Supporting Information

DNA-mediated oxidation of p53

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Supplimental Figure S1:

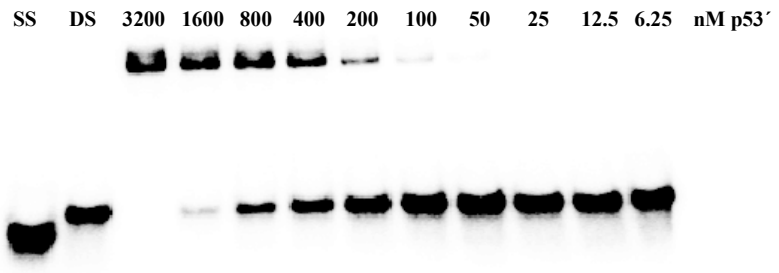

Figure S1: Representative autoradiogram of the EMSA assay to determine binding affinity of p53′ to synthetic consensus sequence oligonucleotides. The AQ-AAA sequence is used in the EMSA above. The left two lanes are single stranded oligo (SS) and double stranded oligo (DS), respectively. The following lanes are a serial dilution of p53′ starting ranging from 3.2 μM to 6.25 nM. Samples contained 100 nM AQ-AAA, 5 μM dAdT, 0.1% NP-40, 0.1 mg/ml BSA in 20 mM TrisCl (pH 8), 20% glycerol, 100 mM KCl, and 0.2 mM EDTA. Image quant was used to analyze the signal intensities for each band. A minimum of three replicates per sequence was conducted. The data were fit to the Hill equation in Origin and the concentration of p53′ (in monomer units) at which the DNA is half maximally bound was determined.

Supplemental Figure S2:

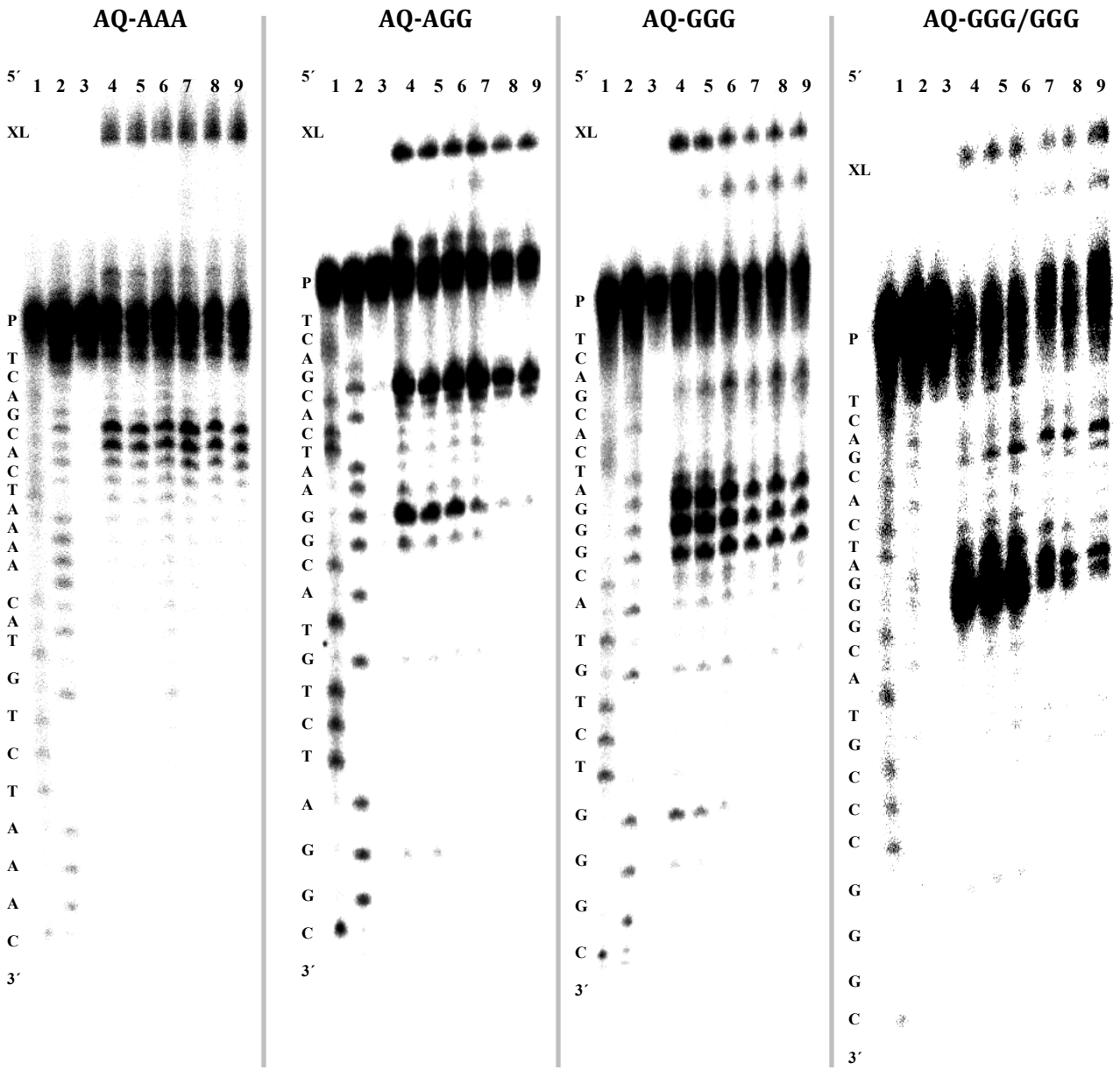

Figure S2: Representative autoradiograms of the guanine oxidation gel shift assays of the AQ-conjugated synthetic consensus sequence oligonucleotides with a 3′ radiolabel. Lanes 1 and 2 are the Maxam-Gilbert sequencing lanes corresponding to pyrimidies (C/T) and purines (A/G). Individual bases are designated on the left along with the parent band (P) and the crosslinked bands (XL). The dark control in lane 3 was not irradiated and contained no p53′. The following lanes 4-9 are irradiated samples with varied concentrations of p53′ from 0 to 40 μM of p53′ monomer respectively. Samples contained 1 μM AQ-Duplex, 5 μM dAdT, 0.1% NP-40, 0.1 mg/ml BSA in 20 mM TrisCl (pH 8), 20% glycerol, 100 mM KCl, and 0.2 mM EDTA. Ethanol precipitated samples were suspended in formamide loading dye and run on a pre-run 20% polyacrylamide denaturing gel at 90 watts for three hours in 1x TBE buffer.

Supporting Table S1:
Predicted responsiveness to DNA CT of select human p53 response elements

Gene	First quarter site	Second quarter site	Linker	Third quarter site	Fourth quarter site	Predicted Responsiveness	p53 Activity	Predicted CT Response of p53	Δ gene regulation	Reference
AIFM2	AGGCA	TGAGC	CACCGTGCCT	GGCCA	AGCCC	**AIFM2**	Activator	Dissociation	Downregulation	1
	Yes	Yes	Traps	Yes	Yes	**Yes**				
APAF1	AGACA	TGTCT	GGAGACCCTAGGA	CGACA	AGCCC	**APAF1**	Activator	Dissociation	Downregulation	2
	No	No	Traps	No	Yes	**No**				
BBC3	CTGCA	AGTCC		TGACT	TGTCC	**BBC3**	Activator	Dissociation	Downregulation	3
	Yes	Yes		No	Yes	**Yes**				
C12orf5	AGACA	TGTCC	AC	AGACT	TGTCT	**C12orf5**	Activator	Dissociation	Downregulation	4
	No	Yes		No	No	**No**				
CCNK	AAACT	AGCTT	GC	AGACA	TGCTG	**CCNK**	Activator	Dissociation	Downregulation	5
	No	Yes		No	Yes	**Yes**				
CDKN1A	GAACA	TGTCC		CAACA	TGTTG	**CDKN1A**	Activator	Remains Bound	No Change	6
	No	Yes		No	No	**No**				
DDB2	GAACA	AGCCC	T	GGGCAT	TGTTT	**DDB2**	Activator	Dissociation	Downregulation	7
	No	Yes		Yes	No	**Yes**				
FAS	GGACA	AGCCC		TGACA	AGCCA	**FAS**	Activator	Dissociation	Downregulation	8
	Yes	Yes		No	Yes	**Yes**				
GADD45A	GAACA	TGTCT		AAGCAT	TGCTG	**GADD45A**	Activator	Dissociation	Downregulation	9
	No	No		Yes	Yes	**Yes**				
IGFBP3	AAACA	AGCCA	C	CAACA	TGCTT	**IGFBP3**	Repressor	Dissociation	Upregulation	10
	No	Yes		No	Yes	**Yes**				
MMP2	AGACA	AGCCT		GAACT	TGTCT	**MMP2**	Activator	Dissociation	Downregulation	11
	No	Yes		No	No	**No**				
PERP	AGGCA	AGCTC		CAGCT	TGTTC	**PERP**	Activator	Dissociation	Downregulation	12
	Yes	Yes		Yes	No	**Yes**				
PLK2	AAACA	TGCCT		GGACT	TGCCC	**PLK2**	Activator	Dissociation	Downregulation	13
	No	Yes		Yes	Yes	**Yes**				

PPM1J	GAACA	TGCCT		GAGCA	AGCCC	**PPM1J**	Activator	Dissociation	Downregulation	14
	No	Yes		Yes	Yes	**Yes**				
PTEN	GAGCA	AGCCC	CAGGCAGCTACACT	GGGCA	TGCTC	**PTEN**	Activator	Dissociation	Downregulation	15
	Yes	Yes (No)	Traps	Yes	Yes	**Yes**				
RRM2B	TGACA	TGCCC		AGGCA	TGTCT	**RRM2B**	Activator	Dissociation	Downregulation	16
	No	Yes		Yes	No	**Yes**				
SCARA3	GGGCA	AGCCC		AGACA	AGTTG	**SCARA3**	Activator	Dissociation	Downregulation	17
	Yes	Yes		No	No	**Yes**				
TP63	TAACT	TGTTA	TTG	AAACA	TGCTC	**TP63**	Activator	Remain Bound	No Change	18
	No	No		No	Yes	**No**				
TSC2	TAACA	AGCTC	G	GGGCT	AGCCC	**TSC2**	Activator	Dissociation	Downregulation	19
	No	Yes	Trap	(No) Yes	Yes	**Yes**				
VCAN	AGACT	TGCCA	C	AGACA	AGTCC	**VCAN**	Activator	Dissociation	Downregulation	20
	No	Yes		No	Yes	**Yes**				
VDR	TAACT	AGTTT		GAACA	AGTTG	**VDR**	Activator	Remains Bound	No Change	21
	No	No		No	No	**No**				

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