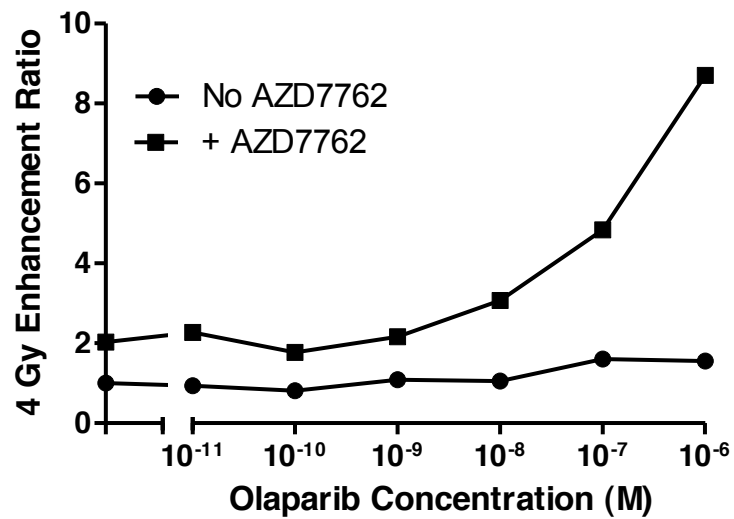
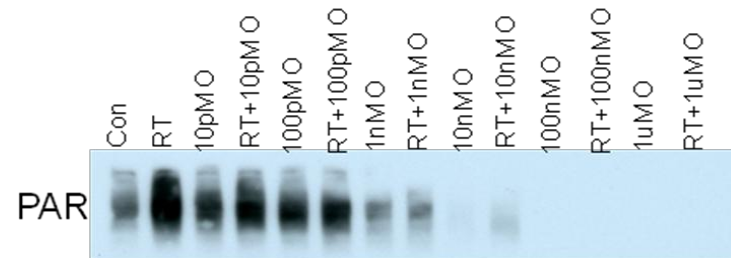


Suppl. Fig. 1.

A.



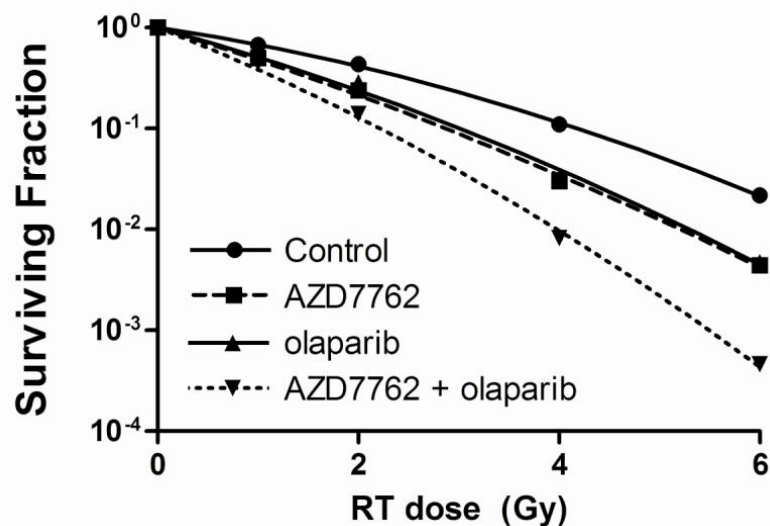
B.



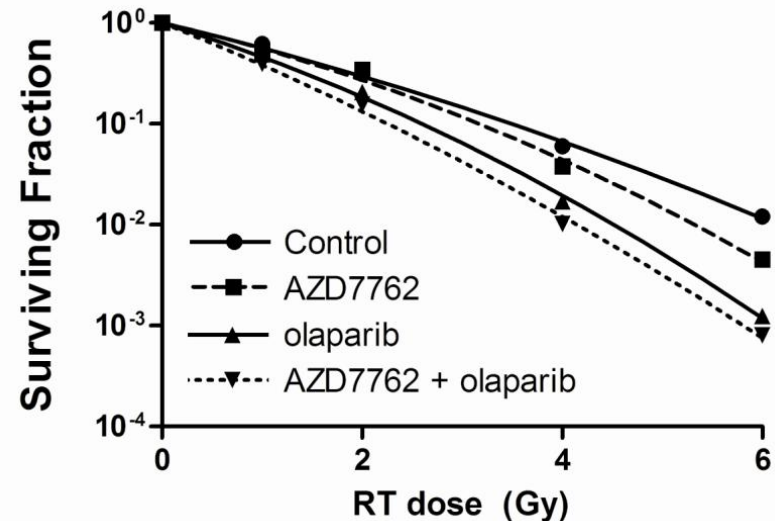
**Suppl. Fig. 1. Olaparib concentration response curve in MiaPaCa-2 cells.** Cells were treated as illustrated (Fig. 1D) with AZD7762 (100nM), radiation (4 Gy), and the indicated concentrations of olaparib and processed for clonogenic survival (A). The 4 Gy radiation enhancement ratios were calculated by correcting each condition to the untreated control and dividing the 4Gy corrected surviving fraction for a given condition by the un-irradiated corrected surviving fraction. PAR levels were assessed by immunohistochemistry (B).

Suppl. Fig. 2.

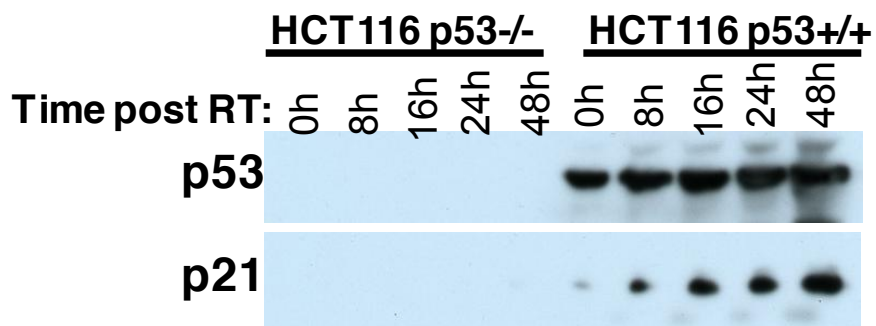
A. HCT116<sup>-/-</sup>



B. HCT116<sup>+/+</sup>



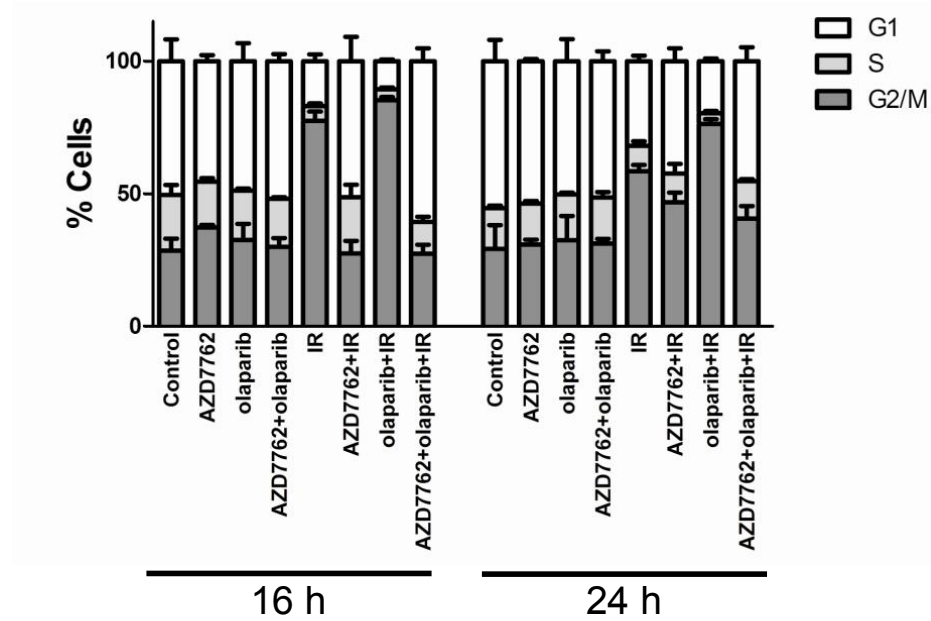
C.



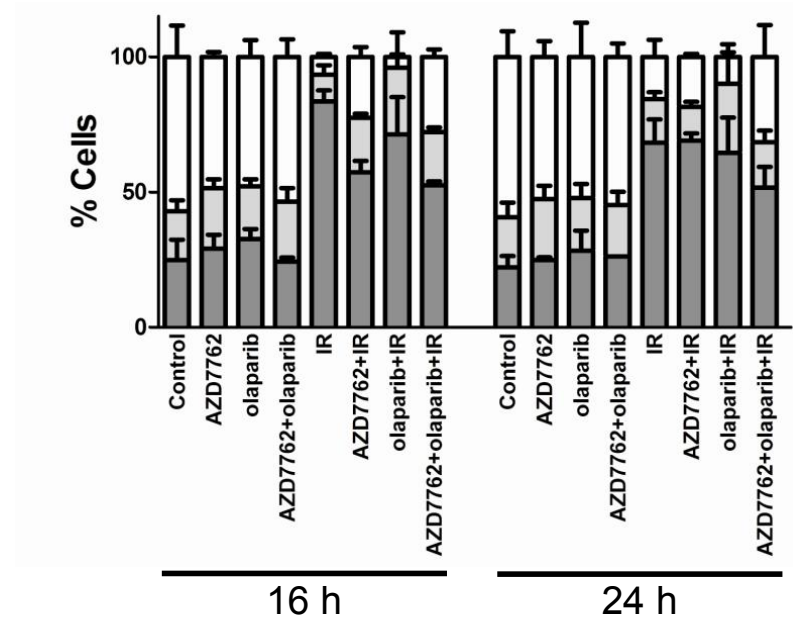
Suppl. Fig. 2. HCT116 cell line characterization. Representative curves from n = 3-4 experiments for HCT116 p53<sup>-/-</sup> (A) and HCT116 p53<sup>+/+</sup> (B) cells. C, Time-course for p53 and p21 in response to radiation (7.5 Gy).

Suppl. Fig. 3.

A. HCT116 +/+



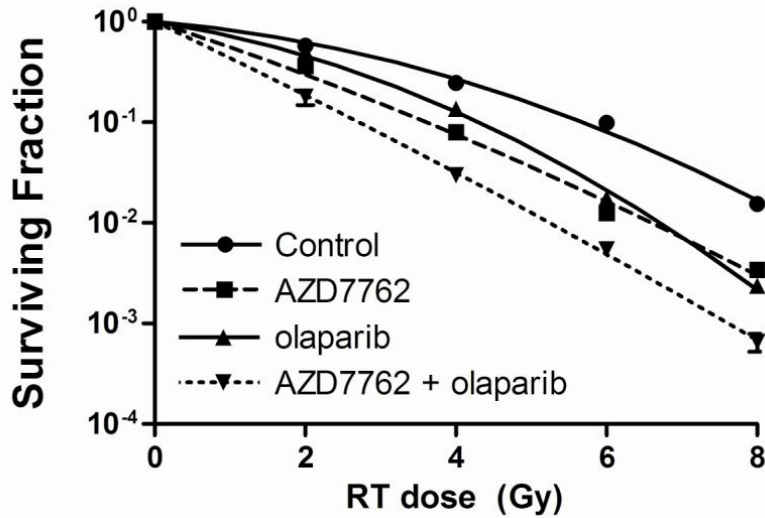
B. HCT116 -/-



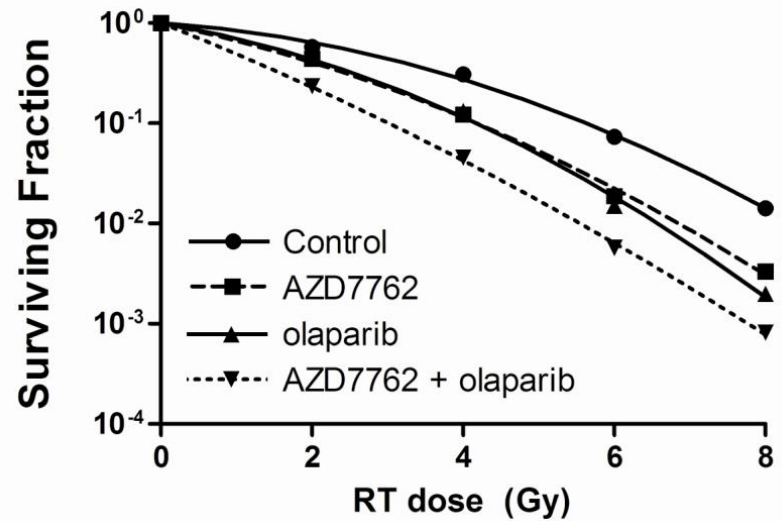
Suppl. Fig. 3. Cell cycle analysis of HCT116 cells in response to AZD7762, olaparib, and radiation. At the indicated times post-RT, cells were analyzed for cell cycle by DNA content. Data are the mean  $\pm$  SE of n = 2 -3 independent experiments.

Suppl. Fig. 4.

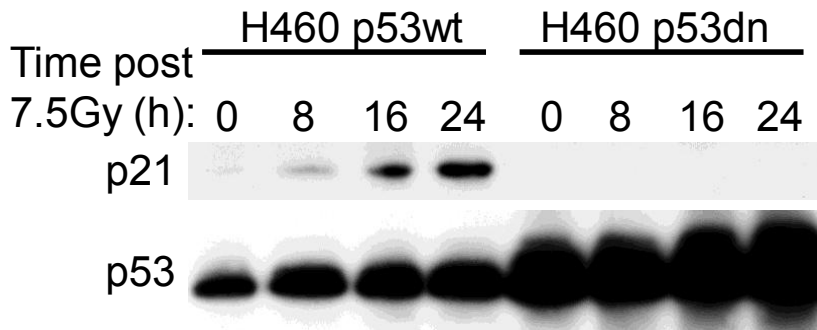
A.



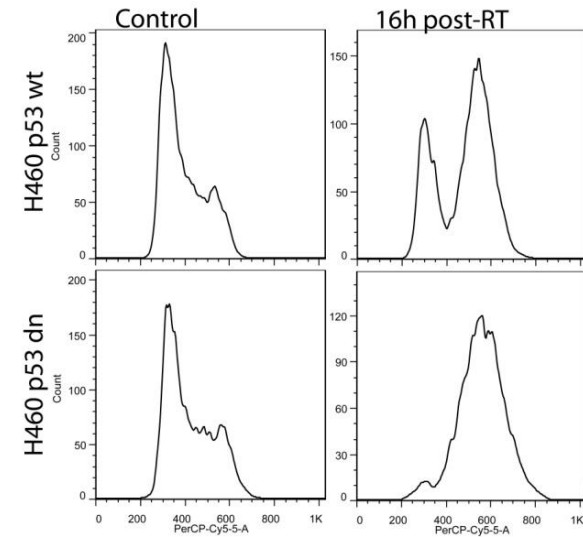
B.



C.



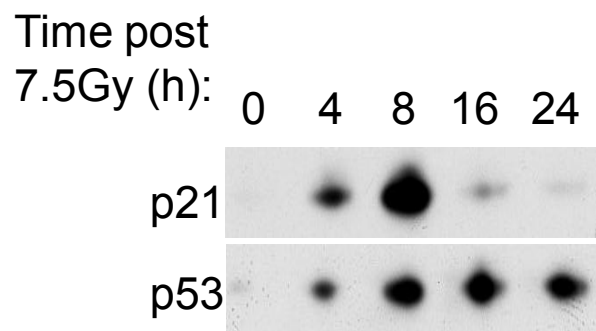
D.



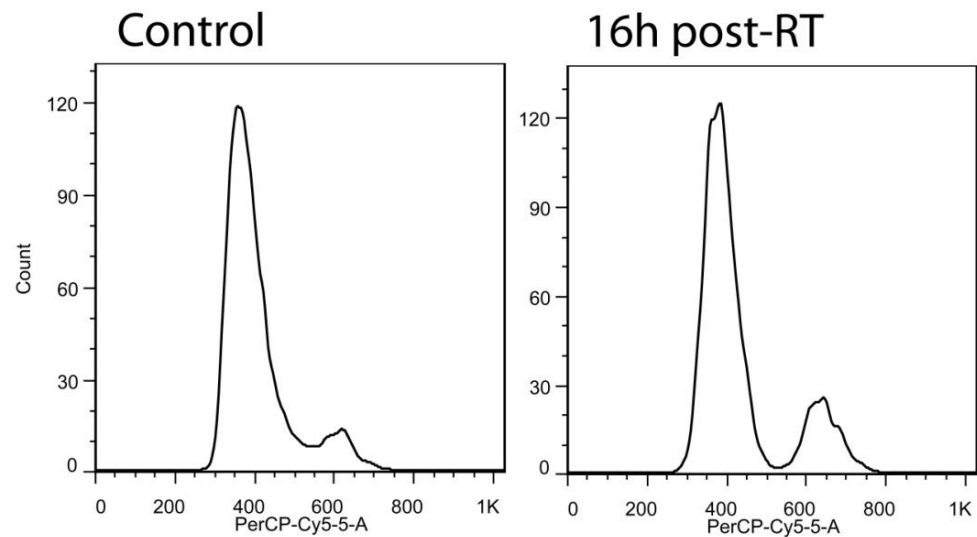
**Suppl. Fig. 4. H460 cell line characterization.** Representative curves from n = 3 experiments for H460 p53 dn (A) and H460 p53 wt (B) cells. C, Time-course for p53 and p21 in response to radiation (7.5 Gy). D, Propidium iodide-based cell cycle analysis at 16 hours post-RT (7.5 Gy) demonstrates a G1 arrest in H460 p53wt and lack of G1 arrest in H460 p53dn cells.

Suppl. Fig. 5.

A.



B.



**Suppl. Fig. 5. CCL-241 cell line characterization.** A, Time-course for p53 and p21 in response to radiation (7.5 Gy). B, Propidium iodide-based cell cycle analysis at 16 hours post-RT (7.5 Gy) demonstrates a G1 arrest.