

Supporting Table S1: Individual defecation experiments and statistics

Genotype	Treatment	Mean defecation cycle length (sec) Mean \pm SEM	Maximum defecation cycle length (sec)	p-values vs. control*	Mean defecation cycle length change (sec)
Wild type (N2)	Control [#]	58.0 \pm 0.7 (n=28)	70.2		
<i>dsc-4(qm182)</i>		49.7 \pm 0.6 (n=28)	56.0	P<0.0001	-8.3
<i>dsc-3(qm179)</i>		51.0 \pm 0.8 (n=28)	60.4	P<0.0001	-7.0
<i>dsc-4(qm182); dsc-3(qm179)</i>		50.3 \pm 0.5 (n=25)	55.0	P<0.0001	-7.7
clk-1(qm30)	Control	91.3 \pm 2.6 (n=27)	131.4		
<i>clk-1(qm30); dsc-4(qm182)</i>		67.0 \pm 0.8 (n=27)	76.8	P<0.0001	-24.3
<i>clk-1(qm30); dsc-3(qm179)</i>		63.0 \pm 0.8 (n=25)	72.0	P<0.0001	-28.3
<i>clk-1(qm30); dsc-4(qm182); dsc-3(qm179)</i>		64.4 \pm 1.1 (n=30)	79.8	P<0.0001	-26.9
Wild type (N2)	Control	55.1 \pm 0.5 (n=20)	59.6		
<i>qm179</i>		51.7 \pm 0.5 (n=23)	56.4	P<0.0001	-3.4
<i>tat-2(tm1634)</i>		50.9 \pm 0.8 (n=20)	57.2	P<0.0001	-4.2
<i>qm179/tat-2(tm1634)</i>		51.7 \pm 0.5 (n=29)	58.2	P<0.0001	-3.4
clk-1(qm30)	Control	89.7 \pm 4.4 (n=20)	148.7		
<i>clk-1(qm30); qm179</i>		64.8 \pm 0.6 (n=20)	71.2	P<0.0001	-24.9
<i>clk-1(qm30); tat-2(tm1634)</i>		65.9 \pm 1.2 (n=23)	79.2	P<0.0001	-23.8
<i>clk-1(qm30); qm179/tat-2(tm1634)</i>		63.0 \pm 1.6 (n=21)	83.2	P<0.0001	-26.7
<i>clk-1(qm30); qm179; qmEx[tat-2]</i>		93.4 \pm 3.3 (n=20)	128.4		
Wild type (N2)	Empty vector (HT115) (Control)	61.0 \pm 0.6 (n=27)	67.4		
	<i>tat-2 RNAi</i>	58.1 \pm 0.5 (n=29)	62.2	P=0.0001	-2.9

<i>clk-1(qm30)</i>	Empty vector (HT115) (Control)	91.5±3.1 (n=29)	136.3		
	<i>tat-2 RNAi</i>	71.3±1.3 (n=33)	88.3	P<0.0001	-20.2
<i>clk-1(qm30); tat-2(qm179)</i>	Empty vector (HT115) (Control)	65.5±2.0 (n=20)	79.8		
<i>clk-1(qm30); tat-2(qm179)</i>	<i>mAtp8b1 RNAi</i>	67.0±2.3 (n=20)	81.0		
<i>clk-1(qm30); tat-2(qm179); qmEx[Ptat-2::mAtp8b1]</i>	Empty vector (HT115)	80.6±6.5 (n=20)	166.0	P=0.032	+15.1
<i>clk-1(qm30); tat-2(qm179); qmEx[Ptat-2::mAtp8b1]</i>	<i>mAtp8b1 RNAi</i>	66.2±2.8 (n=21)	103.4		
<i>clk-1(qm30); tat-2(qm179)</i>	Control	65.7±0.7 (n=21)	71.2		
<i>clk-1(qm30); tat-2(qm179); qmEx[Ptat-2::mAtp8b1]</i>		75.9±3.0 (n=20)	118.2	P=0.0017	+10.2
<i>clk-1(qm30); tat-2(qm179); qmEx[Ptat-2::mAtp8b1 A705T]</i>		65.6±1.2 (n=20)	74.4		
<i>clk-1(qm30); tat-2(qm179); qmEx[Ptat-2::mAtp8b1 G308V]</i>		64.0±0.9 (n=20)	72.4		
<i>clk-1(qm30); tat-2(qm179)</i>	Control	65.6±1.5 (n=20)	78.4		
<i>clk-1(qm30); tat-2(qm179); qmEx[Ptat-2::tat-2::gfp]</i>		85.0±4.7 (n=20)	133.4	P=0.0003	+19.4
<i>clk-1(qm30); tat-2(qm179); qmEx[Pges-1::tat-2::gfp]</i>		82.5±3.7 (n=32)	161.2	P=0.0010	+16.9
<i>clk-1(qm30); tat-2(qm179); qmEx[Psth-1::tat-2::gfp]</i>		64.3±1.7 (n=20)	77.4		
<i>clk-1(qm30); tat-2(qm179);</i>		66.8±1.3 (n=20)	76.0		

qmEx[Ppgp-12::tat-2::gfp]

Wild type (N2)	Control	55.9±0.5 (n=54)	66.2		
	0.025% Cholestyramine	55.6±0.4 (n=50)	66.0		
clk-1(qm30)	Control	95.1±2.3 (n=50)	137.0		
	0.025% Cholestyramine	84.4±1.6 (n=66)	131.7	P=0.0001	-10.7
isp-1(qm150)	Control	104.3±2.4 (n=53)	161.3		
	0.025% Cholestyramine	102.8±1.8 (n=64)	149.0		
tat-2(qm179)	Control	51.9±0.3 (n=50)	56.6		
	0.025% Cholestyramine	51.4±0.4 (n=50)	57.2		
dsc-4(qm182)	Control	49.7±0.3 (n=51)	55.4		
	0.025% Cholestyramine	49.0±0.4 (n=51)	55.6		
clk-1(qm30); tat-2(qm179)	Control	63.4±0.9 (n=50)	90.4		
	0.025% Cholestyramine	63.1±0.7 (n=50)	74.4		
clk-1(qm30); dsc-4(qm182)	Control	66.6±0.6 (n=51)	80.2		
	0.025% Cholestyramine	68.0±0.6 (n=50)	77.4		
Wild type (N2)	Control	58.4±0.4 (n=24)	61.6		
daf-36(k114)		56.9±0.4 (n=25)	62.8	P=0.0122	-1.5
clk-1(qm30)	Control	95.4±2.1 (n=26)	125.3		
clk-1(qm30); daf-36(k114)		76.0±1.6 (n=27)	107.7	P<0.0001	-19.4
Wild type (N2)	Control	55.6±0.4 (n=26)	63.0		
	0.015% Bile	55.5±0.4 (n=20)	59.0		
clk-1(qm30)	Control	87.3±2.8 (n=20)	113.2		
	0.015% Bile	115.2±5.6 (n=20)	172.3	P<0.0001	+27.9

dsc-4(qm182)	Control	49.3±0.3 (n=20)	52.0		
	0.015% Bile	50.2±0.5 (n=21)	54.4		
tat-2(qm179)	Control	50.8±0.6 (n=20)	55.4		
	0.015% Bile	56.3±0.8 (n=20)	66.6	P<0.0001	+5.5
	Cholesterol free+ 0.015% Bile	52.0±0.8 (n=23)	61.6		
clk-1(qm30); tat-2(qm179)	Control	63.9±1.1 (n=20)	75.2		
	0.015% Bile	86.0±1.8 (n=20)	103.4	P<0.0001	+22.1
	Cholesterol free+ 0.015% Bile	63.1±1.3 (n=21)	72.6		
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Wild type (N2)	0.25% DMSO (Control)	59.6±1.1 (n=23)	72.2		
	0.25% DMSO+ 0.15mM cholic acid	59.0±0.7 (n=20)	65.2		
	0.25% DMSO+ 0.6mM cholic acid	60.2±0.5 (n=25)	67.2		
	0.25% DMSO+ 2.5mM cholic acid	59.4±1.0 (n=20)	64.6		
	0.25% DMSO+ 0.15mM CDCA	59.8±0.7 (n=22)	64.4		
	0.25% DMSO+ 0.6mM CDCA	59.0±0.9 (n=21)	68.8		
	0.25% DMSO+ 2.5mM CDCA	58.2±0.9 (n=21)	68.6		
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clk-1(qm30)	0.25% DMSO (Control)	105.3±2.5 (n=77)	174.3		
	0.25% DMSO+ 0.15mM cholic acid	90.7±2.6 (n=40)	138.3	P=0.0003	-14.6
	0.25% DMSO+ 0.6mM cholic acid	96.8±2.0 (n=58)	130.7	P=0.0114	-8.5
	0.25% DMSO+ 2.5mM cholic acid	144.0±4.4 (n=40)	227.7	P<0.0001	+38.7
	0.25% DMSO+ 0.15mM CDCA	103.3±3.6 (n=41)	175.7		
	0.25% DMSO+ 0.6mM CDCA	119.6±4.1 (n=43)	186.7	P=0.0020	+14.3
	0.25% DMSO+ 2.5mM CDCA	136.7±5.0 (n=40)	239.3	P<0.0001	+31.4
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clk-1(qm30)	Cholesterol free+ 0.25% DMSO (Control)	78.2±2.4 (n=41)	127.7		

	Cholesterol free+ 0.25% DMSO + 0.15mM cholic acid	82.1±2.1 (n=41)	115.3		
	Cholesterol free+ 0.25% DMSO + 0.6mM cholic acid	81.5±2.3 (n=40)	139.7		
	Cholesterol free+ 0.25% DMSO + 2.5mM cholic acid	83.4±1.4 (n=42)	109.3		
	Cholesterol free+ 0.25% DMSO + 0.15mM CDCA	79.0±2.1 (n=41)	120.3		
	Cholesterol free+ 0.25% DMSO + 0.6mM CDCA	81.7±1.9 (n=43)	118.3		
	Cholesterol free+ 0.25% DMSO + 2.5mM CDCA	99.0±2.4 (n=42)	129.3	P<0.0001	+20.8
Wild type (N2)	0.25% DMSO (Control)	59.4±0.6 (n=28)	66.6		
	0.25% DMSO+ 0.02mg N2 lipid extract	58.5±0.6 (n=29)	67.6		
	0.25% DMSO+ 0.1mg N2 lipid extract	60.2±0.4 (n=30)	64.8		
	0.25% DMSO+ 0.4mg N2 lipid extract	58.7±0.3 (n=25)	61.6		
	0.25% DMSO+ 0.02mg <i>clk-1</i> lipid extract	58.2±0.7 (n=26)	65.2		
	0.25% DMSO+ 0.1mg <i>clk-1</i> lipid extract	58.4±0.8 (n=28)	69.0		
<i>clk-1(qm30)</i>	0.25% DMSO (Control)	97.0±1.8 (n=25)	115.7		
	0.25% DMSO+ 0.02mg N2 lipid extract	98.8±3.3 (n=28)	152.0		
	0.25% DMSO+ 0.1mg N2 lipid extract	102.0±2.5 (n=25)	123.3		
	0.25% DMSO+ 0.4mg N2 lipid extract	116.7±2.5 (n=25)	139.0	P<0.0001	+19.7
	0.25% DMSO+ 0.02mg <i>clk-1</i> lipid extract	108.3±3.7 (n=28)	169.0	P=0.0114	+11.3

	0.25% DMSO+ 0.1mg <i>clk-1</i> lipid extract	114.8±3.5 (n=26)	149.7	P<0.0001	+17.8
Wild type (N2)	Control (5ug/ml cholesterol)	55.2±0.5 (n=28)	64.2		
	Low Cholesterol (2ug/ml)	54.9±0.8 (n=25)	63.2		
	High Cholesterol (50ug/ml)	55.0±0.6 (n=29)	62.0		
<i>clk-1(qm30)</i>	Control	92.7±1.8 (n=25)	109.0		
	Low Cholesterol	72.9±1.6 (n=26)	102.0	P<0.0001	-19.8
	High Cholesterol	112.3±2.5 (n=28)	148.0	P<0.0001	+19.6
<i>clk-1(qm30); tat-2(qm179)</i>	Control	65.9±1.0 (n=25)	78.2		
	Low Cholesterol	60.4±0.7 (n=25)	65.8	P<0.0001	-5.5
	High Cholesterol	65.9±1.2 (n=26)	79.6		
<i>tat-2(qm179)</i>	Control	51.6±0.5 (n=26)	56.2		
	Low Cholesterol	49.9±0.5 (n=25)	53.6	P=0.0168	-1.7
	High Cholesterol	52.8±0.6 (n=25)	57.0		
<i>clk-1(qm30)</i> (25°C)	Empty vector (HT115) (Control)	85.0±2.2 (n=41)	127		
	<i>sod-1</i> RNAi	92.8±4.1 (n=6)	111		
	<i>sod-2</i> RNAi	115.8±5.2 (n=12)	151	P<0.0001	+30.8
	<i>sod-3</i> RNAi	98.3±2.7 (n=24)	127	P=0.0004	+13.3
	<i>sod-4</i> RNAi	87.6±2.7 (n=29)	120		
	<i>sod-5</i> RNAi	85.7±2.9 (n=24)	115		
Wild type (N2) (25°C)	Control	41.3±1.6 (n=6)	45		
	2mM NAC	43.2±0.5 (n=14)	47		
	4mM NAC	42.3±0.7 (n=14)	46		
	6mM NAC	39.0±1.2 (n=7)	42		

	8mM NAC	43.3±0.6 (n=15)	48		
	10mM NAC	41.9±0.9 (n=7)	44		
<i>clk-1(qm30)</i> (25°C)	Control	82.5±2.7 (n=27)	112		
	2mM NAC	81.7±3.5 (n=23)	121		
	4mM NAC	81.6±2.8 (n=22)	107		
	6mM NAC	78.0±2.4 (n=23)	101		
	8mM NAC	74.9±2.2 (n=25)	99	P=0.0348	-7.6
	10mM NAC	69.2±2.2 (n=24)	91	P=0.0004	-13.3
Wild type (N2)	Control	53.3±0.9 (n=15)	58		
	10mM NAC	51.6±1.0 (n=15)	60		
<i>clk-1(qm30)</i>	Control	73.9±2.2 (n=15)	93		
	10mM NAC	64.1±1.3 (n=13)	72	P=0.001	-9.8
<i>clk-1(qm30); tat-2(qm179)</i>	Control	50.3±2.9 (n=6)	58		
	10mM NAC	50.9±2.1 (n=7)	59		
Wild type (N2)	0.25% DMSO (Control)	58.6±0.4 (n=26)	64.6		
	0.25% DMSO	59.2±0.7 (n=26)	66.4		
	+ 0.1mg N2 lipid extract				
	0.25% DMSO	58.5±0.4 (n=25)	63.6		
	+ 0.1mg <i>clk-1</i> lipid extract				
	0.25% DMSO	58.5±0.7 (n=25)	64.4		
	+ 0.1mg <i>clk-1</i> ; NAC lipid extract				
	0.25% DMSO	58.5±0.5 (n=26)	65.6		
	+ 0.1mg <i>clk-1</i> ; <i>sod-2</i> lipid extract				

<i>clk-1(qm30)</i>	0.25% DMSO (Control)	93.5±3.0 (n=26)	126.3		
	0.25% DMSO	106.8±3.0 (n=27)	149.0	P=0.0026	+13.3
	+ 0.1mg N2 lipid extract				
	0.25% DMSO	122.5±5.0 (n=25)	180.0	P<0.0001	+29.0
	+ 0.1mg <i>clk-1</i> lipid extract				
	0.25% DMSO	106.4±2.8 (n=28)	153.7	P=0.0026	+12.9
	+ 0.1mg <i>clk-1</i> ; NAC lipid extract				
	0.25% DMSO	160.3±26.0 (n=30)	848.0	P=0.0210	+66.8
+ 0.1mg <i>clk-1</i> ; <i>sod-2</i> lipid extract					

*When experiments have been carried out more than once, the p-values are for comparisons between pooled datasets for each condition.

Unless different levels of cholesterol supplementation, the use of the RNAi strain HT115, or scoring at 25°C is specified, all experiments were carried out at 20°C with OP50 and the standard 5µg/ml of cholesterol.