

Supplementary Figure S1.

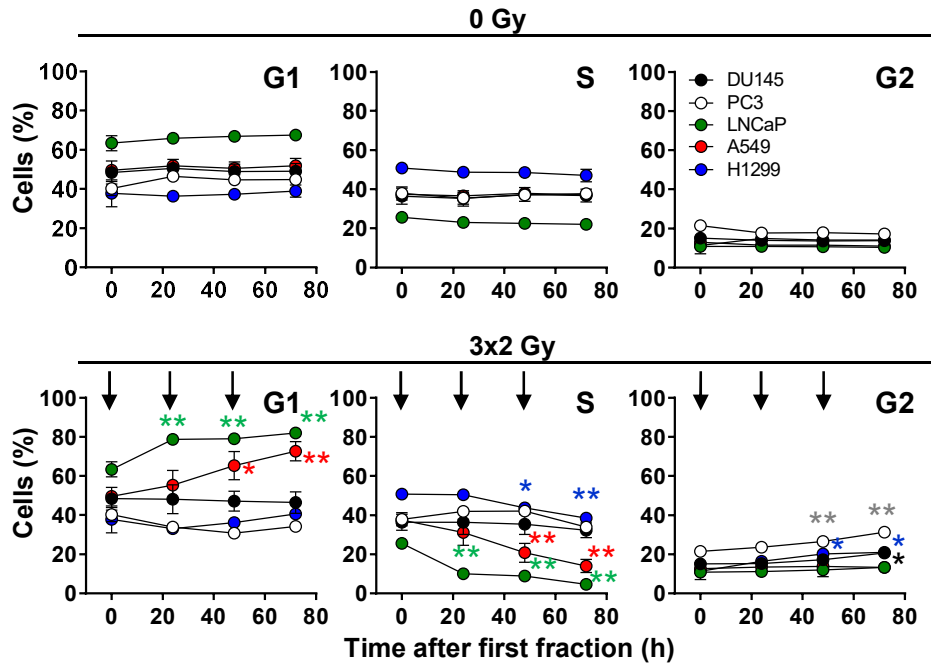


Figure S1. Cell cycle distribution of human prostate and non-small cell lung carcinoma cells during the time course of fractionated radiotherapy (3 fractions of 2 Gy). Unirradiated cells (0 Gy) were used as control. Cells were incubated with BrdU for 10 min at indicated time points. Arrows indicate time of irradiation (2 Gy). Results show mean \pm STDEV ($n = 3$, * $P < 0.05$, ** $P < 0.01$, Student's t-test).

Supplementary Figure S2.

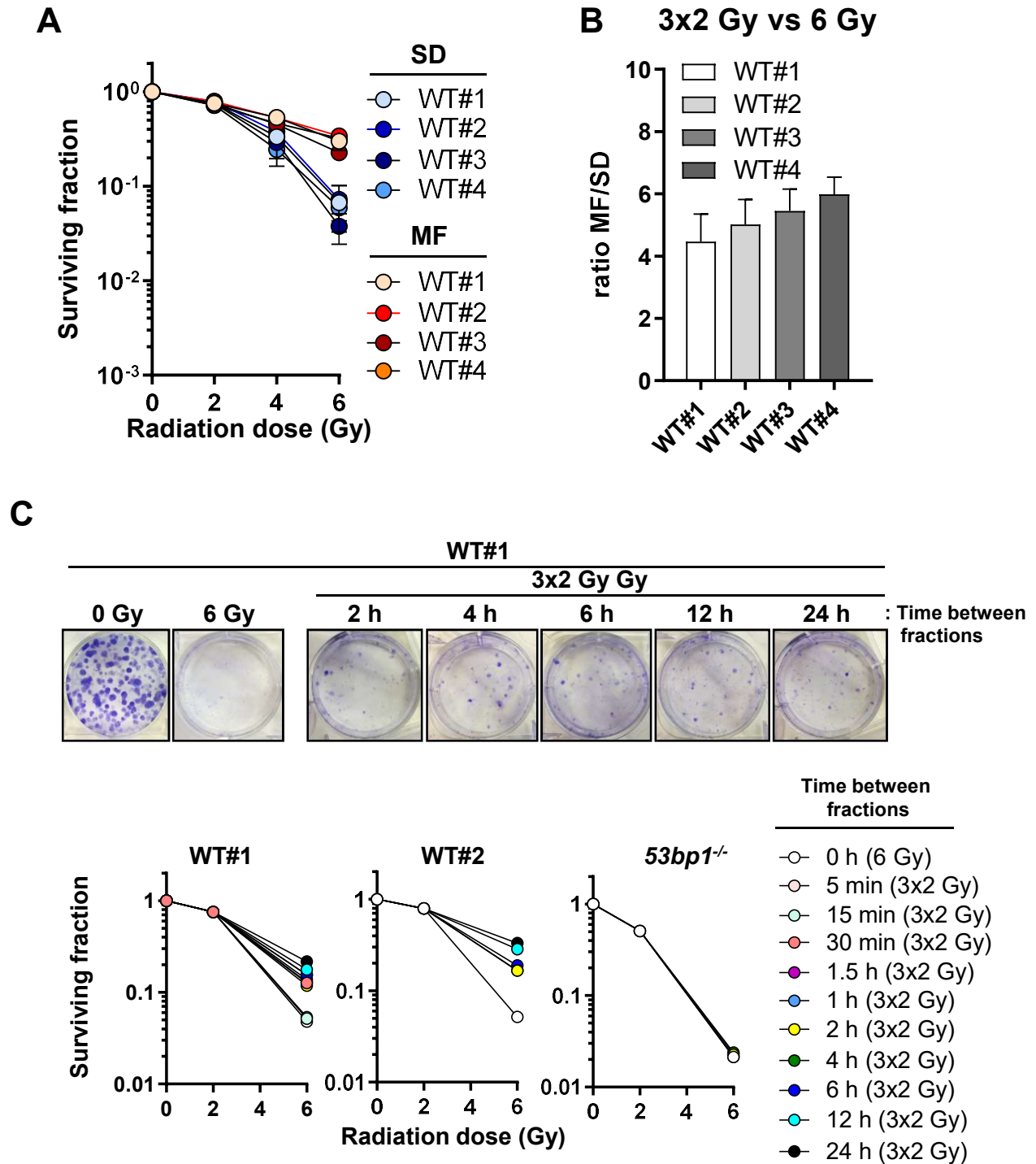


Figure S2. (A) Clonogenic survival and (B) SD/MF ratios of 4 wildtype MEF cell lines. (C) Colony formation assay of WT#1, WT#2, and *53bp1*^{-/-} MEF irradiated with 6 Gy single dose or 3 times 2 Gy fractionated radiation with indicated time intervals between fractions. Unirradiated cells were used as control.

Supplementary Figure S3.

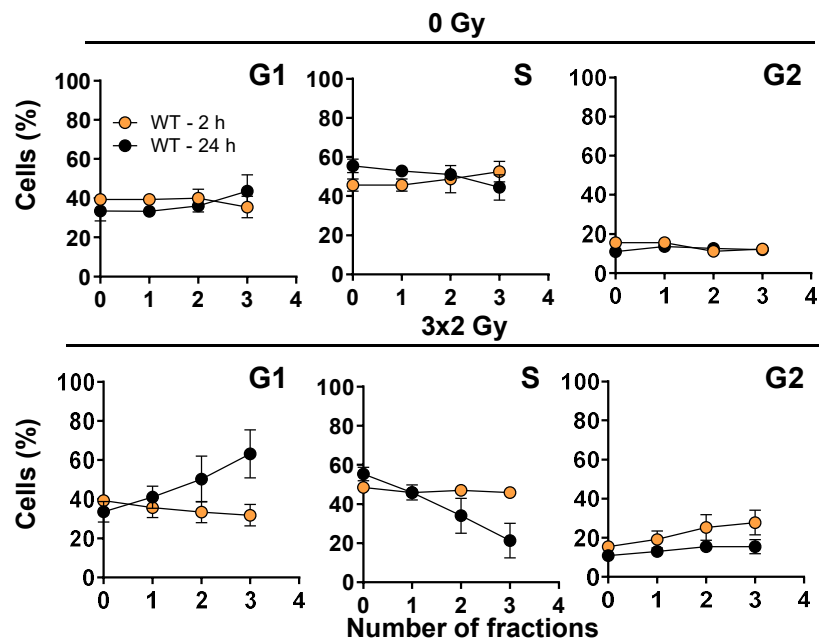
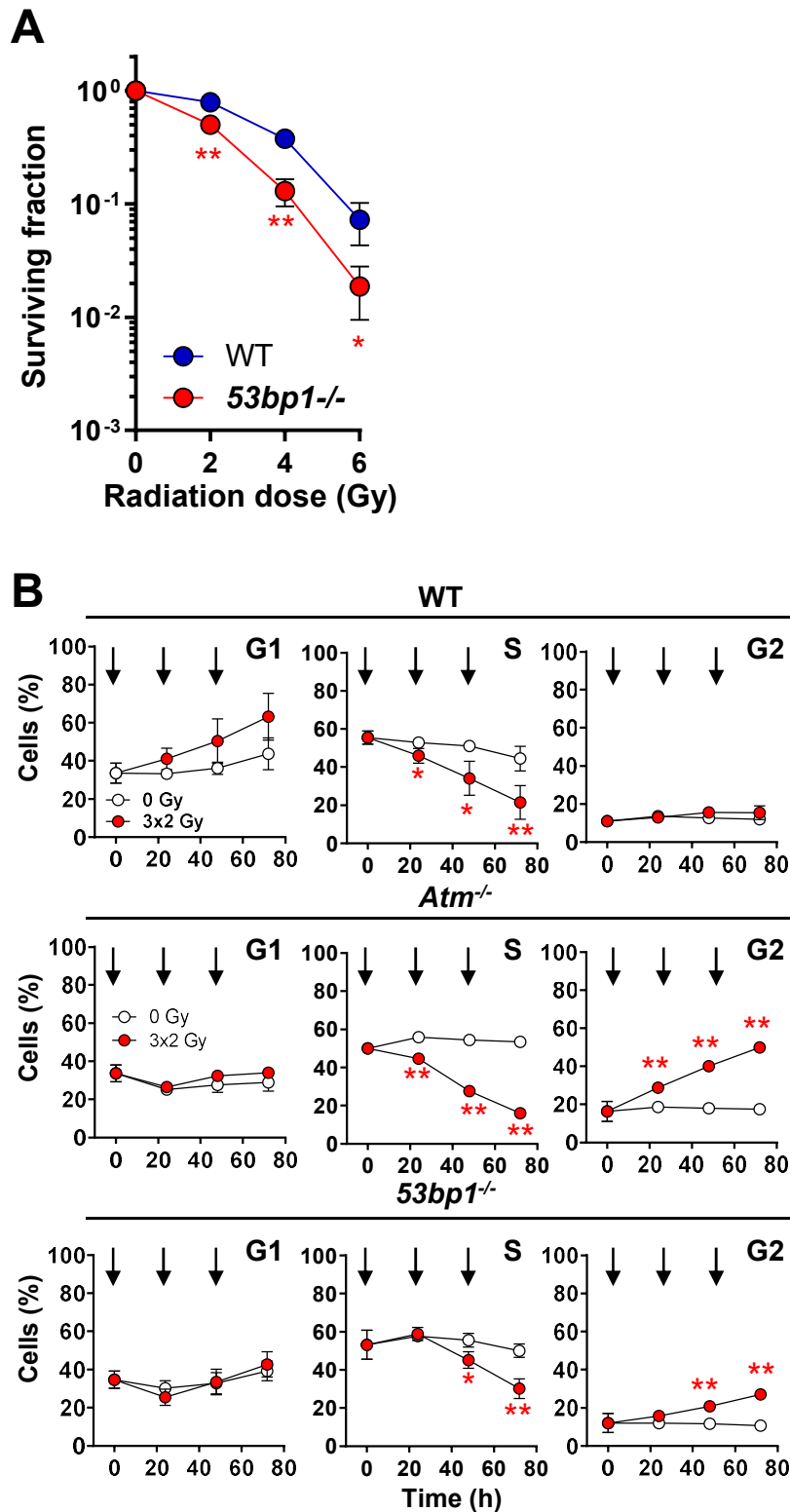


Figure S3. Cell cycle distribution of wildtype (WT) MEF during the course of fractionated radiotherapy (3 fractions of 2 Gy) with a 2 h or 24 h time interval between fractions.

Supplementary Figure S4.



Supplementary Figure S5.

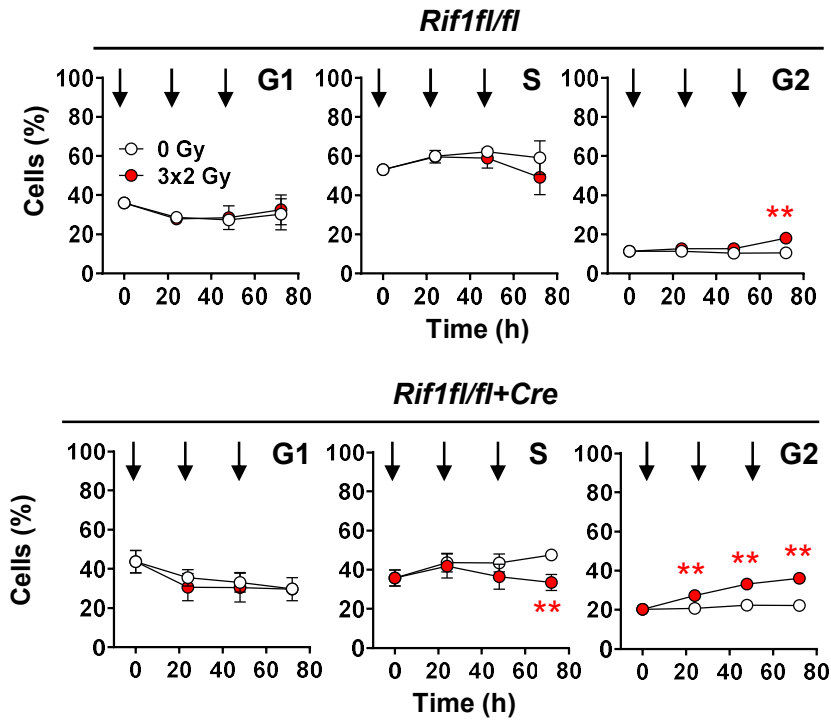


Figure S5. Cell cycle distribution of unirradiated (0 Gy) and irradiated (3 x 2 Gy) *Rif1fl/fl* and *Rif1fl/fl+Cre* at indicated time points during the time course of fractionated radiotherapy (3 fractions of 2 Gy). Cells were incubated with BrdU prior to fixation and staining with Anti-BrdU antibodies. Results show mean \pm STDEV (n = 3, ** P < 0.01, Student's t-test).

Supplementary Figure S6.

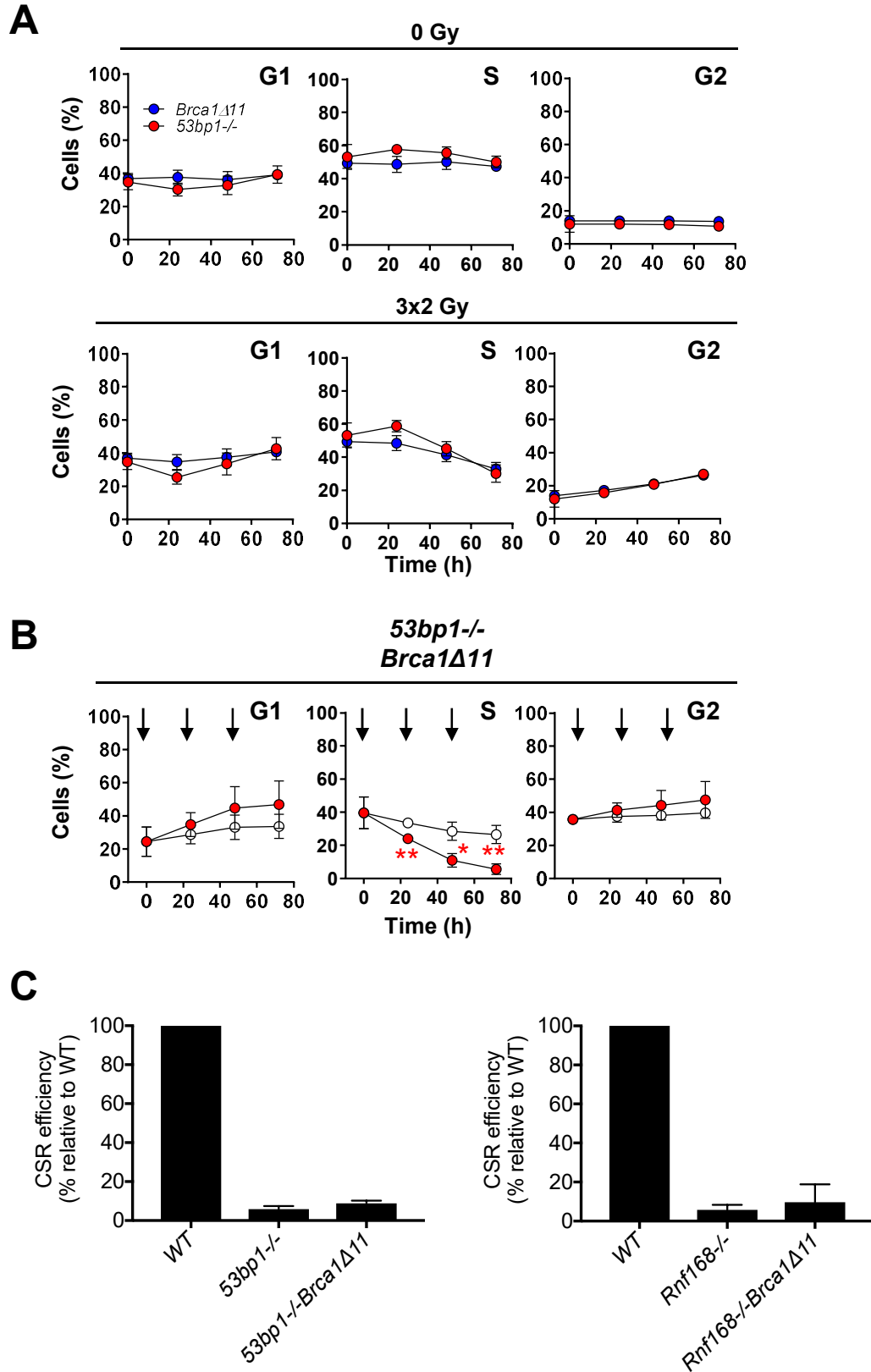


Figure S6. (A) Cell cycle distribution of unirradiated (0 Gy) and irradiated (3 x 2 Gy) *53bp1^{-/-}* and *Brca1Δ11* and (B) *53bp1^{-/-}Brca1Δ11* cells at indicated time points. Cells were incubated with BrdU prior to fixation and staining with Anti-BrdU antibodies. (C) Class switch recombination (CSR) in wildtype (WT), *53bp1^{-/-}*, *53bp1^{-/-}Brca1Δ11*, *Rnf168^{-/-}*, and *Rnf168^{-/-}Brca1Δ11* splenic B cells. WT MEF were used as control. CSR efficiency in WT B cells was set to 100%.

Supplementary Figure S7.

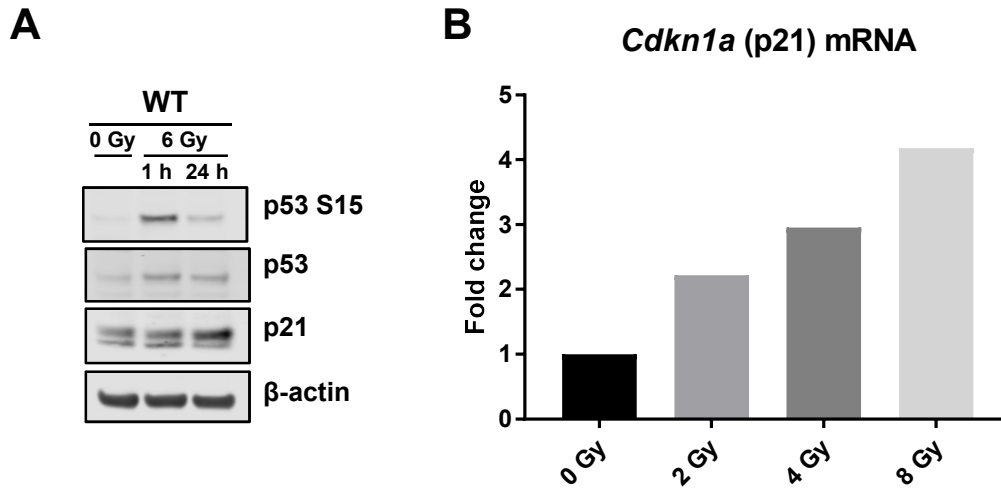


Figure S7. (A) Western blot showing p53 expression and serine-15 phosphorylation as well as p21 expression in wild type (WT) MEF at 1 h or 24 h after a single 6 Gy dose of IR. β-actin served as loading control. (B) Fold change of *Cdkn1a* mRNA expression in WT cells at 24 h after indicated radiation treatment analyzed using qRT-PCR.