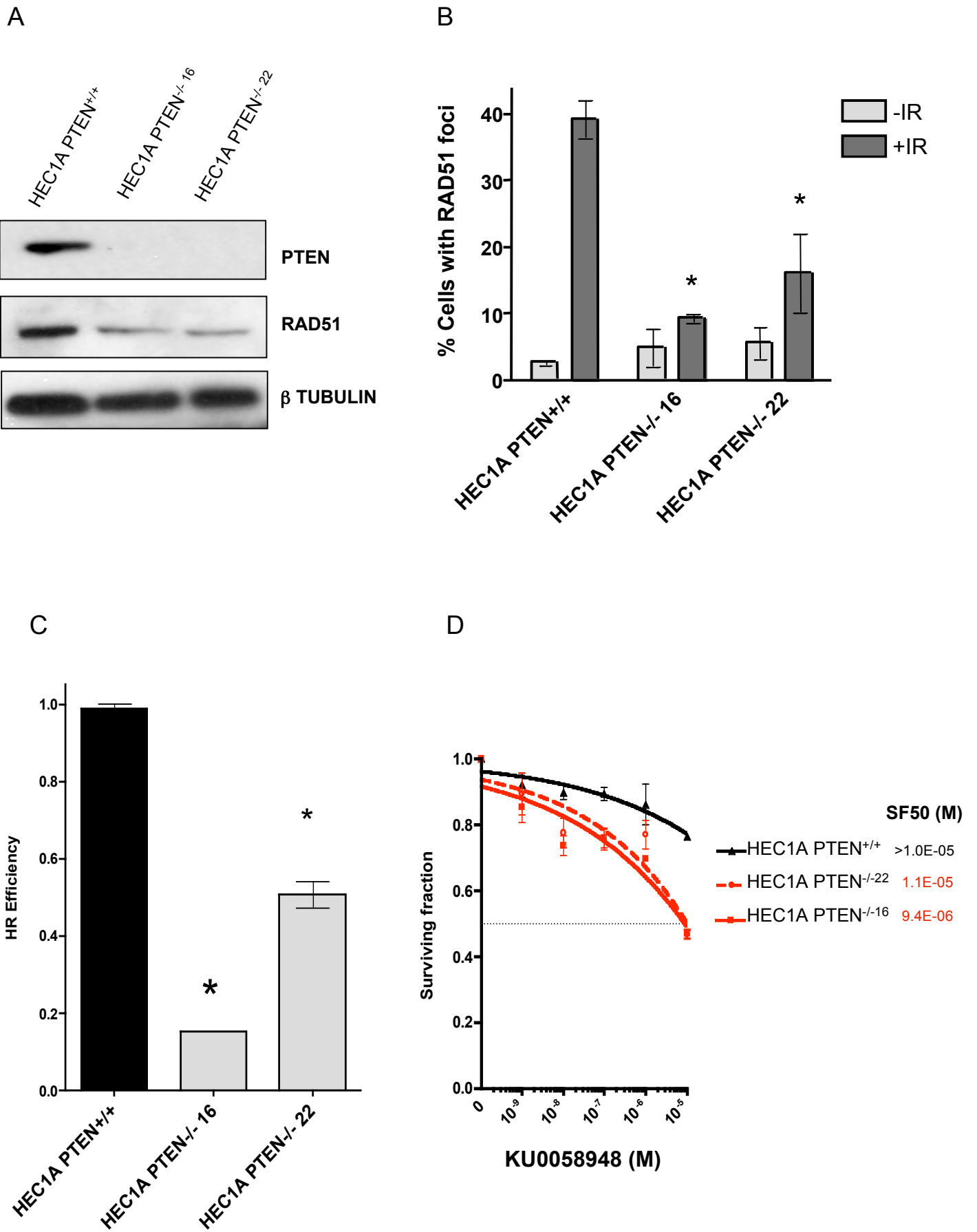
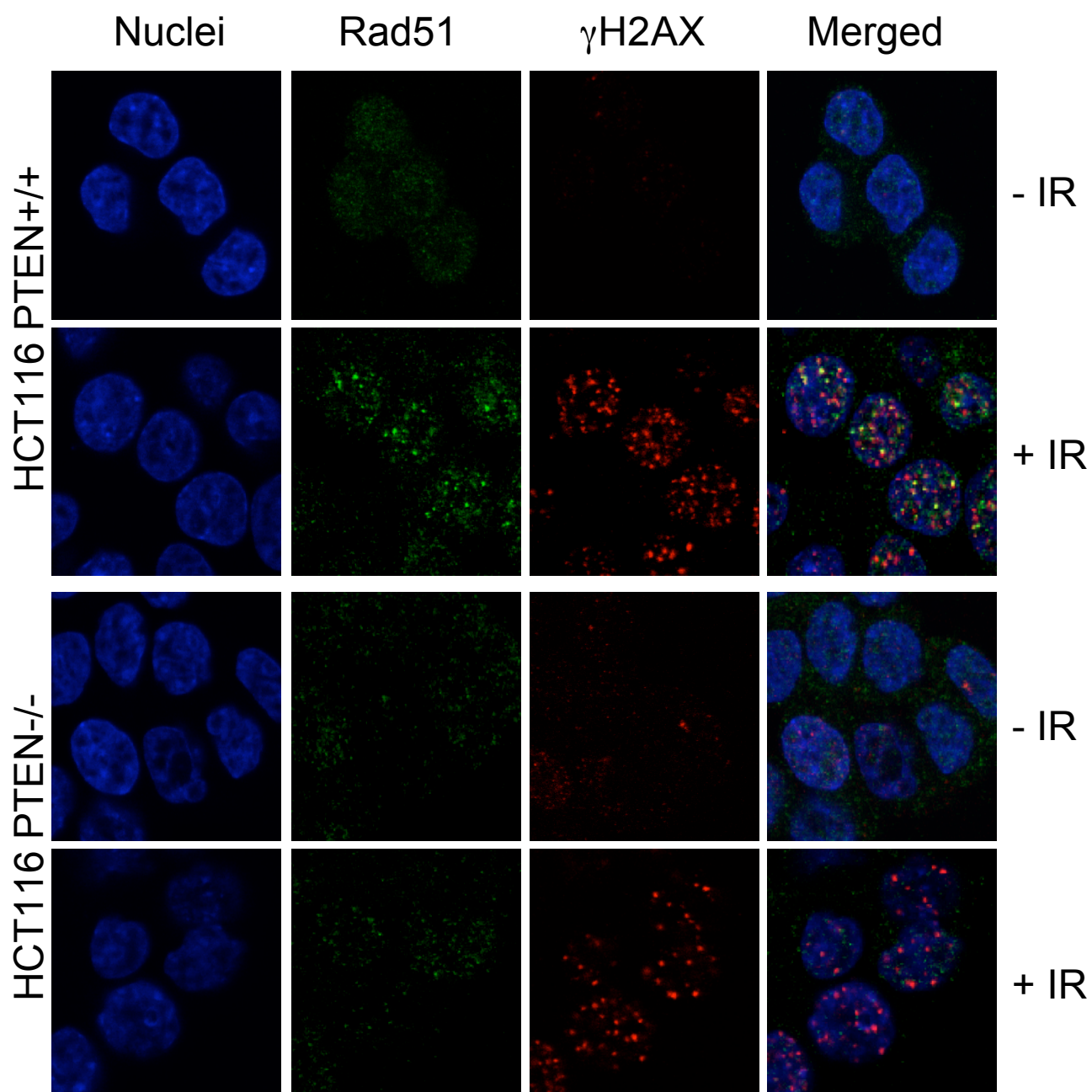


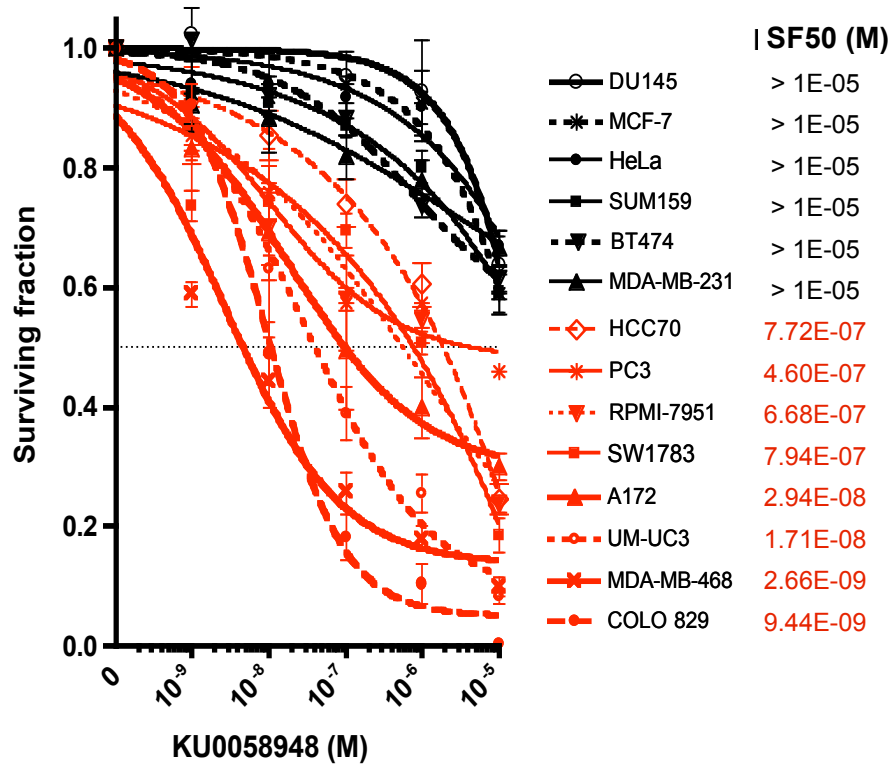
Supplementary
Figure 1



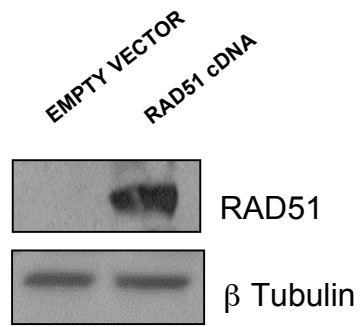
Supplementary
Figure 2



Supplementary
Figure 3



Supplementary
Figure 4



Sample Name	COSMIC Sample ID	Amino Acid	Nucleotide	Primary Tissue	Histology	Pubmed ID	Mutation ID	Sample Source
HCC70	907048	p.F90fs*9	c.270delT	breast	carcinoma		5839	cell-line
S73189	850765	p.K60fs*9	c.180_181ins?	breast	carcinoma	9090379	5956	NS
MDA-MB-468	850823	p.L70fs*7	c.208_251del44	breast	carcinoma	9072974	4940	NS
895812	895812	p.A39fs*5	c.116_117insG	central_nervous_system	glioma	15517868	6230	surgery fresh/frozen
S69959	849640	p.A79fs*20	c.237delC	central_nervous_system	glioma	10560660	5837	primary
SKMG-3	847808	p.C71fs*6	c.212_255del44	central_nervous_system	glioma	11515790	4919	NS
S72911	850499	p.D24fs*20	c.70_71insA	central_nervous_system	glioma	9490783	5013	primary
S75437	851274	p.D24fs*20	c.70_71insA	central_nervous_system	glioma	9393744	5013	primary
S64444	845068	p.E43fs*11	c.127delG	central_nervous_system	glioma	9499454	5807	NS
S70838	850036	p.F56fs*2	c.165_492del328	central_nervous_system	glioma	10980610	5872	primary surgery
895809	895809	p.K60*	c.178A>T	central_nervous_system	glioma	15517868	6229	fresh/frozen
S75626	851448	p.K66fs*38	c.197_198ins14	central_nervous_system	glioma	9619835	5022	primary
S69259	849020	p.K6fs*4	c.17_18delAA	central_nervous_system	glioma	11438483	4929	primary
S62854	844241	p.L70fs*7	c.210_253del44	central_nervous_system	glioma	9426052	4887	primary
S62857	844244	p.L70fs*7	c.210_253del44	central_nervous_system	glioma	9426052	4887	primary
SF539	905984	p.M1_*404del	c.1_1212del1212	central_nervous_system	glioma		14078	cell-line
H4	907042	p.M1_*404del	c.1_1212del1212	central_nervous_system	glioma		14078	cell-line
D-								
245MG	946366	p.M1_*404del	c.1_1212del1212	central_nervous_system	glioma		14078	cell-line
D-								
336MG	946369	p.M1_*404del	c.1_1212del1212	central_nervous_system	glioma		14078	cell-line
S69935	849616	p.N12fs*6	c.35_53del19	central_nervous_system	glioma	10560660	4930	primary
S68135	848253	p.R14fs*26	c.42_52del11	central_nervous_system	glioma	12112531	4921	primary
S73281	850849	p.R15fs*9	c.45_46insGA	central_nervous_system	glioma	9072974	5014	primary
A172	687563	p.R55fs*1	c.165_1212del1048	central_nervous_system	glioma		26622	cell-line
SW1088	909745	p.R55fs*1	c.165_1212del1048	central_nervous_system	glioma		26622	cell-line
U-87-								
MG	850822	p.V54fs*29	c.160_208del49	central_nervous_system	glioma	9072974	4939	NS
S64442	845066	p.Y16fs*1	c.47_48insA	central_nervous_system	glioma	9499454	5879	NS
S67801	847927	p.Y46*	c.138C>G	central_nervous_system	glioma	11939587	5307	primary

S65197	845784	p.Y65*	c.195C>A	central_nervous_system	glioma	10096247	5296	primary
S69951	849632	p.Y65*	c.195C>G	central_nervous_system	glioma	10560660	5317	primary
S69958	849639	p.Y76fs*1	c.226_227delTA	central_nervous_system	glioma	10560660	4963	primary
S62656	844061	p.Y76fs*1	c.227_228delAT	central_nervous_system	glioma	9331071	4956	primary
S68139	848257	p.Y76fs*1	c.227_228delAT	central_nervous_system	glioma	12112531	4956	primary
S70960	850147	p.Y88fs*3	c.263_264delAT	central_nervous_system	glioma	9681833	4934	primary
LS971	945577	p.Y88fs*3	c.263_264delAT	central_nervous_system	glioma	10949938	4934	NS
S67198	847435	p.A3fs*14	c.9_30del22	endometrium	carcinoma	11585417	4923	primary
S65694	846198	p.C71fs*6	c.213_256del44	endometrium	carcinoma	10657903	4905	primary
S62930	844310	p.D24fs*19	c.71_72insC	endometrium	carcinoma	9887237	5880	primary
S67536	847693	p.D24fs*19	c.71_72insC	endometrium	carcinoma	11006040	5880	primary
S63111	844441	p.E18fs*5	c.54_57delGGAT	endometrium	carcinoma	9865913	4891	primary surgery
1048066	1048066	p.E73fs*25	c.219_222delAAGA	endometrium	carcinoma	17219201	23629	fresh/frozen
S75526	851354	p.E73fs*4	c.219_220delAA	endometrium	carcinoma	9307275	4948	primary surgery -
1009661	1009661	p.E7fs*3	c.19_20delGA	endometrium	carcinoma	16021566	21341	NOS surgery
1048053	1048053	p.F56C	c.167T>G	endometrium	carcinoma	17219201	23624	fresh/frozen
S75519	851347	p.F90fs*9	c.270delT	endometrium	carcinoma	9307275	5839	primary
S68847	848789	p.H64fs*9	c.190_191delCA	endometrium	carcinoma	11555573	4928	primary
S63113	844443	p.I32fs*22	c.96delT	endometrium	carcinoma	9865913	5800	primary
S66112	846569	p.I32fs*22	c.96delT	endometrium	carcinoma	9326929	5800	primary
S63114	844444	p.I33fs*20	c.97_100delATTG	endometrium	carcinoma	9865913	4893	primary
S63078	844426	p.I33fs*21	c.97delA	endometrium	carcinoma	9829719	5798	primary
S63079	844427	p.I33fs*21	c.97delA	endometrium	carcinoma	9829719	5798	metastasis surgery
E15857	738849	p.K6fs*4	c.17_18delAA	endometrium	carcinoma	12015762	4929	fresh/frozen
S73358	850914	p.K6fs*4	c.17_18delAA	endometrium	carcinoma	11849740	4929	primary surgery
1048051	1048051	p.K6fs*4	c.17_18delAA	endometrium	carcinoma	17219201	4929	fresh/frozen
S67196	847433	p.L25fs*28	c.75_78delGACC	endometrium	carcinoma	11585417	4922	primary surgery -
1009628	1009628	p.L57fs*42	c.166_166delT	endometrium	carcinoma	16021566	21340	NOS surgery
E15818	738809	p.L57fs*6	c.170_171insT	endometrium	carcinoma	12015762	5000	fresh/frozen

S68845	848787	p.L57fs*6	c.170_171insT	endometrium	carcinoma	11555573	5000	primary
1121036	1121036	p.L57fs*6	c.170_171insT	endometrium	carcinoma	18500270	5000	fixed - NOS
S73359	850915	p.N48fs*6	c.143delA	endometrium	carcinoma	11849740	5834	primary
S73362	850918	p.N63fs*10	c.187_188delAA	endometrium	carcinoma	11849740	4942	primary surgery
1048052	1048052	p.N63fs*10	c.187_188delAA	endometrium	carcinoma	17219201	4942	fresh/frozen surgery
1048067	1048067	p.N63fs*10	c.187_188delAA	endometrium	carcinoma	17219201	4942	fresh/frozen
S73361	850917	p.N63fs*11	c.188_189insA	endometrium	carcinoma	11849740	5017	primary
S87002	852673	p.N63fs*36	c.187delA	endometrium	carcinoma	9354433	5836	primary
S65506	846031	p.N63fs*36	c.188delA	endometrium	carcinoma	10746673	5811	primary
S75527	851355	p.N63fs*36	c.188delA	endometrium	carcinoma	9307275	5811	primary
S65507	846032	p.N63fs*36	c.188delA	endometrium	hyperplasia	10746673	5811	primary
S65683	846187	p.N69fs*30	c.206delA	endometrium	carcinoma	10657903	5818	primary
S63112	844442	p.P30fs*24	c.89delC	endometrium	carcinoma	9865913	5799	primary
S86998	852669	p.R14fs*10	c.40delA	endometrium	carcinoma	9354433	5831	primary
S65503	846028	p.R14fs*29	c.41_42insG	endometrium	carcinoma	10746673	5877	primary
S67062	847299	p.R15fs*28	c.45_46insT	endometrium	carcinoma	11190805	5020	primary
S68836	848778	p.R55fs*2	c.165_181del17	endometrium	carcinoma	11555573	4926	primary
S67546	847703	p.T26fs*28	c.78delC	endometrium	carcinoma	11006040	5833	primary
S73360	850916	p.V45fs*10	c.134_135insCA	endometrium	carcinoma	11849740	5016	primary
S67493	847650	p.Y16fs*21	c.46_65del20	endometrium	carcinoma	11006040	4914	primary
S82126	852119	p.Y16fs*28	c.46_47insT	endometrium	carcinoma	15069681	5878	primary
S77674	851776	p.Y27fs*1	c.80_90del11	endometrium	carcinoma	11156411	4964	primary
S86999	852670	p.Y27fs*16	c.80_81delAT	endometrium	carcinoma	9354433	4952	primary surgery
1048065	1048065	p.Y29fs*25	c.83_83delT	endometrium	carcinoma	17219201	23628	fresh/frozen
S63056	844404	p.Y68fs*5	c.202_203delTA	endometrium	carcinoma	9829719	4889	primary
S62932	844312	p.Y76fs*1	c.227_228delAT	endometrium	carcinoma	9887237	4956	primary
S63078	844426	p.Y76fs*1	c.227_228delAT	endometrium	carcinoma	9829719	4956	primary
OPM-2	909249	p.M1_*404del	c.1_1212del11212	haematopoietic_and_lymphoid_tissue	haematopoietic_neoplasm		14078	cell-line
S70738	849939	p.M1fs*7	c.1_8delATGACAGC	haematopoietic_and_lymphoid_tissue	lymphoid_neoplasm	9697884	5982	primary
KE-37	907277	p.Y27fs*1	c.80_1212del1133	haematopoietic_and_lymphoid_tissue	haematopoietic_neoplasm		26623	cell-line
1141	1141074	p.E7fs*3	c.21_22delGA	large_intestine	carcinoma	18781614	27631	surgery

									fresh/frozen
980	1141072	p.F90fs*9	c.270delT	large_intestine	carcinoma	18781614	5839		surgery fresh/frozen
1141	1141074	p.L57fs*42	c.170delT	large_intestine	carcinoma	18781614	5835		surgery fresh/frozen
1190	1141075	p.L57fs*6	c.170_171insT	large_intestine	carcinoma	18781614	5000		surgery fresh/frozen
S66226	846674	p.C83fs*9	c.247_248insT	liver	carcinoma	10363579	5883		primary
H774 NCI-	844562	p.?	c.1-?_492+?del	lung	carcinoma	9696041	5779		NS
H774	844809	p.?	c.1-?_492+?del	lung	carcinoma	9598803	5779		NS
SBC-1 NCI-	713885	p.M1_*404del	c.1_1212del1212	lung	carcinoma		14078		cell-line
H774	924243	p.M1_*404del	c.1_1212del1212	lung	carcinoma		14078		cell-line
N230	844810	p.M1_?del fs	c.1-?_79+?del	lung	carcinoma	9598803	5783		NS
N231	844811	p.M1_?del fs	c.1-?_79+?del	lung	carcinoma	9598803	5783		NS
N417 NCI-	844812	p.M1_?del fs	c.1-?_79+?del	lung	carcinoma	9598803	5783		NS
H1436 LU-134-	908469	p.R55fs*1	c.165_1212del1048	lung	carcinoma		26626		cell-line
A	753588	p.Y27fs*1	c.80_1212del1133	lung	carcinoma		26623		cell-line
S74259	851158	p.L57fs*42	c.170delT	meninges	meningioma	9549723	5835		primary
1131708	1131708	p.C71fs*28	c.213_213delT	ovary	carcinoma	17418409	27933		fresh - NOS surgery - NOS
979747	979747	p.F81fs*18	c.241_242TT>G	ovary	carcinoma	15668893	21619		cell-line
RTSG	909705	p.K6fs*4	c.17_18delAA	ovary	carcinoma		4929		cell-line
S63057	844405	p.Y68fs*5	c.202_203delTA	ovary	carcinoma	9829719	4889		primary
S63183	844508	p.G36fs*18	c.107delG	prostate	carcinoma	9823969	5802		primary
S63185 LNCaP- Clone- FGC	844510	p.G44fs*11	c.131_139GCGTATACA>ACAGAAAGACA	prostate	carcinoma	9823969	5769		primary
907788		p.K6fs*4	c.17_18delAA	prostate	carcinoma		4929		cell-line
LNCaP	850745	p.K6fs*4	c.16_17delAA	prostate	carcinoma	9090379	4937		NS
LNCaP	850821	p.K6fs*4	c.16_17delAA	prostate	carcinoma	9072974	4937		NS
LNCaP	850413	p.K6fs*4	c.17_18delAA	prostate	carcinoma	9661880	4929		NS
S72826	850417	p.Q87*	c.259C>T	prostate	carcinoma	9661880	5163		NS
PC-3	905934	p.R55fs*1	c.165_1212del1048	prostate	carcinoma		26622		cell-line

S72835	850426	p.Y76fs*1	c.226_227delTA	prostate	carcinoma	9661880	4963	NS
FM95	851403	p.?	c.1-?_492+?del	skin	malignant_melanoma	9288767	5779	NS
S77773	851874	p.K6fs*4	c.17_18delAA	skin	malignant_melanoma	10651986	4929	metastasis
G-mel	706101	p.M1_?del fs	c.1-?_79+?del	skin	malignant_melanoma	10766161	5783	NS
SW872	909756	p.M1_*404del	c.1_1212del1212	soft_tissue	liposarcoma		14078	cell-line
UM-UC-3	724838	p.M1_*404del	c.1_1212del1212	urinary_tract	carcinoma		14078	cell-line

Supplementary Table 1.

Genotypes of human tumour cell lines used in this study.

Supplementary Table 2.

Human tumours and tumour cell lines listed in the COSMIC database ([www.http://www.sanger.ac.uk/genetics/CGP/cosmic/](http://www.sanger.ac.uk/genetics/CGP/cosmic/)) bearing *PTEN* mutations predicted to truncate the open reading frame before amino acid 93.

Supplementary Figure 1. Homologous recombination and PARP inhibitor sensitivity in HEC1A tumour cells.

A) *PTEN* deficiency in HEC1A cells causes a reduction in RAD51 expression. Total cell lysates from isogenic HEC1A endometrial tumour cells were immunoblotted for *PTEN* and RAD51. Detection of ACTIN is shown as a loading control. Parental HEC1A cells are shown (*PTEN*^{+/+}) along with two individually derived *PTEN*^{-/-} lines (KO16 and KO22). **B)** *PTEN* deficiency in HEC1A cells causes a reduction in IR-induced nuclear RAD51 focus formation. * *p* values vs. +IR *PTEN*^{+/+} < 0.05 (Student's *t* test). No other comparisons were statistically significant. **C)** *PTEN* deficiency in HEC1A cells sensitises cells to a drug-like PARP inhibitor. *p* values for both *PTEN*^{-/-} lines vs. *PTEN*^{+/+} cells < 0.001 (two-way ANOVA). **D)** *PTEN* deficiency in HEC1A cells causes a reduction in HR using a synthetic HR substrate. * *p* values null vs. wild type *PTEN* cells < 0.05 (Student's *t* test).

Supplementary Figure 2. Decreased RAD51 focus formation upon DNA damage

in *PTEN* deficient cells. γ H2AX foci (red), RAD51 foci (green) and nuclei (stained with DAPI – blue) are shown. Magnification is 1000X.

Supplementary Figure 3. PARP inhibitor sensitivity in human tumour cells.

See Supplementary Table 1 for genotypes. PTEN mutant lines are shown in red and PTEN wild type lines in black. For each PTEN null line, survival was significantly different than in DU145 and MCF7 cells ($p < 0.05$, two-way ANOVA).

Supplementary Figure 4. RAD51 expression from a retroviral vector used in

Figure 4. PC3 cells were infected with virus and cell lysates analysed by western blotting two days later.