Supplemental Information for Delaney *et al.*

Supplemental Figure 1: Survival of long-lived strains following transient heat shock.

(a) Long lived strains which showed significant ($p < 0.05$) changes in relative growth inhibition compared to wild type BY4742 are shown. The control sensitive *msn2Δmsn4Δ* and *hac1Δ* strains are shown for comparison. Error bars are s.e.m. Data for all strains tested can be found in **Supplemental Table 4**.

(b) Percent survival after heat shock is shown for wild type BY4742 and long lived strains *rpl20bΔ* and *afg3Δ* cells.

(c) Scatter plot comparing the percent change in replicative lifespan to percent change in survival for each long-lived mutant.

Supplemental Figure 2: Replicative lifespan curves of control strains sensitive to the tested stresses. Parentheses denote mean lifespan.

Supplemental Figure 3: Growth curves and lifespan curves of respiratory dead or deficient strains. Parentheses denote mean lifespan, arrows indicate when the cultures shift to respiration.

Supplemental Figure 4: Unsuppressed growth of *afg3Δ*, *yta12Δ*, and *mrpl32Δ* and corresponding lifespan curves.

(a) Pictures of tetrads resulting from *afg3Δ*, *yta12Δ*, and *mrpl32Δ* crosses.

(b) Lifespans of indicated strains. Parentheses denote mean lifespans.

(c) Patches of yeast grown at 30°C indicate that rho^0 cells can be complemented by *afg3Δ* mutants, indicating *afg3Δ* contains functional mtDNA

(d) Lifespans of indicated strains. Parentheses denote mean lifespans.

Supplemental Figure 5: Cold incubation similarly impairs *afg3Δ* cell growth and longevity relative to *rpl20bΔ* cells

Spot tests of indicated strains were performed by growing the strain for 24 hours in YPD at 30°C and then serially diluting the cultures 1:10 on the media indicated. Days of incubation are indicated by the number in the lower left corner of each picture. Lifespans were performed in a 15°C incubator on normal YEPD plates.

Supplemental Figure 6: WT and afg3Δ cells do not perish after 24 hours in YPD medium

(a) Colony forming viability assay after 24 hours of growth in YPD, 30°C.

(b) Cells incubated as in (a) were also tested for membrane integrity defects, of which less than 1% of WT or *afg3Δ* cells could stain with a vital dye (a heat shock positive control is also shown).

Supplemental Table 1: Summary of long lived mutants' resistance profile: Tunicamycin

Supplemental Table 2: Summary of long lived mutants' resistance profile: Paraquat

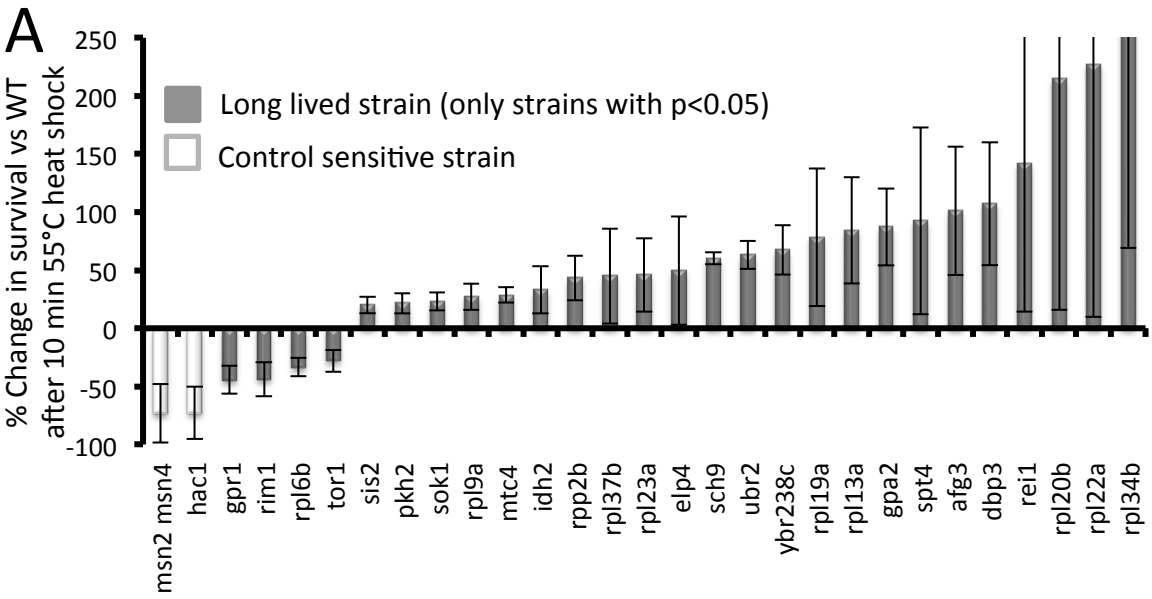
Supplemental Table 3: Summary of long lived mutants' resistance profile: Heat shock

Supplemental Table 4: Summary of long lived mutants' resistance profile: MMS

Supplemental Table 5: Strain list

Supplemental Table 6: Lifespan statistics

Figure S1


A
% Change in survival vs WT after 10 min 55°C heat shock
Long lived strain (only strains with p<0.05)
Control sensitive strain
250
200
150
100
50
0
-50
-100
msn2
msn4
hac1
gpr1
rim1
rpl6b
tor1
sis2
pkh2
sok1
rpl9a
mtc4
idh2
rpp2b
rpl37b
rpl23a
elp4
sch9
ubr2
ybr238c
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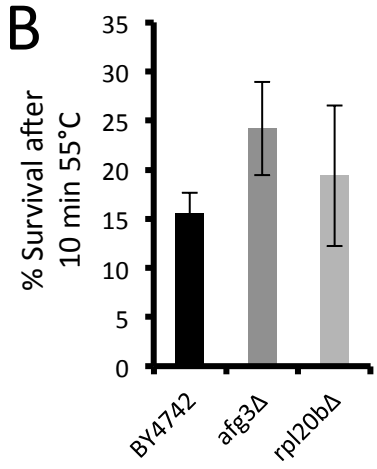
rpl13a
gpa2
spt4
afg3
dbp3
rei1
rpl20b
rpl22a
rpl34b


B
% Survival after 10 min 55°C
35
30
25
20
15
10
5
0
BY4742
afg3Δ
rpl20bΔ

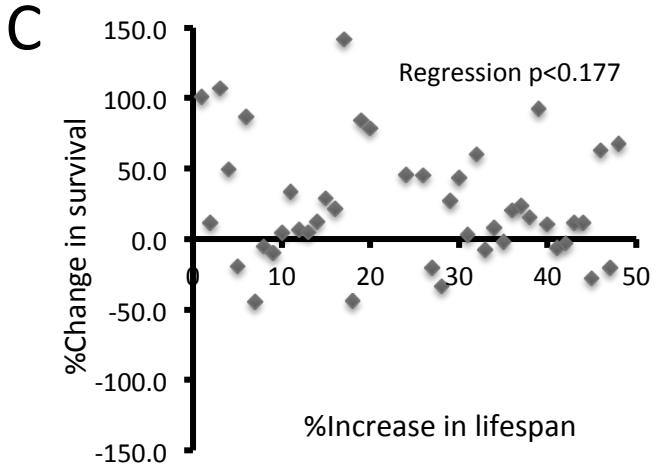

C
Regression p<0.177
%Change in survival
%Increase in lifespan
150.0
100.0
50.0
0.0
-50.0
-100.0
-150.0
0
10
20
30
40
50

Figure S2

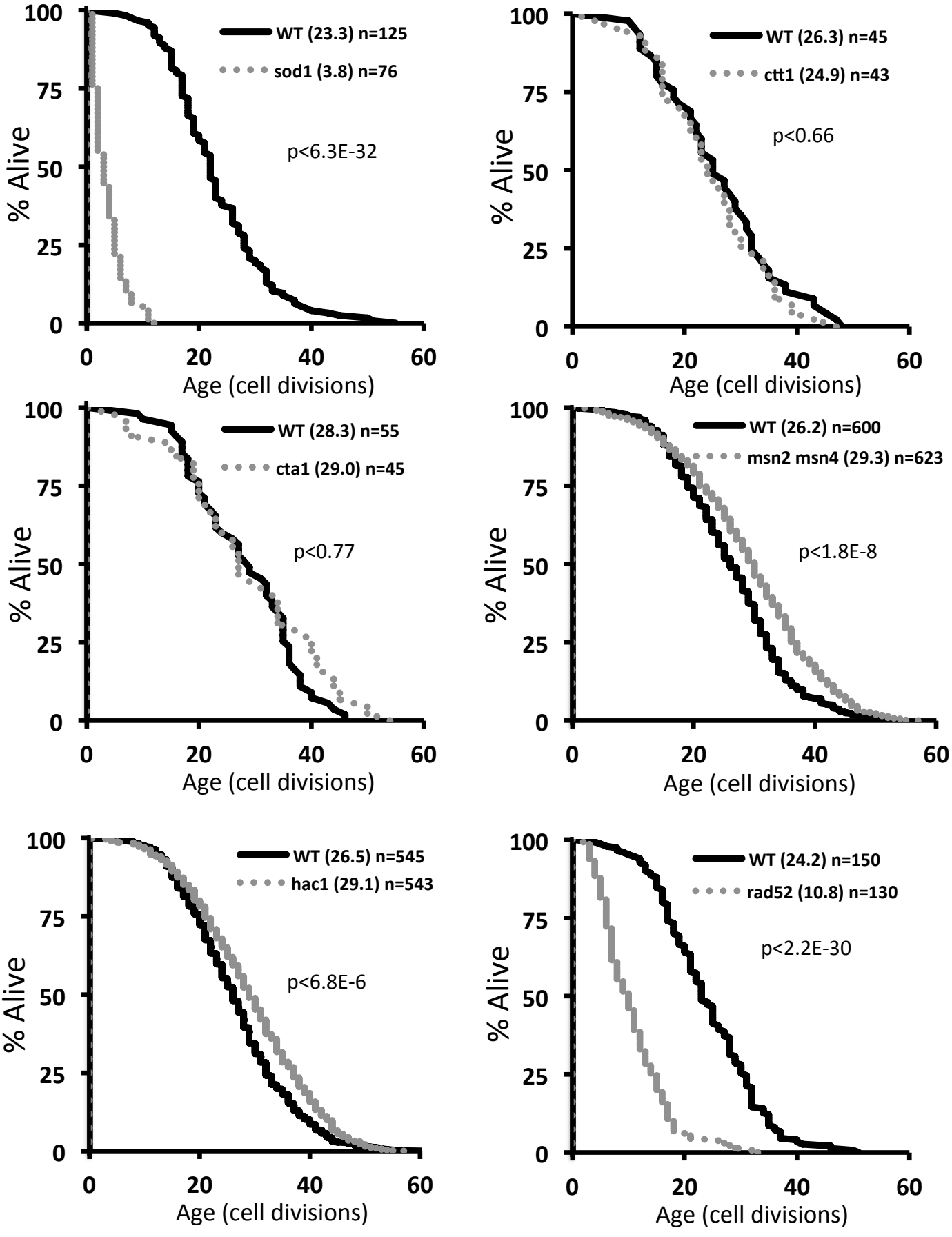

WT (23.3) n=125
sod1 (3.8) n=76
p<6.3E-32
WT (26.3) n=45
ctt1 (24.9) n=43
p<0.66
WT (28.3) n=55
cta1 (29.0) n=45
p<0.77
WT (26.2) n=600
msn2 msn4 (29.3) n=623
p<1.8E-8
WT (26.5) n=545
hac1 (29.1) n=543
p<6.8E-6
WT (24.2) n=150
rad52 (10.8) n=130
p<2.2E-30
% Alive
Age (cell divisions)
0
25
50
75
100
0
20
40
60

Figure S3

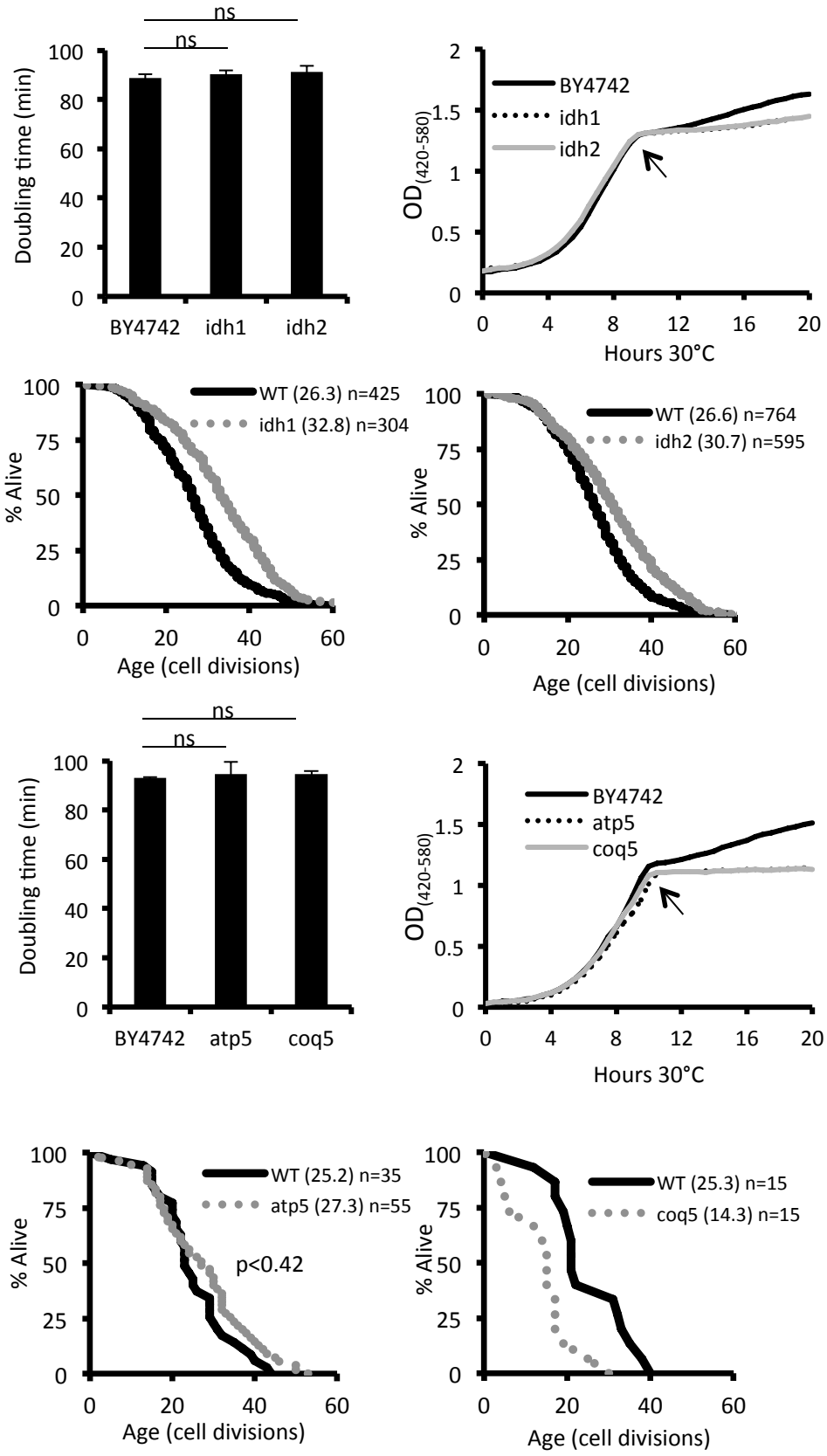

ns
ns
Doubling time (min)
BY4742
idh1
idh2
OD(420-580)
Hours 30°C
WT (26.3) n=425
idh1 (32.8) n=304
% Alive
Age (cell divisions)
WT (26.6) n=764
idh2 (30.7) n=595
atp5
coq5
WT (25.2) n=35
atp5 (27.3) n=55
p<0.42
WT (25.3) n=15
coq5 (14.3) n=15

Figure S4

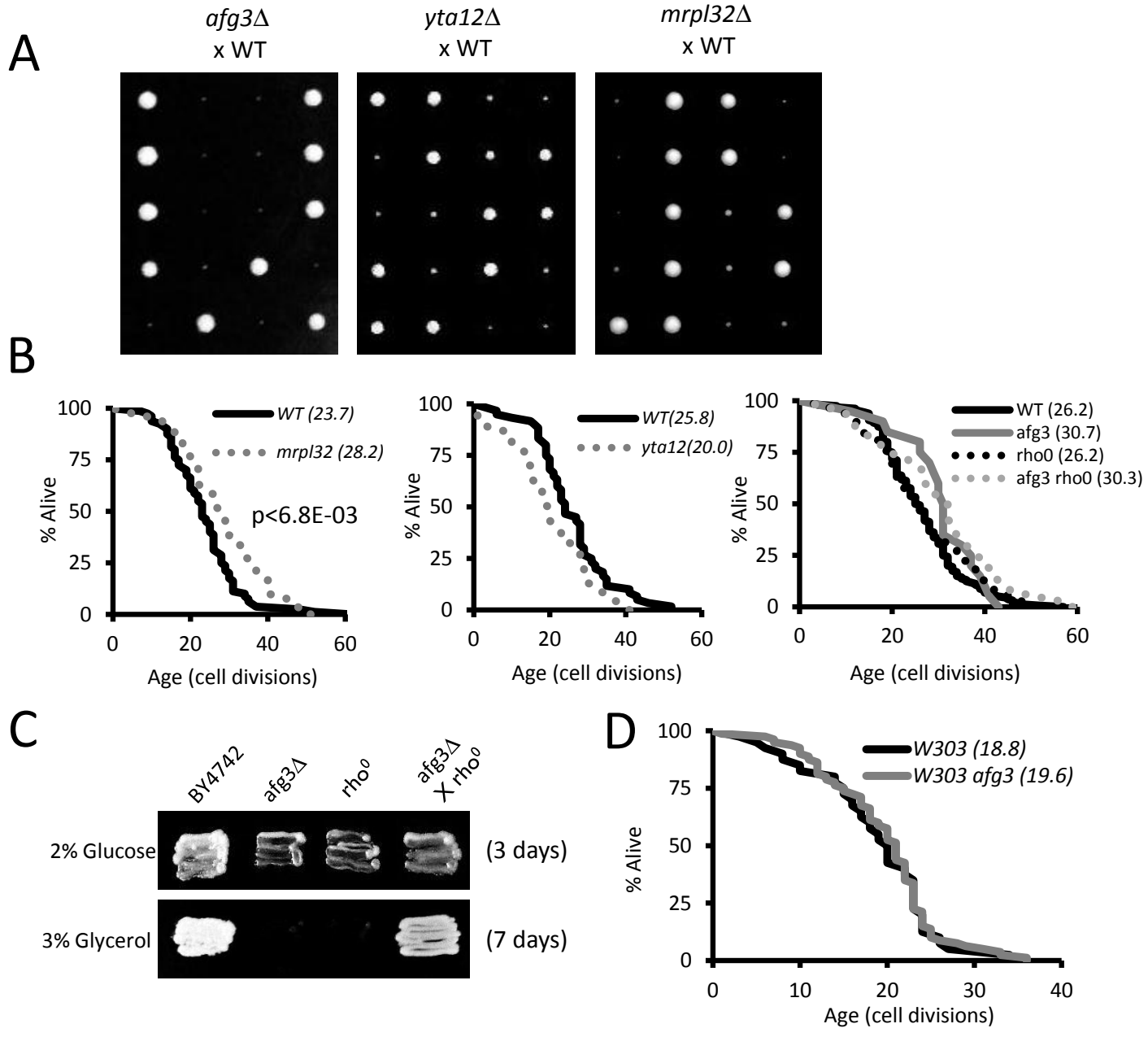
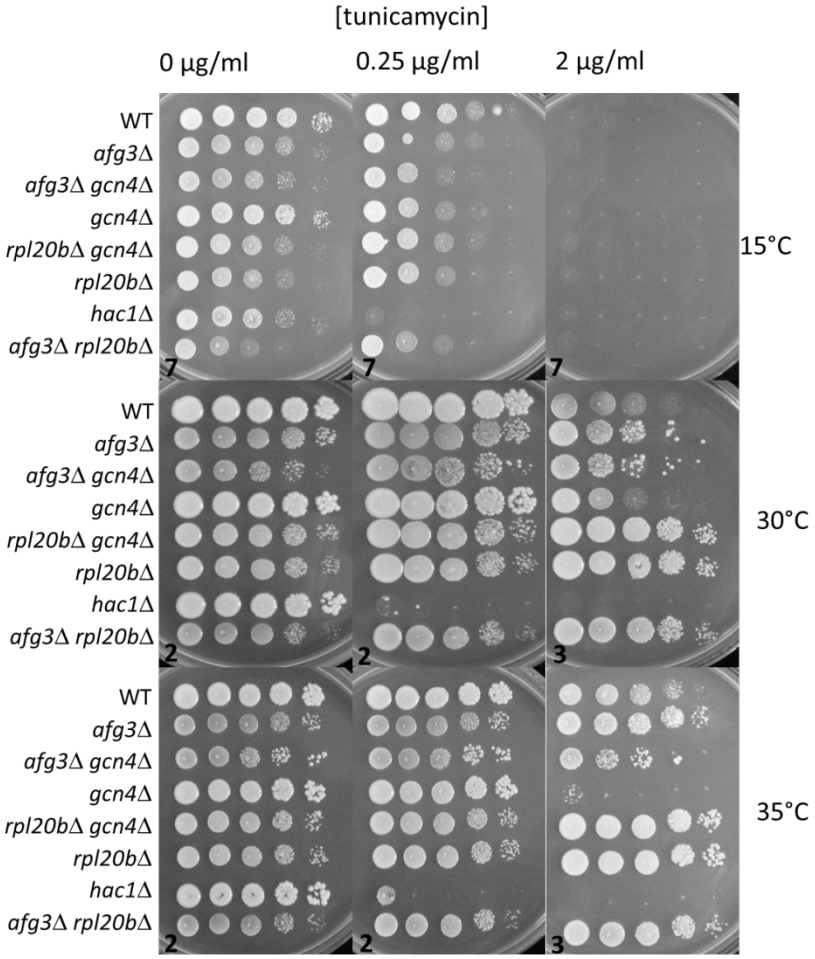

A
afg3Δ x WT
yta12Δ x WT
mrpl32Δ x WT
B
WT (23.7)
mrpl32 (28.2)
p<6.8E-03
% Alive
Age (cell divisions)
WT(25.8)
yta12(20.0)
WT (26.2)
afg3 (30.7)
rho0 (26.2)
afg3 rho0 (30.3)
C
BY4742
afg3Δ
rho0
afg3Δ X rho0
2% Glucose
(3 days)
3% Glycerol
(7 days)
D
W303 (18.8)
W303 afg3 (19.6)

Figure S5


[tunicamycin]
0 µg/ml
0.25 µg/ml
2 µg/ml
WT
afg3Δ
afg3Δ gcn4Δ
gcn4Δ
rpl20bΔ gcn4Δ
rpl20bΔ
hac1Δ
afg3Δ rpl20bΔ
15°C
30°C
35°C
7
2
3

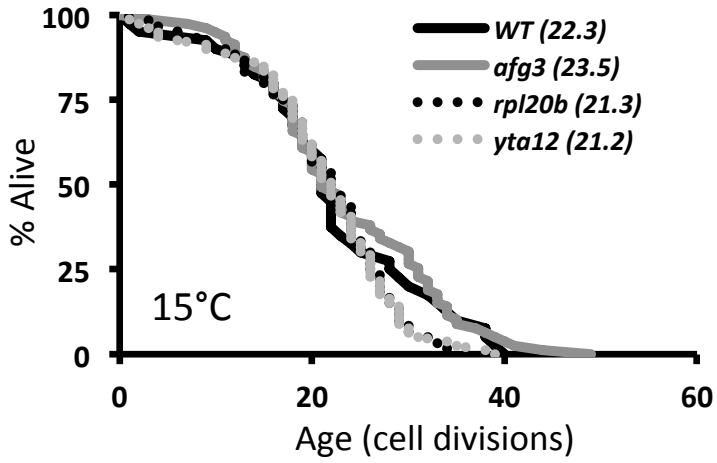
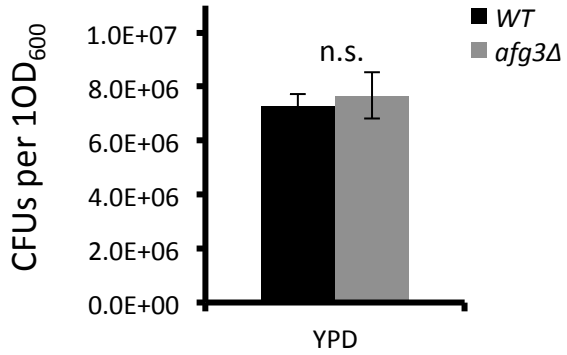

WT (22.3)
afg3 (23.5)
rpl20b (21.3)
yta12 (21.2)
% Alive
100
75
50
25
0
15°C
0
20
40
60
Age (cell divisions)

Figure S6

A


CFUs per 1OD600
1.0E+07
8.0E+06
6.0E+06
4.0E+06
2.0E+06
0.0E+00
n.s.
WT
afg3Δ
YPD

B

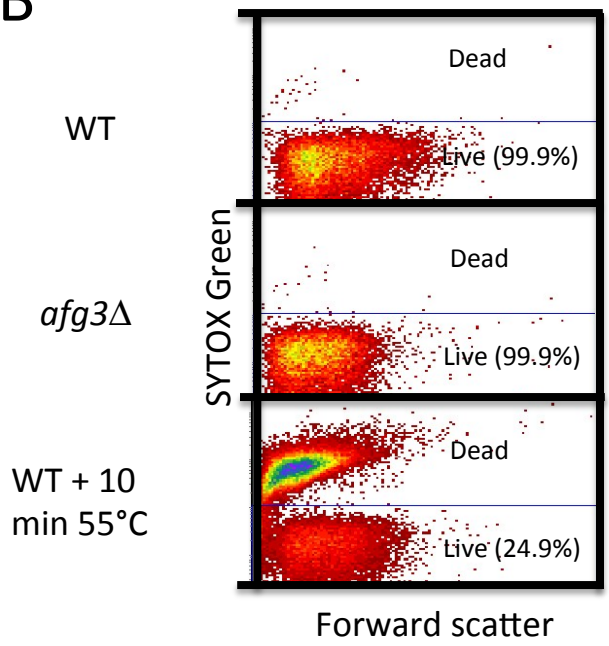

WT
afg3Δ
WT + 10 min 55°C
SYTOX Green
Dead
Live (99.9%)
Dead
Live (99.9%)
Dead
Live (24.9%)
Forward scatter

Table S1

Tunicamycin (1µg/ml)

Strain	%Δ RLS	Doubling time w/o drug (min)	Doubling time w/ drug (min)	GRC_s	s.e.m.	V_s	p		$log_2(V_s)$
BY4742	N/A	96.0	283.7	195.5	7.8	0.0	1.00E+00		0.00
afg3Δ	20.4	115.0	155.7	35.4	0.9	81.9	3.67E-08	***	6.36
alg12Δ	24.7	102.8	387.8	277.1	11.7	-41.8	6.52E-04	***	-5.38
dbp3Δ	33.6	112.1	187.3	67.1	6.2	65.7	1.65E-06	***	6.04
elp4Δ	34.8	116.1	254.6	119.4	7.7	38.9	1.13E-03	**	5.28
fob1Δ	23.5	94.1	298.4	217.2	19.5	-11.1	3.27E-01		-3.48
gpa2Δ	36.1	118.4	277.8	134.6	12.9	31.1	7.87E-03	**	4.96
gpr1Δ	21.1	110.2	265.8	141.3	3.5	27.7	1.41E-02	*	4.79
hse1Δ	25.5	96.0	477.1	397.3	50.3	-103.2	1.38E-07	***	-6.69
hxk2Δ	25.8	103.9	337.3	224.6	29.0	-14.9	2.22E-01		-3.90
idh1Δ	35.1	94.1	318.0	237.9	26.1	-21.7	7.38E-02		-4.44
idh2Δ	25.3	96.9	283.1	192.2	17.2	1.7	8.81E-01		0.74
inp51Δ	13.2	114.2	346.0	202.9	82.3	-3.8	8.43E-01		-1.93
inp53Δ	30.7	98.4	275.6	180.1	14.6	7.8	4.77E-01		2.97
msw1Δ	30.2	91.3	287.2	214.5	3.9	-9.7	3.64E-01		-3.28
mtc4Δ	35.5	94.5	271.1	187.0	16.9	4.3	6.97E-01		2.11
pkh2Δ	22.2	96.6	306.4	217.3	13.6	-11.2	3.11E-01		-3.48
rei1Δ	37.5	146.2	154.7	5.8	5.9	97.0	1.69E-09	***	6.60
rim1Δ	13.7	107.7	255.2	137.1	11.7	29.9	1.00E-02	*	4.90
rpl13aΔ	27	121.0	182.8	51.1	8.5	73.9	2.72E-07	***	6.21
rpl19aΔ	28.4	124.1	181.0	45.8	5.8	76.5	1.33E-07	***	6.26
rpl20bΔ	40.3	152.8	185.4	21.3	14.5	89.1	1.46E-08	***	6.48
rpl22aΔ	34.5	163.2	138.2	-15.3	8.8	107.9	2.37E-10	***	6.75
rpl23aΔ	29.5	115.4	199.0	72.5	5.8	62.9	3.16E-06	***	5.98
rpl34bΔ	35.4	160.8	223.1	38.7	4.2	80.2	5.58E-08	***	6.33
rpl37bΔ	35.1	118.9	165.4	39.1	7.0	80.0	6.39E-08	***	6.32
rpl43bΔ	37.5	100.9	221.3	119.3	6.1	38.9	1.09E-03	**	5.28
rpl6bΔ	13.9	139.4	190.7	36.8	2.9	81.2	4.37E-08	***	6.34
rpl9aΔ	29.4	117.7	153.3	30.3	9.2	84.5	2.66E-08	***	6.40
rpp2bΔ	54.2	147.7	156.6	6.0	5.6	96.9	1.70E-09	***	6.60
sam1Δ	37.9	99.2	330.5	233.2	12.0	-19.3	8.44E-02		-4.27
sch9Δ	42.8	148.8	404.2	171.7	23.9	-12.1	2.73E-01		-3.60
sip2Δ	18	91.3	273.2	199.2	23.1	-1.9	8.66E-01		-0.95
SIR2OX	25	94.4	301.7	219.6	21.3	-12.3	2.84E-01		-3.62
sis2Δ	47.8	92.9	291.3	213.6	24.7	-9.3	4.29E-01		-3.21
sok1Δ	37.2	101.1	392.2	288.1	30.7	-47.4	5.84E-04	***	-5.57
sps1Δ	23.8	98.8	206.0	108.4	25.2	44.5	7.15E-04	***	5.48
spt4Δ	46.3	103.1	177.3	72.0	6.2	63.2	3.01E-06	***	5.98
tif1Δ	13.1	96.5	339.4	251.5	73.5	-28.7	1.15E-01		-4.84
tif2Δ	18.1	96.8	295.8	205.6	14.9	-5.2	6.38E-01		-2.37
tif4631Δ	18	109.4	243.7	122.7	4.2	37.2	1.61E-03	**	5.22
tis11Δ	32.2	96.2	302.7	214.7	14.4	-9.8	3.74E-01		-3.30
tma19Δ	31.8	92.0	277.1	201.1	9.8	-2.9	7.88E-01		-1.54
tor1Δ	30.8	90.6	305.1	236.9	18.5	-21.2	6.72E-02		-4.41
ubr2Δ	47.2	96.0	217.1	126.0	7.6	35.5	2.55E-03	**	5.15
ure2Δ	29.5	93.3	329.7	253.4	24.1	-29.6	1.60E-02	*	-4.89
ybr238cΔ	49.7	94.2	310.5	229.8	12.2	-17.6	1.15E-01		-4.13
BY4743	43.8	98.1	249.7	154.5	8.7	21.0	5.97E-02		4.39
hac1Δ	9.9	97.3	ng	ng	N/A	N/A	N/A		N/A

ng = no growth in stressed media

GRC_s = % change in growth rate upon addition of stress, compared to unstressed

V_s =Stress Vector= (GRC_s BY4742 - GRC_s mutant)/(GRC_s BY4742)*100

* p<0.05

** p<0.01

*** p<0.001 and satisfies Bonferroni correction

Table S2

Paraquat (5mM)									
Strain	%Δ RLS	Doubling time w/o drug (min)	Doubling time w/ drug (min)	GRC_s	s.e.m.	V_s	p		$log_2(V_s)$
BY4742	N/A	89.2	150.7	68.8	3.3	0.0	1.00E+00		0.00
afg3Δ	20.4	129.4	164.1	26.9	2.9	61.0	7.43E-06	***	5.93
alg12Δ	24.7	103.6	157.0	51.6	3.5	25.1	1.79E-02	*	4.65
dbp3Δ	33.6	115.9	149.5	29.0	2.6	57.9	1.29E-05	***	5.86
elp4Δ	34.8	128.9	361.3	180.3	42.1	-162.0	9.54E-05	***	-7.34
fob1Δ	23.5	95.1	150.4	58.2	1.7	15.4	1.15E-01		3.95
gpa2Δ	36.1	114.9	162.2	41.2	1.6	40.1	5.02E-04	***	5.33
gpr1Δ	21.1	98.9	181.4	83.5	4.7	-21.2	4.50E-02	*	-4.41
hse1Δ	25.5	102.1	153.1	50.0	7.0	27.4	2.96E-02	*	4.77
hxk2Δ	25.8	99.9	187.7	87.9	8.8	-27.7	6.03E-02		-4.79
idh1Δ	35.1	98.7	163.3	65.5	11.8	4.9	7.33E-01		2.28
idh2Δ	25.3	100.2	150.1	49.8	2.3	27.7	8.94E-03	**	4.79
inp51Δ	13.2	97.1	192.1	97.7	18.3	-42.0	1.80E-02	*	-5.39
inp53Δ	30.7	97.3	143.0	47.0	4.4	31.7	4.73E-03	**	4.99
msw1Δ	30.2	92.8	166.6	79.6	12.4	-15.6	2.40E-01		-3.96
mtc4Δ	35.5	90.4	191.0	111.4	0.9	-61.8	3.22E-04	***	-5.95
pkh2Δ	22.2	121.4	168.1	38.5	13.6	44.0	4.55E-03	**	5.46
rei1Δ	37.5	136.3	164.0	20.3	5.7	70.5	2.84E-06	***	6.14
rim1Δ	13.7	101.7	169.6	66.8	6.2	2.9	7.77E-01		1.55
rpl13aΔ	27	121.6	189.8	56.1	30.2	18.6	4.39E-01		4.22
rpl19aΔ	28.4	119.8	156.5	30.6	4.3	55.5	3.05E-05	***	5.79
rpl20bΔ	40.3	143.1	182.4	27.4	9.3	60.2	6.78E-05	***	5.91
rpl22aΔ	34.5	142.1	174.0	22.5	4.3	67.3	3.23E-06	***	6.07
rpl23aΔ	29.5	121.9	161.5	32.5	13.5	52.8	8.36E-04	***	5.72
rpl34bΔ	35.4	154.6	209.9	35.7	7.8	48.1	3.78E-04	***	5.59
rpl37bΔ	35.1	136.9	168.2	22.9	4.5	66.8	3.73E-06	***	6.06
rpl43bΔ	37.5	102.2	168.8	65.1	13.4	5.5	6.86E-01		2.45
rpl6bΔ	13.9	125.2	160.8	28.4	4.9	58.7	1.90E-05	***	5.87
rpl9aΔ	29.4	110.6	156.2	41.3	9.0	40.1	2.52E-03	**	5.32
rpp2bΔ	54.2	139.1	161.5	16.1	3.4	76.6	4.93E-07	***	6.26
sam1Δ	37.9	90.4	159.1	76.0	10.4	-10.4	3.93E-01		-3.38
sch9Δ	42.8	178.8	250.6	40.2	3.8	41.7	4.85E-04	***	5.38
sip2Δ	18	88.0	162.5	84.6	8.3	-22.9	5.16E-02		-4.52
SIR2OX	25	87.1	158.4	81.9	9.5	-18.9	1.17E-01		-4.24
sis2Δ	47.8	104.8	214.9	105.1	14.8	-52.6	1.67E-03	**	-5.72
sok1Δ	37.2	88.0	149.6	70.0	9.7	-1.7	8.91E-01		-0.74
sps1Δ	23.8	94.3	140.6	49.1	4.2	28.7	1.86E-02	*	4.85
spt4Δ	46.3	111.0	292.1	163.2	26.8	-137.0	7.85E-06	***	-7.10
tif1Δ	13.1	94.2	151.9	61.2	4.8	11.1	2.72E-01		3.47
tif2Δ	18.1	95.1	159.2	67.4	4.4	2.1	8.30E-01		1.08
tif4631Δ	18	111.0	204.3	84.0	24.4	-22.1	2.79E-01		-4.46
tis11Δ	32.2	91.0	156.4	71.9	14.0	-4.4	7.48E-01		-2.15
tma19Δ	31.8	91.6	161.9	76.7	15.8	-11.5	4.41E-01		-3.52
tor1Δ	30.8	99.2	152.0	53.3	7.8	22.6	5.11E-02		4.50
ubr2Δ	47.2	91.0	199.1	118.9	4.0	-72.6	7.61E-05	***	-6.18
ure2Δ	29.5	99.1	142.8	44.1	4.8	36.0	2.06E-03	**	5.17
ybr238cΔ	49.7	90.2	156.7	73.7	8.5	-7.1	5.31E-01		-2.82
BY4743	43.8	88.9	193.7	118.0	11.5	-71.4	1.52E-04	***	-6.16
ctt1Δ	-5.3	80.9	158.0	95.3	12.6	-38.5	1.07E-02	*	-5.27
cta1Δ	2.5	90.0	182.1	102.2	13.6	-48.5	3.15E-03	**	-5.60
sod1Δ	-83.8	87.1	ng	ng	N/A	N/A	N/A		N/A

ng = no growth in stressed media

GRC_s = % change in growth rate upon addition of stress, compared to unstressed

V_s =Stress Vector= (GRC_s BY4742 - GRC_s mutant)/(GRC_s BY4742)*100

* p<0.05

** p<0.01

*** p<0.001 and satisfies Bonferroni correction

Table S3

MMS (0.01%)									
Strain	%Δ RLS	Doubling time w/o drug (min)	Doubling time w/ drug (min)	GRC_s	s.e.m.	V_s	p		$log_2(V_s)$
BY4742	N/A	90.8	150.6	66.0	3.6	0.0	1.00E+00		0.00
afg3Δ	20.4	117.8	254.9	116.4	9.2	-76.4	1.04E-08	***	-6.26
alg12Δ	24.7	95.8	148.5	54.9	2.5	16.7	2.59E-02	*	4.07
dbp3Δ	33.6	115.1	180.4	56.7	11.7	14.1	1.63E-01		3.82
elp4Δ	34.8	111.9	254.8	127.6	13.4	-93.4	6.99E-09	***	-6.55
fob1Δ	23.5	89.0	134.7	51.4	3.3	22.1	5.14E-03	**	4.47
gpa2Δ	36.1	119.8	197.1	64.5	12.7	2.2	8.32E-01		1.13
gpr1Δ	21.1	93.7	151.6	61.8	4.4	6.2	4.05E-01		2.64
hse1Δ	25.5	91.2	145.0	59.1	3.4	10.5	1.58E-01		3.39
hxk2Δ	25.8	96.0	151.6	58.0	1.2	12.1	9.35E-02		3.59
idh1Δ	35.1	95.6	156.1	63.3	6.2	4.0	6.15E-01		2.00
idh2Δ	25.3	95.7	163.7	70.9	7.4	-7.6	3.65E-01		-2.92
inp51Δ	13.2	91.6	144.8	58.1	2.9	11.9	1.05E-01		3.58
inp53Δ	30.7	97.1	145.0	49.3	2.4	25.2	1.55E-03	**	4.66
msw1Δ	30.2	91.1	134.3	47.3	2.2	28.3	5.12E-04	***	4.82
mtc4Δ	35.5	88.6	135.1	52.4	4.9	20.5	1.15E-02	*	4.36
pkh2Δ	22.2	94.2	148.1	57.1	4.2	13.4	8.04E-02		3.74
rei1Δ	37.5	138.2	222.5	61.0	13.7	7.5	4.91E-01		2.90
rim1Δ	13.7	95.2	151.2	58.8	9.8	10.8	2.42E-01		3.44
rpl13aΔ	27	115.1	178.3	54.9	10.2	16.7	8.10E-02		4.06
rpl19aΔ	28.4	118.3	189.9	60.5	12.0	8.3	4.10E-01		3.06
rpl20bΔ	40.3	154.3	274.1	77.7	24.7	-17.8	2.86E-01		-4.15
rpl22aΔ	34.5	150.1	266.1	77.3	19.8	-17.2	2.21E-01		-4.11
rpl23aΔ	29.5	116.7	185.6	59.0	9.6	10.6	2.49E-01		3.41
rpl34bΔ	35.4	191.5	404.7	111.3	42.5	-68.8	1.55E-02	*	-6.10
rpl37bΔ	35.1	116.8	168.9	44.6	8.5	32.3	9.48E-04	***	5.02
rpl43bΔ	37.5	100.2	153.9	53.6	2.9	18.8	1.41E-02	*	4.23
rpl6bΔ	13.9	130.7	215.8	65.1	14.8	1.3	9.10E-01		0.35
rpl9aΔ	29.4	115.3	183.9	59.5	10.9	9.9	3.08E-01		3.30
rpp2bΔ	54.2	143.3	252.9	76.4	19.9	-15.9	2.59E-01		-3.99
sam1Δ	37.9	95.5	150.4	57.5	2.7	12.9	8.09E-02		3.69
sch9Δ	42.8	149.4	417.4	179.4	17.4	-172.0	1.30E-12	***	-7.43
sip2Δ	18	93.8	149.0	58.9	6.4	10.8	1.85E-01		3.43
SIR2OX	25	91.5	144.1	57.5	9.6	12.8	1.66E-01		3.68
sis2Δ	47.8	100.4	165.7	65.0	9.3	1.4	8.73E-01		0.51
sok1Δ	37.2	99.0	147.9	49.5	10.5	25.0	1.32E-02	*	4.64
sps1Δ	23.8	109.3	168.1	53.8	7.5	18.5	3.45E-02	*	4.21
spt4Δ	46.3	105.0	191.0	81.9	3.2	-24.2	2.47E-03	**	-4.60
tif1Δ	13.1	97.7	157.0	60.7	10.0	8.0	3.91E-01		2.99
tif2Δ	18.1	94.5	137.3	45.3	0.8	31.3	1.44E-04	***	4.97
tif4631Δ	18	117.3	172.2	46.8	11.3	29.1	6.19E-03	**	4.86
tis11Δ	32.2	101.4	150.3	48.2	6.1	27.0	2.06E-03	**	4.75
tma19Δ	31.8	94.5	145.2	53.7	8.3	18.6	3.92E-02	*	4.21
tor1Δ	30.8	87.7	131.7	50.1	2.8	24.0	2.50E-03	**	4.58
ubr2Δ	47.2	94.9	145.0	52.8	2.9	20.0	9.64E-03	**	4.32
ure2Δ	29.5	95.4	148.3	55.5	7.6	15.8	6.75E-02		3.98
ybr238cΔ	49.7	100.3	155.1	54.7	4.9	17.1	3.17E-02	*	4.09
BY4743	43.8	88.8	135.2	52.3	3.2	20.7	8.06E-03	**	4.37
rad52Δ	-55.4	107.2	650.1	506.5	166.5	-667.9	7.85E-07	***	-9.38

ng = no growth in stressed media

GRC_s = % change in growth rate upon addition of stress, compared to unstressed

V_s =Stress Vector= (GRC_s BY4742 - GRC_s mutant)/(GRC_s BY4742)*100

* p<0.05

** p<0.01

*** p<0.001 and satisfies Bonferroni correction

Table S4

Heat Shock (10 min 55°C)

Strain	%Δ RLS	Vs WT (16% alive baseline)	s.e.m.	p		log_2(Vs WT)
BY4742	N/A	0.0	4.2	1.00E+00		0.00
afg3Δ	20.4	101.0	55.2	7.11E-04	***	6.66
alg12Δ	24.7	12.0	5.9	5.77E-01		2.55
dbp3Δ	33.6	107.3	52.9	2.77E-04	***	6.74
elp4Δ	34.8	49.7	46.7	3.47E-02	*	5.63
fob1Δ	23.5	-19.0	11.2	7.68E-02		-4.25
gpa2Δ	36.1	86.9	33.1	1.01E-04	***	6.44
gpr1Δ	21.1	-44.4	11.8	2.06E-04	***	-5.47
hse1Δ	25.5	-4.8	11.8	6.33E-01		-2.26
hxk2Δ	25.8	-10.0	13.1	3.42E-01		-3.33
idh1Δ	35.1	4.3	9.1	6.43E-01		2.11
idh2Δ	25.3	33.2	20.4	1.75E-02	*	5.05
inp51Δ	13.2	6.5	12.8	5.32E-01		2.70
inp53Δ	30.7	4.9	12.3	6.29E-01		2.30
msw1Δ	30.2	12.0	7.6	1.88E-01		3.59
mtc4Δ	35.5	28.8	6.7	3.22E-03	**	4.85
pkh2Δ	22.2	21.4	8.9	2.90E-02	*	4.42
rei1Δ	37.5	141.8	127.8	3.67E-02	*	7.15
rim1Δ	13.7	-43.8	14.7	5.70E-04	***	-5.45
rpl13aΔ	27	84.2	45.6	8.52E-04	***	6.39
rpl19aΔ	28.4	78.4	59.3	8.62E-03	**	6.29
rpl20bΔ	40.3	233.8	260.2	4.94E-02	*	7.87
rpl22aΔ	34.5	227.1	217.5	2.48E-02	*	7.83
rpl23aΔ	29.5	45.9	31.7	1.62E-02	*	5.52
rpl34bΔ	35.4	386.3	317.5	1.02E-02	*	8.59
rpl37bΔ	35.1	44.8	40.8	5.09E-02		5.49
rpl43b	37.5	-20.8	16.0	8.04E-02		-4.38
rpl6bΔ	13.9	-33.6	7.8	5.58E-03	**	-5.07
rpl9aΔ	29.4	27.1	11.4	2.49E-02	*	4.76
rpp2bΔ	54.2	43.2	19.5	2.52E-03	**	5.43
sam1Δ	37.9	3.1	14.7	7.81E-01		1.63
sch9Δ	42.8	60.2	5.1	4.58E-07	***	5.91
sip2Δ	18	8.1	7.1	3.63E-01		3.03
SIR2OX	25	-2.0	9.0	8.25E-01		-1.03
sis2Δ	47.8	20.1	7.1	3.23E-02	*	4.33
sok1Δ	37.2	23.3	7.9	1.62E-02	*	4.54
sps1Δ	23.8	15.6	36.2	4.33E-01		3.97
spt4Δ	46.3	92.5	80.5	3.30E-02	*	6.53
tif1Δ	13.1	10.5	8.2	2.57E-01		3.39
tif2Δ	18.1	-6.6	6.0	4.90E-01		-2.71
tif4631Δ	18	-3.1	32.5	8.55E-01		-1.62
tis11Δ	32.2	11.5	6.3	2.36E-01		3.52
tma19Δ	31.8	12.0	2.3	2.00E-01		3.58
tor1Δ	30.8	-28.2	9.2	9.38E-03	**	-4.82
ubr2Δ	47.2	62.9	12.0	2.89E-06	***	5.98
ure2Δ	29.5	-20.5	14.0	6.55E-02		-4.36
ybr238cΔ	49.7	67.3	21.1	4.46E-05	***	6.07
BY4743	43.8	-30.2	8.1	5.19E-03	**	-4.92
hac1Δ	9.9	-72.7	22.6	3.01E-05	***	-6.18
msn2 msn4Δ	11.8	-73.2	25.5	7.46E-05	***	-6.19

ng = no growth in stressed media
Vs WT = % change in survival integral
(WT survival on average 16%)
* p<0.05
** p<0.01
*** p<0.001 and satisfies Bonferroni correction

Table S5: Strains used in this study

Genotype	Frozen stock	Full Genotype (all MATalpha)
WT	GS2422	BY4742 his3 leu2 ura3 MET15 lys2
sir2 fob1	KK144	sir2::HIS3 fob1::LEU2 his3 leu2 ura3 MET15 lys2
gcn4	JD364	gcn4::KanMX his3 leu2 ura3 met15 LYS2
fob1	GS11	fob1::URA3 his3 leu2 ura3 MET15 lys2
tor1	GS5	tor1::URA3 his3 leu2 ura3 MET15 lys2
rpl20b	JD288/KS1797	rpl20b::HIS3 his3 leu2 ura3 MET15 lys2
SIR2OX	JD570	SIR2OX::LEU2 his3 leu2 ura3 MET15 lys2
afg3	JD487	afg3::URA3 his3 leu2 ura3 MET15 lys2
sir2 fob1 afg3	JD385	afg3::URA3 sir2::HIS3 fob1::LEU2 his3 leu2 ura3 MET15 lys2
afg3 gcn4	JD604	afg3::URA3 gcn4::KanMX his3 leu2 ura3 MET15 LYS2
afg3 hac1	JD594	afg3::URA3 hac1::KanMX his3 leu2 ura3 MET15 lys2
rpl20b hac1	KS542	rpl20b::HIS3 hac1::KanMX his3 leu2 ura3 met15 LYS2
mrpl32	JD669	mrpl32::URA3 his3 leu2 ura3 MET15 lys2
yta12	JD822	yta12::URA3 his3 leu2 ura3 MET15 lys2
afg3 rpl20b	JD1666	rpl20b::HIS3 afg3::URA3 his3 leu2 ura3 MET15 lys2
rho0	JD569	rho0 his3 leu2 ura3 MET15 lys2

All others are from the BY4742 deletion collection

Table S6: Supplemental life span data

Figure		Strain	**Mean**	Median	N	p val vs strain 1	p val vs strain 2	p val vs strain 3
5b	1	WT	**23.2**	24	40			
	2	afg3	**28.4**	28	160	2.04E-03		
	3	hac1	**25.6**	26	20	3.22E-01	2.15E-01	
	4	afg3 hac1	**30.7**	32	40	2.08E-04	1.16E-01	3.49E-02
6c	1	fob1	**32.7**	35	39			
	2	fob1 afg3	**38.3**	40	40	2.29E-02		
6d	1	WT	**20.3**	19	80			
	2	afg3	**25.5**	24	180	1.15E-03		
	3	sir2 fob1	**19.7**	20	40	9.29E-01	1.25E-02	
	4	sir2 fob1 afg3	**29.1**	30	40	1.43E-06	1.42E-02	2.96E-05
6e	1	sir2 fob1	**30.8**	34	20			
	2	sir2 fob1 afg3	**46.0**	44	20	3.60E-02		
	3	sir2 fob1 DR	**42.9**	50	20	1.67E-02	9.14E-01	
	4	sir2 fob1 afg3 DR	**45.4**	48	20	1.48E-03	**8.82E-01**	7.56E-01
6f	1	WT	**21.2**	20	98			
	2	afg3	**26.7**	26	260	2.95E-07		
	3	gcn4	**22.7**	21	80	2.24E-01	8.08E-04	
	4	afg3 gcn4	**18.0**	17	119	4.10E-03	7.59E-13	4.82E-04
6h	1	WT	**19.8**	19	39			
	2	afg3	**24.2**	24	100	4.77E-03		
	3	rpl20b	**33.8**	36	59	1.41E-08	4.34E-08	
	4	afg3 rpl20b	**30.3**	32	40	2.23E-05	1.70E-03	**1.24E-01**
S1	1	WT	**23.3**	22	125			
	2	sod1	**3.8**	3	76	6.71E-32		
S1	1	WT	**26.3**	25	45			
	2	ctt1	**24.9**	24	43	6.64E-01		
S1	1	WT	**28.3**	29	55			
	2	cta1	**29.0**	27	45	7.68E-01		
S1	1	WT	**26.2**	26	600			
	2	msn2 msn4	**29.3**	30	623	1.76E-08		
S1	1	WT	**26.5**	26	545			
	2	hac1	**29.1**	29	543	6.77E-06		
S1	1	WT	**24.2**	23	150			
	2	rad52	**10.8**	10	130	2.20E-30		
S2	1	WT	**26.3**	26	425			
	2	idh1	**32.8**	33	304	1.66E-14		
S2	1	WT	**26.6**	26	764			
	2	idh2	**30.7**	31	595	4.10E-11		
S2	1	WT	**25.2**	23	35			
	2	atp5	**27.3**	27	55	4.22E-01		
S2	1	WT	**25.3**	21	15			
	2	coq5	**14.3**	15	15	8.41E-04		
S4b	1	WT	**23.7**	23	80			
	2	mrpl32	**28.2**	28	60	6.82E-03		
S4b	1	WT	**25.8**	24	60			
	2	yta12	**20.0**	20	53	5.45E-03		
S4b	1	WT	**26.7**	26	160			
	2	rho0	**26.1**	26	110	9.41E-01		
	3	afg3	**30.7**	31	20	3.71E-02	5.25E-02	
	4	afg3 rho0	**30.3**	32	40	3.00E-02	7.74E-02	9.94E-01
S4d	1	W303	**18.8**	20	40			
	2	W303 afg3	**19.6**	21	80	6.87E-01		
S5	1	WT	**22.3**	21	40			
	2	afg3	**23.5**	21	79	7.21E-01		
	3	rpl20b	**21.3**	22	60	8.66E-01		
	4	yta12	**21.2**	22	79	8.51E-01		