Supplemental Information

Supplemental Figure 1. Expression of fusion proteins in *Saccharomyces cerevisiae* L40 for yeast two-hybrid experiments. Western blots were used to confirm the expression of (A) VP16 and (B) LexA fusion proteins in yeast using anti-VP16 activation domain or anti-LexA DNA binding domain antibodies, respectively. Expression of phosphoglycerate kinase 1 (PGK1) detected using an anti-PGK1 antibody was used as the internal control. * indicates the position of the expected fusion protein. White spaces between lanes were inserted to indicate the transition from non-continuous lanes or lanes spliced in from different gels. FL, full length; aa, amino acid. Expression of LexA-NCoR1-RD1, LexA-NCoR1- RD2/3, LexA-NCoR1-C and LexA-Sin3A are not shown.

Supplemental Figure 2. Representative TR2, TR4 and NcoR1 co-occupancy near the RNA catabolism-related genes DCP1A (mRNA-decapping enzyme 1A), AUH (AU RNA binding protein/enoyl-CoA hydratase) and AGO1 (Argonaute-1), and in the vicinity of the cell proliferation-related E2F transcription factor family genes.

Supplemental Figure 3. HCF1 and NCoR1 interaction is independent of TR4 binding. Co-immune precipitation of HCF1 followed by western blot of HCF1 or NCoR1 in the NCoR1 CoRNR site mutant HuDEP-2 cell clone 1 (see text).

Supplemental Figure 4. An anti-ubiquitin antibody immunoprecipitates NCoR1 protein in wild-type HUDEP2 cells. Western blots of immune precipitated anti-ubiquitin extracts from wild type HUDEP-2 cells were interrogated with anti-ubiquitin (top) or NCoR1 (bottom panel) antibodies.

Supplemental Figure 5. Proteasome inhibitor Lactacystin (Lac) treatment accumulates protein ubiquitination in HUDEP2 cells in a dose-dependent manner.

Supplemental Figure 6. *BAP1* heterozygous knockout induces γ-globin synthesis in HUDEP-2 cells. (A) Confirmation of the targeted mutation in *BAP1*$^{+/-}$ clones by Sanger sequencing. The wild type allele in both clones (1A1 and 3C2)

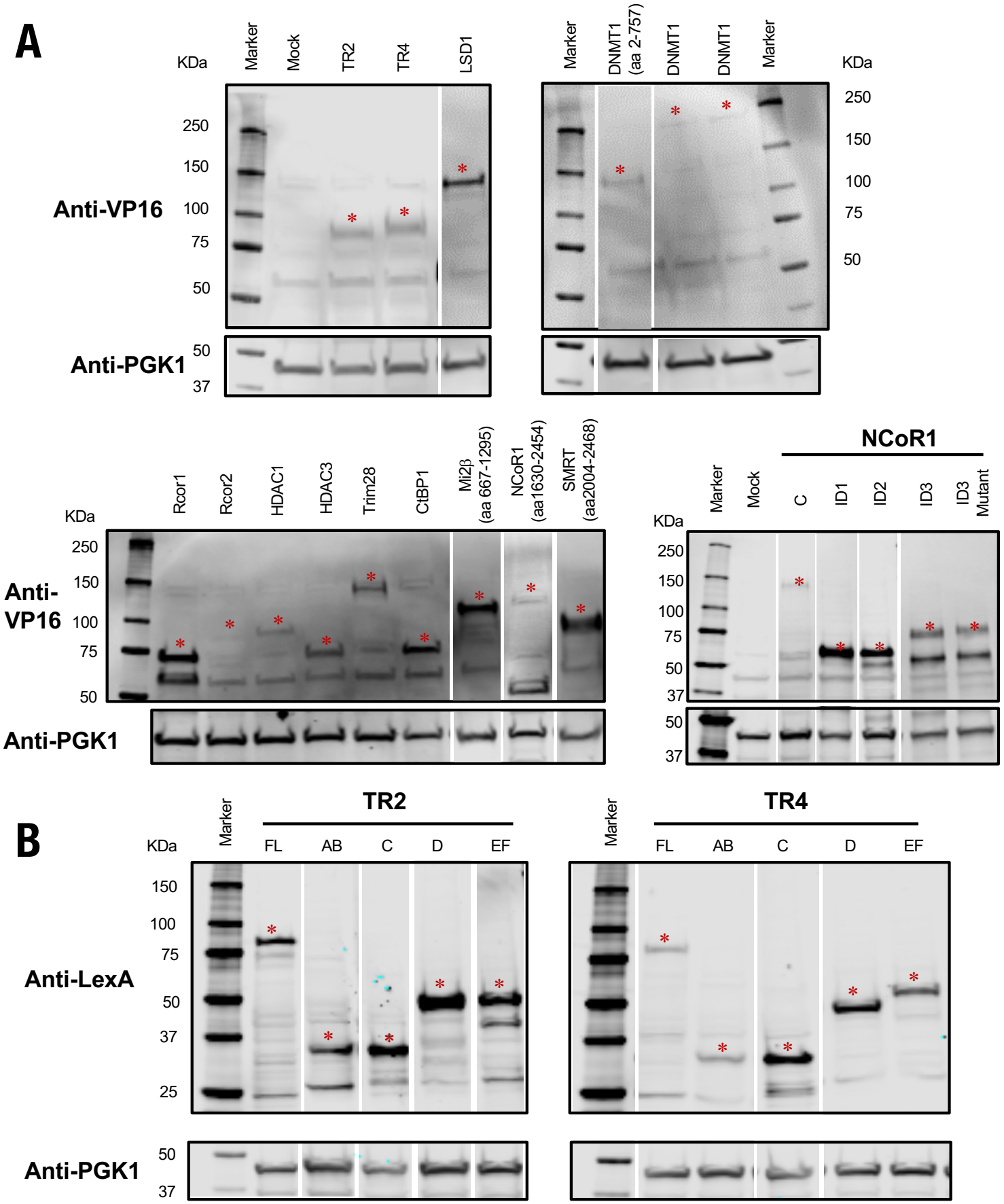
are not shown. (B). Heterozygous knockout of BAP1 significantly induced γ-globin, but not adult β-globin, in mutant HUDEP-2 cells. (***p<0.001; unpaired Student's t-test).

Supplemental Figure 7. Cell growth is slowed in HUDEP-2 cells bearing TR4 interaction-deficient mutations. (**p<0.01; ***p<0.001; unpaired Student's t-test).

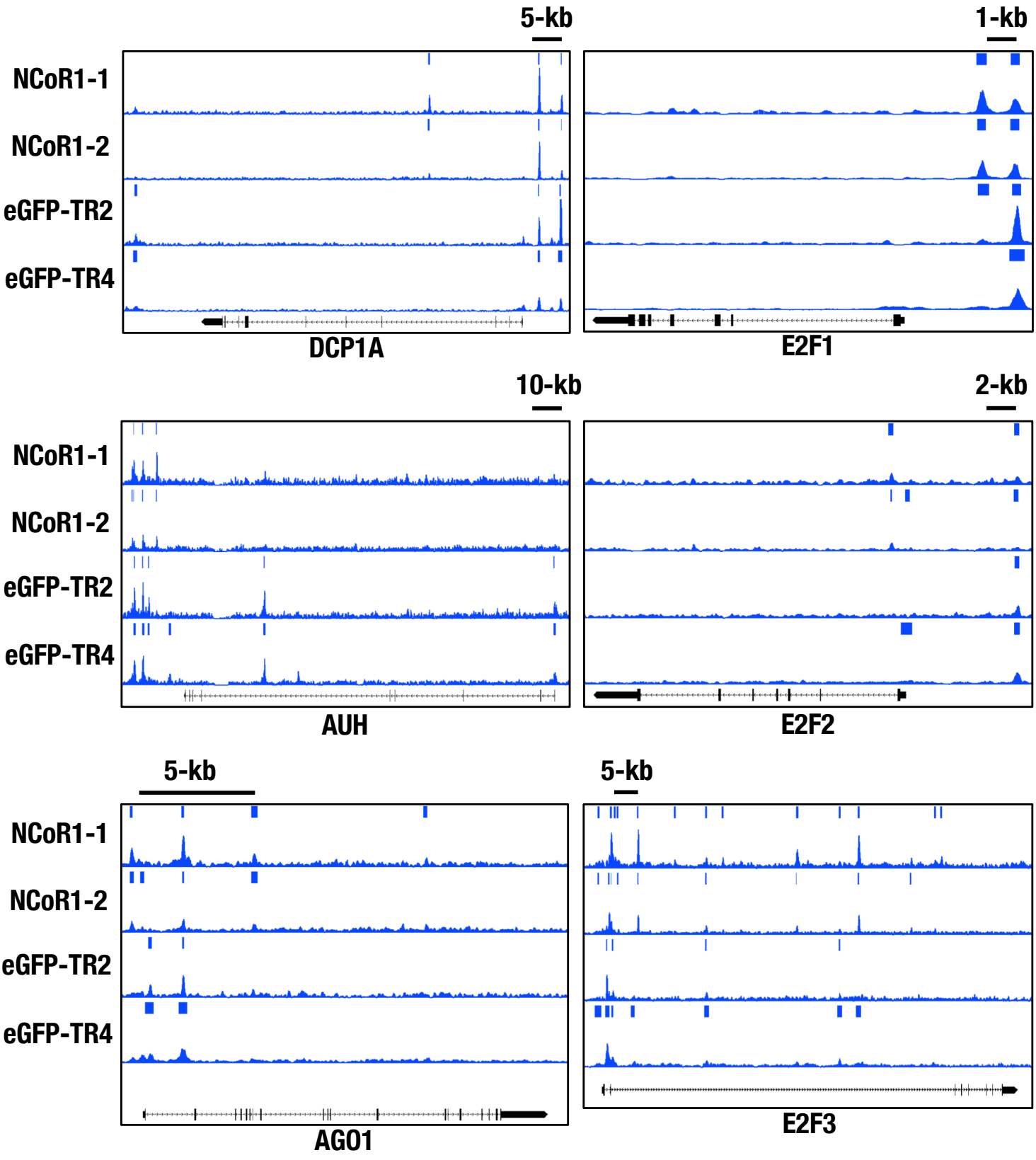
Supplemental Table 1. Proteins identified by BioID mass spectrometry. The total proteins identified from mass spectral analysis from control and TR4-BirA* HUDEP-2 labeling experiments (3 each) is shown. Accession: UniprotKB protein accession number. Description: UniprotKB protein description. Sum PEP Score: protein score calculated as the negative log of the Posterior error probability (PEP) values of connected PSMs. Coverage: The percent calculated by dividing the number of amino acids in all found peptides by the total number of amino acids in the entire protein sequence. #Peptides: The number of distinct peptide sequences in the protein group. #PSMs: Peptide Spectrum Matches, the total number of identified peptide sequences for the proteins. #Unique Peptides: The number of unique peptide sequences identified of the proteins. #AAs: Number of amino acids of the proteins. MW [kDa]: Molecular weight of the proteins. cale. pl: calculated isoelectric point. Area: average of the peptide peak areas assigned to the protein. emPAI: Exponentially modified protein abundance index. Score: The protein score, which is the sum of the scores of the individual peptides calculated by Proteome Discoverer (v2.1, Thermo Scientific).

Supplemental Table 2. Primers used in this study.

Supplemental Table 3. Antibodies used in this study.



Supplemental Figure 1.



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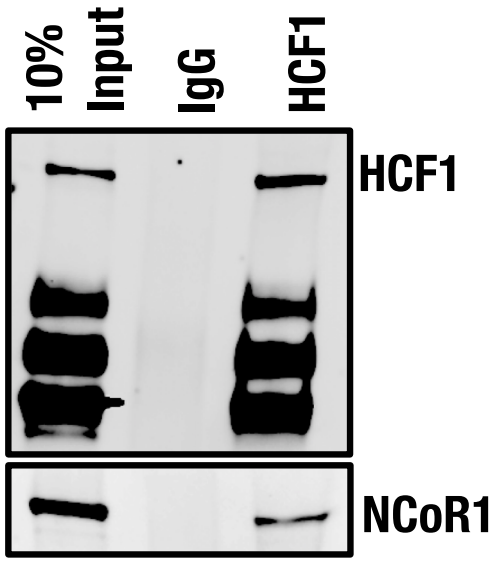

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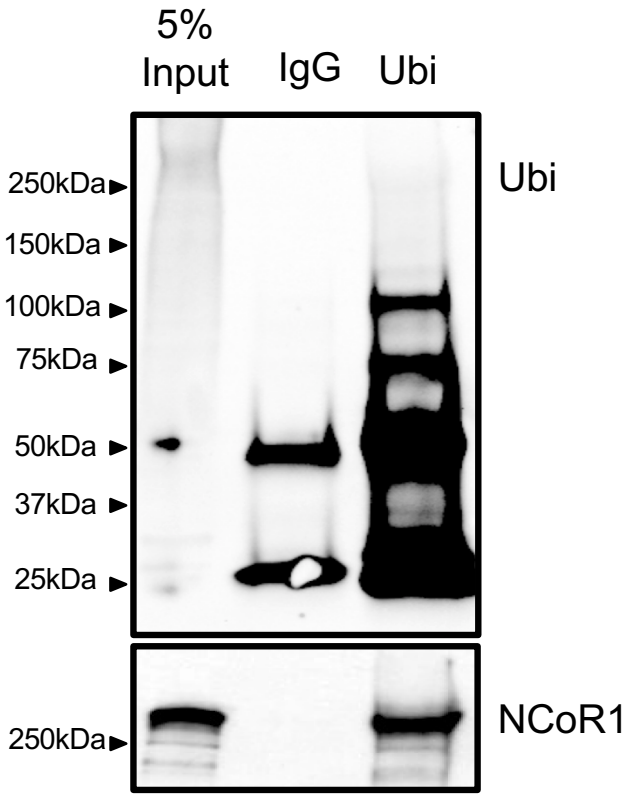

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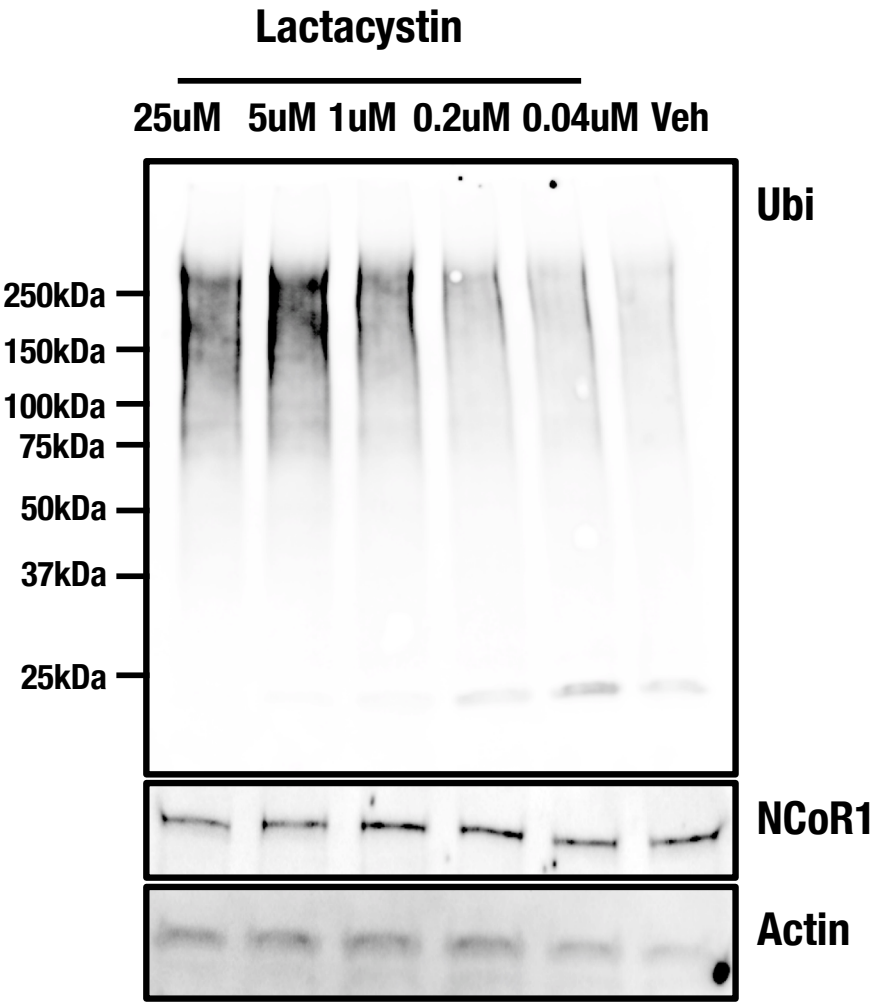

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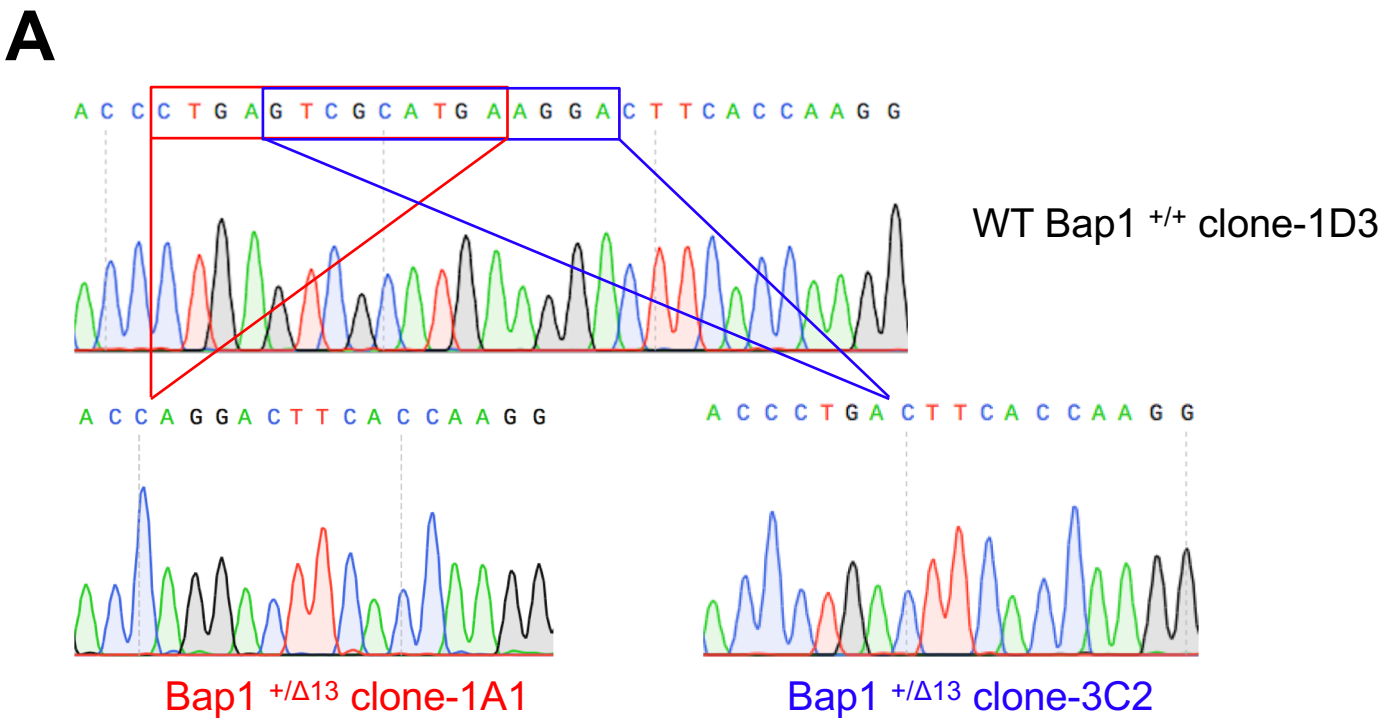
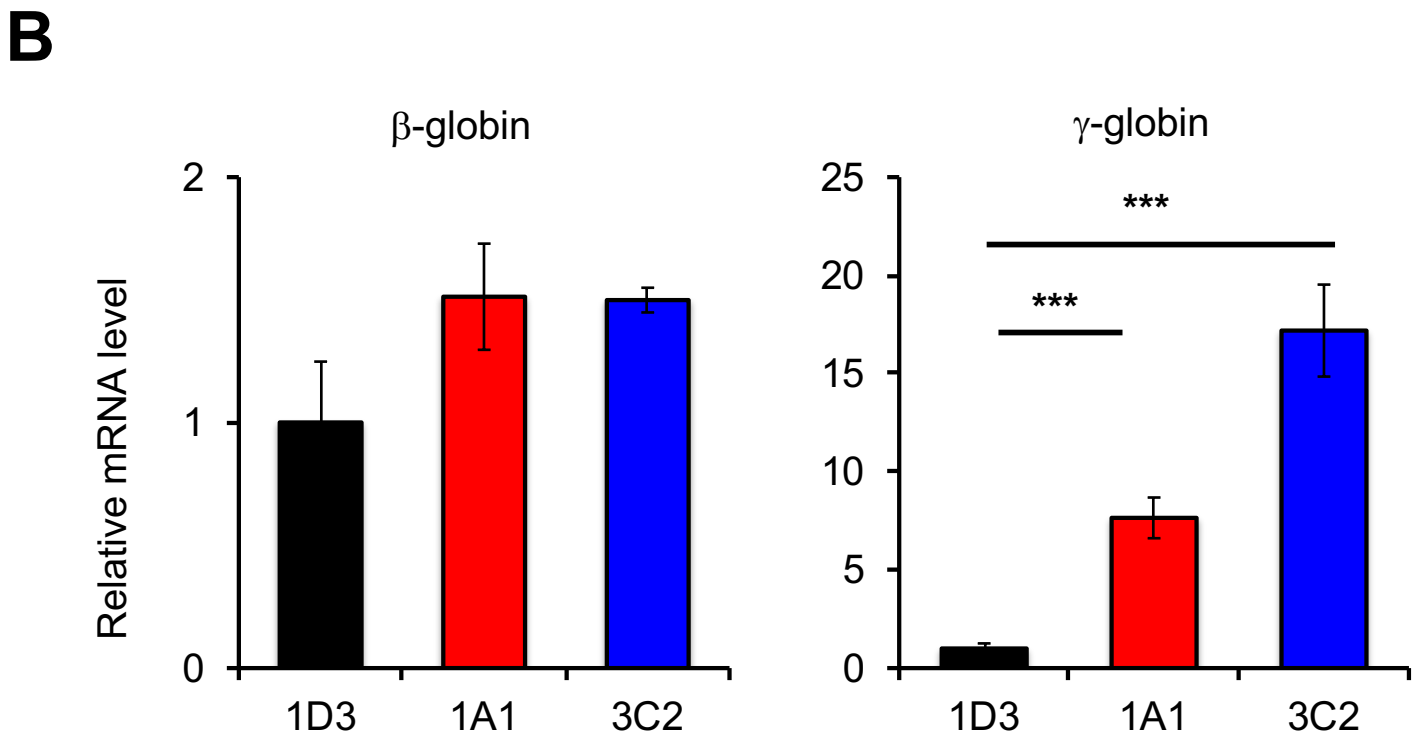
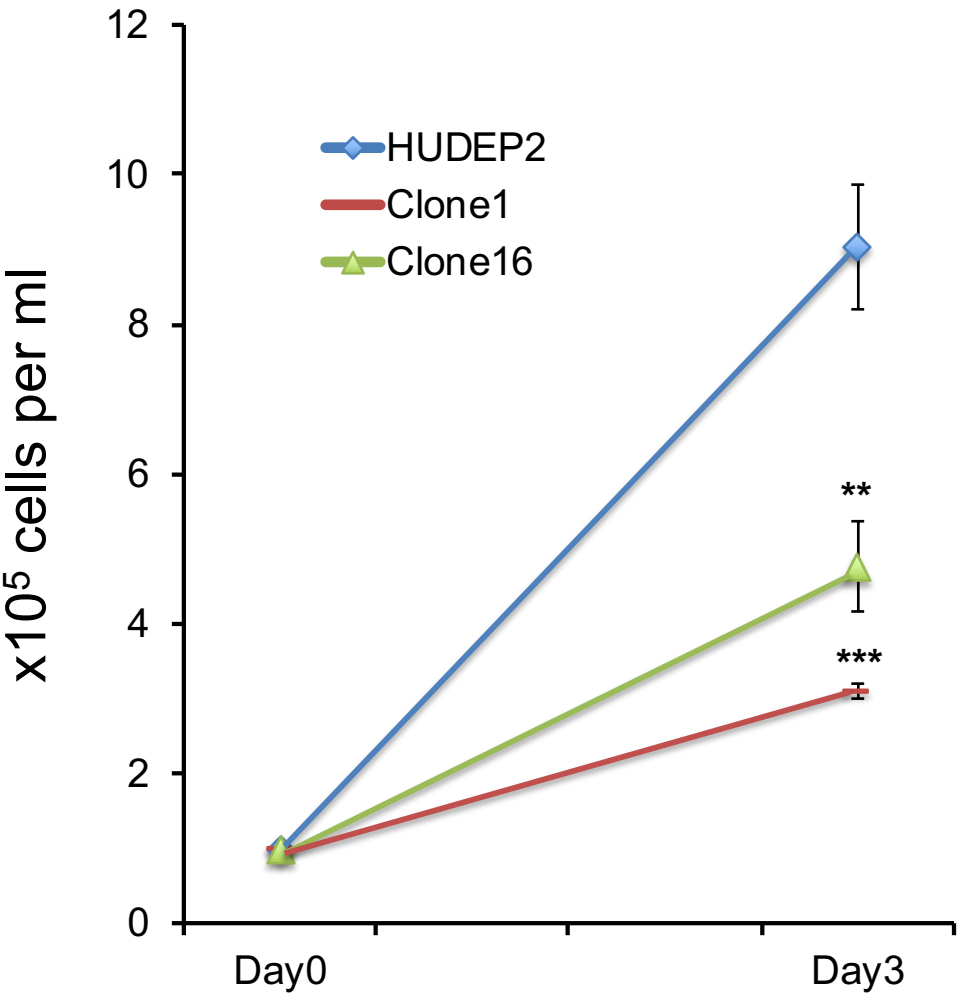




Supplemental Figure 6.



Supplement Figure 7.

Genes/Targets	Primer sequence (5'→3')	Application
Human β-globin	AGGAGAAGTCTGCCGTTACTG	qRT-PCR
	CCGAGCACTTTCTTGCCATGA	
Human γ-globin	TGGATCCTGAGAACTTCAAGC	
	CACTGGCCACTCCAGTCAC	
Human OAZ1	GACAGCTTTGCAGTTCTCCTGG	
	TTCGGAGCAAGGCGGCTC	
Human BAP1	TGATGAGGATGACTATGAGGATG	
	GCTTCCCTGTTCCCTTCC	
Human NCoR1	TCGCTTCCACTGTTTCTGC	
	GGGCTTGACAGCTTCAACTT	
Mouse GAPDH	TGGTGAAGGTCGGTGTGAAC	
	CCATGTAGTTGAGGTCAATGAAGG	
Mouse β-globin	TTTAACGATGGCCTGAATCACTT	
	CAGCACAATCACGATCATATTGC	
Mouse βh1-globin	TGGACAACCTCAAGGAGACC	
	ACCTCTGGGGTGAATTCCTT	
HS2	ATCTGGGCACACACCCTAAG	ChIP assay
	AAGCAAACCTTCTGGCTCAA	
Negative control locus	ACAGAGGCCTCCTCAGTCAA	
	CATCAATGGCTGGTTCACAC	
ARHGAP42	CCACATTGCTTGTGGGATTA	
	GCCGATAAGCAAATGAGAGG	

Supplemental Table 2. Primers used in this study.

Antibody (Species)	Co-IP	WB	ChIP	Cat#
NCoR1 (Rabbit)	+		+	A301-145A
HCF1 (Rabbit)	+			A301-399A
Ubi (Mouse)	+	+		sc-8017
HA (Rabbit)		+		
HA (Goat)	+	+		A00168
LRF (Armenian hamster)		+		14-3309-80
MYB (Mouse)		+		05-175
NCoR1 (Goat)		+		sc-1609
TR4 (Rabbit)		+		Homemade
TR4 (Goat)		+		sc-8620
LSD1 (Rabbit)		+	+	ab17721
Dnmt1 (Mouse)		+		IMG-261A
HDAC1 (Rabbit)		+		ab7028
HCF1 (Goat)		+		AF6254
BAP1 (Mouse)		+		sc-28383
LaminB (Goat)		+		sc-6217
LexA DBD (Rabbit)		+		06-719
VP16 AD (Mouse)		+		sc-7545
PGK1 (Mouse)		+		ab113687
Streptavidin		+		926-32230

Supplement Table 3. Antibodies used in this study.