Cell Reports, Volume *26*

Supplemental Information

A Persistence Detector for Metabolic Network Rewiring in an Animal

Jote T. Bulcha, Gabrielle E. Giese, Md. Zulfikar Ali, Yong-Uk Lee, Melissa D. Walker, Amy D. Holdorf, L. Safak Yilmaz, Robert C. Brewster, and Albertha J.M. Walhout

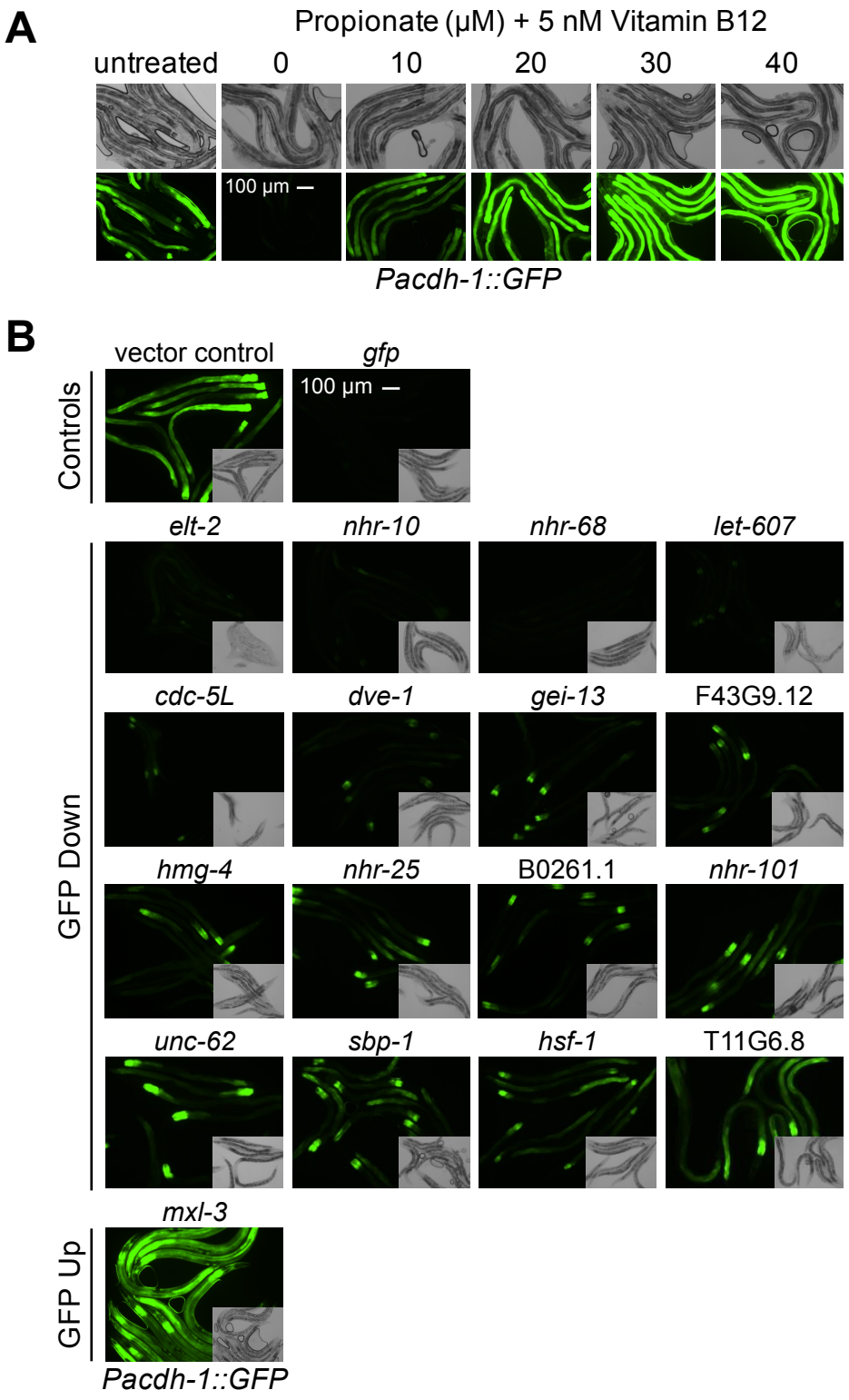

Figure S1. Results of the TF RNAi screen for the increase or decrease of GFP expression in *Pacdh-1::GFP* transgenic animals in the presence of propionate. Related to Figure 2.

(A) Fluorescence microscopy images (bottom) show that 5 nM vitamin B12 represses *Pacdh-1::GFP* while propionate supplementation in the presence of 5 nM vitamin B12 induces reporter activation in a dose dependent manner. Top images show DIC controls.

(B) Fluorescence microscopy images of all 17 TF RNAi experiments performed side-by-side with untreated animals and with animals supplemented with 5 nM vitamin B12 and 40 mM propionate. Insets show DIC images.

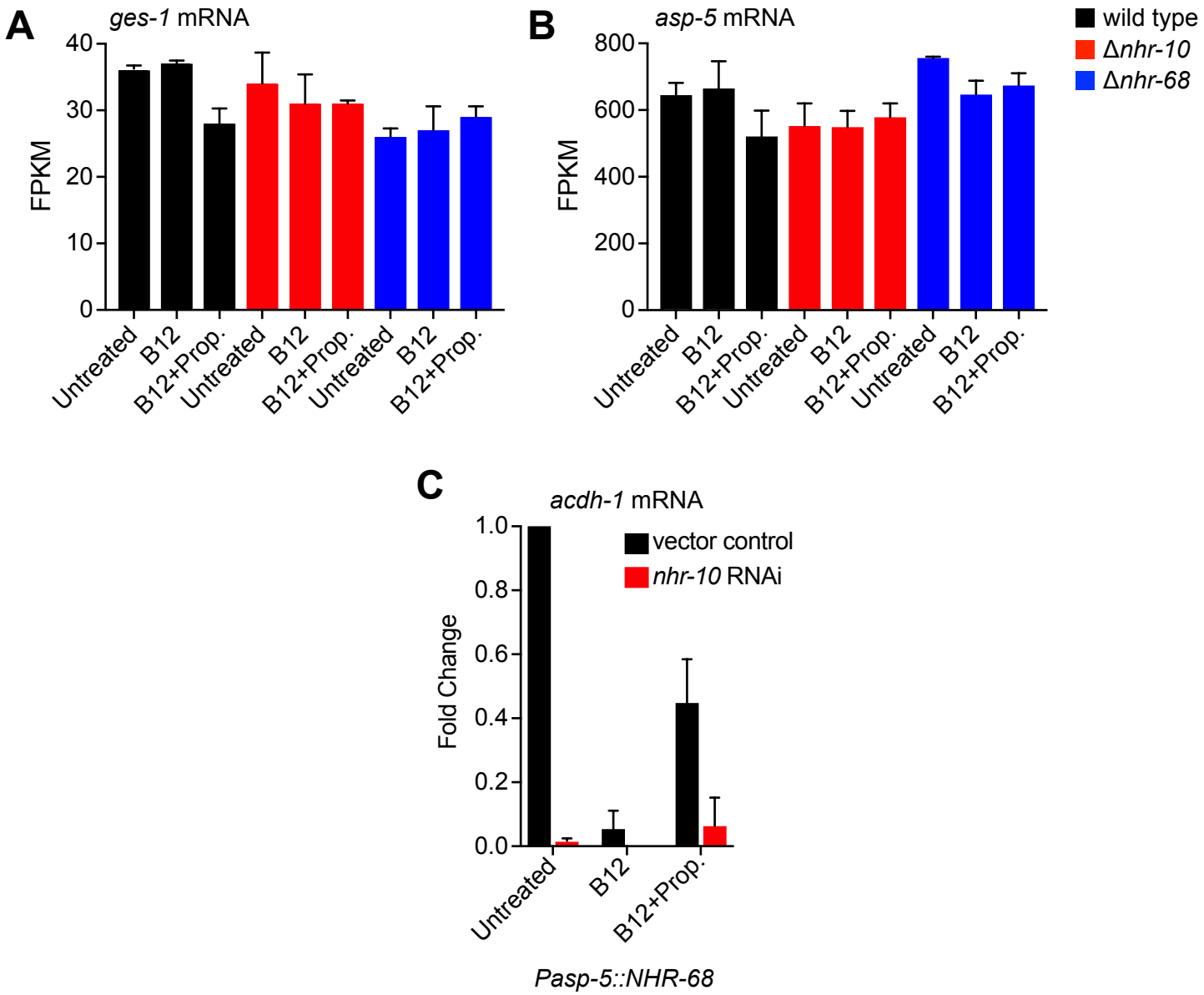

Figure S2: Expression levels of *ges-1* and *asp-5* are not affected by vitamin B12, propionate, *nhr-10*, or *nhr-68*. Related to Figure 4.

(A, B) Bar-graph of RNA-seq fragments per kilobase of transcript per million mapped reads (FPKM) data showing that expression levels of intestinal genes *ges-1* (low expression) and *asp-5* (high expression) are not affected by 20 nM vitamin B12, 40 mM propionate, *nhr-10* deletion, or *nhr-68* deletion.

(C) qRT-PCR showing that constitutive intestinal expression (*asp-5* promoter) of NHR-68 does not induce *acdh-1* expression in response to propionate. All measurements are statistically significantly different compared to untreated vector control as determined by two-tailed paired Student's t-test ($P < 0.05$).

Sequence Name	Gene Name	Fold Change WT+B12 / WT (log2)	P-Adj	Fold Change WT+B12+Prop / WT+B12 (log2)	P-Adj	Fold Change *nhr-10*+B12+Prop / WT+B12+Prop	P-Adj	Fold Change Δ*nhr-68*+B12+Prop / WT+B12+Prop	P-Adj
F38A5.14	*nspb-1*	-5.94692	7.10E-09	6.8226	0	-0.4181	0.935	1.51663	0.0880
C17C3.12	*acdh-2*	-4.32705	0	5.7681	0	-9.1129	0	1.62773	0.8756
C55B7.4	*acdh-1*	-4.57147	0	4.1611	0	-12.4294	0	-9.6212	0
C14F5.2	*zig-3*	-4.70019	2.65E-04	4.0482	1.30E-10	-3.5210	1.73E-09	-4.3169	6.96E-12
T13F3.6	T13F3.6	-3.42797	2.05E-11	3.9539	9.68E-10	-0.7734	0.379	1.86737	0.0668
F09F7.4	*hach-1*	-1.90083	1.42E-03	2.7035	0	-3.1621	0	-2.3058	0
T07D3.9	T07D3.9	-0.90883	1.36E-03	2.6420	0	-2.8422	0	-2.7636	0
T05E12.7	*srh-237*	-4.11875	0	2.5031	1.52E-05	-4.2733	1.08E-11	-3.2203	1.02E-08
F02E8.4	F02E8.4	-1.38412	1.96E-03	2.4301	1.85E-10	-0.0762	0.961	0.9924	5.44E-14
T05G5.6	*ech-6*	-2.07524	3.42E-06	2.2079	0	-2.9039	0	-2.2165	0
Y38F1A.6	*hphd-1*	-2.15322	3.00E-15	2.1450	0	-4.2685	0	-3.6272	0
R06C7.4	*cpg-3*	-1.15400	1.45E-05	1.8805	8.78E-05	-0.4761	0.965	0.25138	0.9711
F37B4.7	*folt-2*	-1.60076	0	1.7434	0	-5.8406	0	-2.0716	0
C23H5.8	C23H5.8	-0.92923	1.46E-06	1.6491	0	-3.2100	0	-2.0744	0
T10H9.5	*pmp-5*	-2.50304	0	1.5272	1.08E-04	-2.9140	7.77E-16	-2.3058	3.14E-11
W01B11.6	W01B11.6	-2.15102	0	1.3826	3.69E-03	-0.2024	0.931	-0.32831	0.9183
T01H3.4	*perm-1*	-0.90649	9.11E-14	1.3658	3.58E-10	-0.4194	0.852	0.23760	0.7895
F31F4.15	*fbxa-72*	-2.48535	8.08E-05	1.3428	2.05E-14	-0.1178	0.957	-0.7745	4.42E-06
F10D2.9	*fat-7*	-0.63870	1.28E-03	1.2462	1.13E-13	0.0236	0.988	-0.56937	0.0268
C55B7.9	*mdt-18*	-1.47825	0	1.2045	6.23E-12	-0.8590	3.38E-06	-0.9945	1.33E-10
F18E2.1	*papl-1*	-0.89541	4.44E-16	0.9887	1.11E-16	-1.7482	0	-1.6519	0
F28A12.4	*asp-13*	-1.59904	0	0.9812	0	-1.0392	0	-1.2286	0
VF13D12L.3	VF13D12L.3	-0.61847	3.69E-13	0.6299	4.11E-14	-0.8205	0	0.10498	0.9785

Table S1, related to Figure 3: RNA-seq fold change and P-adjusted values for the 23 genes up regulated by propionate and down regulated by vitamin B12 in wild type animals.

Genotyping	**Forward**	**Reverse**
acdh-1(ok1489)	CTTCCAGCTAATGGGTGTTCATGTTCC	CGCCATTGCAGCTTCTCGTAC
pcca-1(ok2282)	GGGGCAACAAAACAGGGTGGTG	CGAGCTTGAGAAGGCTGGAGC
nhr-10(tm4695)	GCATACTCTAGAGGATCAAGCACC	GTTTTCCGCGAATTCTCATTCCG
nhr-68(gk708)	GTTTTCTCTTTTTCAACTGCACCATGTG	CAATCACAGCCATTAAAATGTCTGCATG
MosSCI insert	TCTGGCTCTGCTTCTTCGTT	CAATTCATCCCGGTTTCTGT

qRT-PCR	**Forward**	**Reverse**
acdh-1	GCAAATGCAGATCCTAGCC	GTTTGTCTTCCTCCTTATCTACAG
nhr-68	GCAATTTACAGATTTGGGCG	GCAATCCAAACAGCTTCCT
ama-1 (control)	AATATCTCGCAGGTTATCGC	GTGTACGATGACGGAAACC
act-1 (control)	CTCTTGCCCCATCAACCATG	CTTGCTTGGAGATCCACATC

Table S2, related to the STAR Methods: All DNA oligonucleotides used in this study.