)
[g]*p* value compared to *nuo-6(qm200)* empty vector (C RNAi)
[h]*p* value compared to *gas-1(fc21)* empty vector (C RNAi)
[i]*p* value compared to *gas-1(fc21); cest-2.2 O/E* empty vector (C RNAi)
[j]*p* value compared to *cest-2.2(lf)* empty vector (C RNAi)
[k]*p* value compared to wt - *cco-1* RNAi
[l]*p* value compared to *isp-1(qm150)* empty vector (C RNAi)
[m]*p* value compared to *sod-2(ok1030)* empty vector (C RNAi)

| **Compound Treatment** | | | | | |
|---|---|---|---|---|---|
| **Exp** | **Strain** | **Dead (Censored)** | **Median** | **Max** | ***p* value** |

| | | | | | |
|---|---|---|---|---|---|
| **44** | *gas-1(fc21)* - control treatment | 102(230) | 21 | 26 | - |
| | *gas-1(fc21)* - 1µM asc #8 | 109(304) | 19 | 26 | 0.4597[n] |
| **45** | *gas-1(fc21)* - control treatment | 44(121) | 19 | 27 | - |
| | *gas-1(fc21)* - 1µM asc #8 | 80(156) | 20 | 27 | 0.1906[n] |
| **46** | wt - control plates | 138(17) | 24 | 32 | - |
| | wt - 1mg/ml vitamin C | 116(13) | 26 | 33 | <0.0001[o] |
| | *gas-1(fc21)* - control plates | 121(58) | 19 | 28 | <0.0001[o] |
| | *gas-1(fc21)* - 1mg/ml vitamin C | 93(72) | 19 | 28 | <0.0001[o]<br>0.4779[p] |
| | *gas-1(fc21); cest-2.2O/E* - control plates | 134(13) | 28 | 38 | <0.0001[o]<br><0.0001[p] |
| **46** | *gas-1(fc21); cest-2.2O/E* - 1mg/ml vitamin C | 126(12) | 28 | 39 | <0.0001[o]<br><0.0001[p]<br>0.0206[q] |
| **47** | wt - control plates | 73(16) | 24 | 34 | - |
| | wt - 1mg/ml vitamin C | 70(21) | 26 | 35 | 0.0336[o] |
| | *gas-1(fc21)* - control plates | 112(28) | 20 | 30 | <0.0001[o] |
| | *gas-1(fc21)* - 1mg/ml vitamin C | 111(48) | 20 | 28 | <0.0001[o]<br>0.7841[p] |
| | *gas-1(fc21); cest-2.2O/E* - control plates | 112(26) | 28 | 38 | <0.0001[o]<br><0.0001[p] |
| | *gas-1(fc21); cest-2.2O/E* - 1mg/ml vitamin C | 97(19) | 28 | 38 | <0.0001[o]<br><0.0001[p]<br>0.5906[q] |

[n]*p* value compared to *gas-1(fc21)* - control treatment (1.7% EtOH)

[o]*p* value compared to wt - control plates (NGM without vitamin C)

[p]*p* value comparef to *gas-1(fc21)* - control plates (NGM without viamin C)

[q]*p* value comparef to *gas-1(fc21); cest-2.2O/E* - control plates (NGM without viamin C)

**Appendix Table S2. Targeted Peptides included in the SureQuant-based quantitative MS method.**

| Protein/Unique Peptide (a,c) | Precursor ion (m/z) | Product ions used for quantitation (b) | Retention times (min) |
|---|---|---|---|
| CEST2.2 | | | |
| LSTGTIEGR (light) | 467.253631++ | (y7, y6, y3) | 19,5 |
| **LSTGTIEGR (heavy)** | **472.257765++** | **(y7, y6, y3)** | **19,5** |
| HGEDFAYAFGTNR(light) | 495.556623+++ | (y5, b6, b7) | 28,7 |
| **HGEDFAYAFGTNR (heavy)** | **498.892713+++** | **(y5, b6, b7)** | **28,7** |

aHeavy peptides are labelled at the C-terminal of Arginine (R) or Lysine (K) and highlighted in bold.
bFragments used for quantification are indicated and they are singly charged.
cQuantitation is based on the L/H ratios of the peptides.

**Appendix Table S3. Transcriptome results of genes involved in lipid metabolism (relative to Figure 3).**

| Gene | *gas-1* vs wt | *gas-1; cest-2.2 O/E* vs *gas-1* |
|---|---|---|
| *aak-2* | ↑ | ↓ |
| *abt-1* | ↑ | ns |
| *acdh-9* | ↓ | ↑ |
| *apm-3* | ns | ↑ |
| *ard-1* | ↑ | ns |
| *bgal-2* | ns | ↑ |
| *C24A3.4* | ↑ | ↓ |
| *C29E4.10* | ↑ | ns |
| *cdc-73* | ↓ | ns |
| *cmk-1* | ↓ | ↑ |
| *col-64* | ↑ | ns |
| *cpna-3* | ↓ | ns |
| *cyp-31A2* | ↑ | ns |
| *cyp-44A1* | ↑ | ns |
| *ech-9* | ↓ | ↑ |
| *elo-3* | ↑ | ns |
| *elt-7* | ↑ | ns |
| *F08F1.9* | ↓ | ns |
| *F09B12.3* | ↑ | ns |
| *F13H8.11* | ↑ | ns |
| *F32A5.8* | ↑ | ns |
| *F46H5.7* | ↑ | ↓ |
| *F52F10.2* | ↑ | ns |
| *F53B3.6* | ns | ↓ |
| *F56A4.4* | ↑ | ↓ |
| *F57A8.7* | ns | ↑ |
| *F58A6.1* | ↑ | ns |
| *fat-5* | ↑ | ns |
| *got-1.1* | ↑ | ↓ |
| *got-1.2* | ↑ | ↓ |
| *gpdh-2* | ns | ↓ |
| *gst-14* | ↑ | ns |
| *gst-15* | ns | ↑ |
| *gst-21* | ↑ | ns |
| *gst-22* | ↑ | ns |
| *hsp-12.2* | ↓ | ↑ |
| *igeg-1* | ↑ | ns |
| *K03H6.1* | ↓ | ↑ |
| *K11G12.6* | ↑ | ns |
| *kin-26* | ↑ | ↓ |
| *maa-1* | ↑ | ns |
| *mboa-2* | ↑ | ↓ |
| *mboa-6* | ↑ | ns |

| | | |
|---|---|---|
| *mdt-17* | ↓ | ↑ |
| *mep-1* | ns | ↑ |
| *mig-1* | ↑ | ↓ |
| *nfki-1* | ↓ | ↑ |
| *nhr-168* | ↑ | ns |
| *nhr-175* | ↓ | ns |
| *nhr-20* | ↓ | ns |
| *nhr-219* | ns | ↓ |
| *nhr-232* | ↑ | ↓ |
| *nhr-52* | ns | ↓ |
| *nhr-65* | ↓ | ↑ |
| *oac-31* | ↑ | ↓ |
| *oac-9* | ↑ | ns |
| *obr-2* | ↑ | ↓ |
| *otub-4* | ↑ | ns |
| *paf-1* | ↓ | ns |
| *paqr-2* | ↓ | ↑ |
| *pde-2* | ns | ↓ |
| *plc-1* | ↓ | ns |
| *ptr-13* | ↑ | ↓ |
| *ptr-21* | ↑ | ↓ |
| *R05H5.4* | ↑ | ns |
| *rho-1* | ns | ↑ |
| *seb-2* | ↑ | ns |
| *T06D8.3* | ↓ | ↑ |
| *T20B3.1* | ↑ | ns |
| *taf-7.2* | ↑ | ns |
| *tkr-2* | ↑ | ns |
| *ugt-15* | ↓ | ↓ |
| *ugt-54* | ↑ | ns |
| *Y41E3.18* | ns | ↓ |
| *Y87G2A.18* | ns | ↓ |
| *ZK1073.1* | ↑ | ↓ |
| *ZK550.2* | ns | ↓ |
| *nhr-48* | ↑ | ns |

↑ = significantly upregulated; ↓ = significantly downregulated; ns=not significant (5% FDR).