Supporting Information

POLQ is important for repair of DNA double-strand breaks caused by fork collapse

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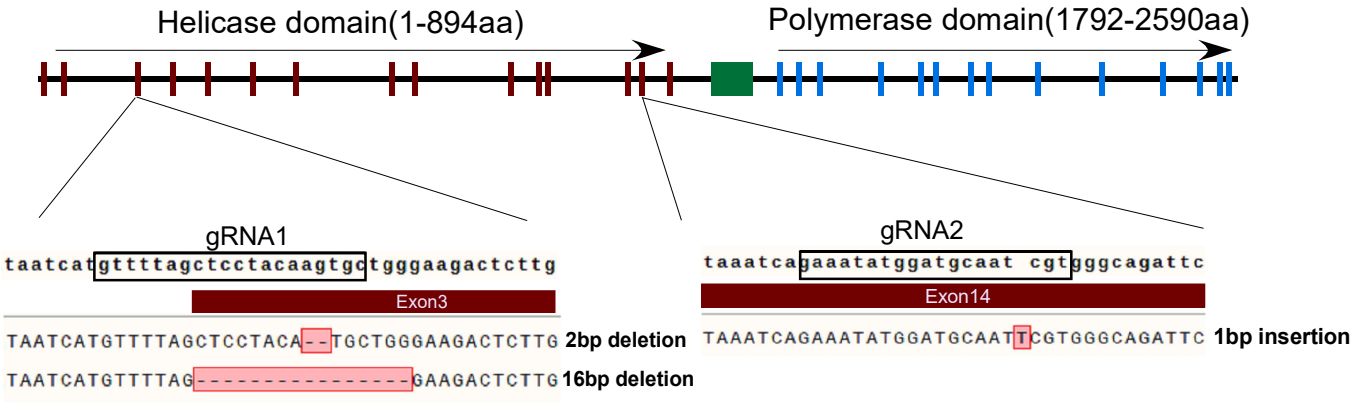
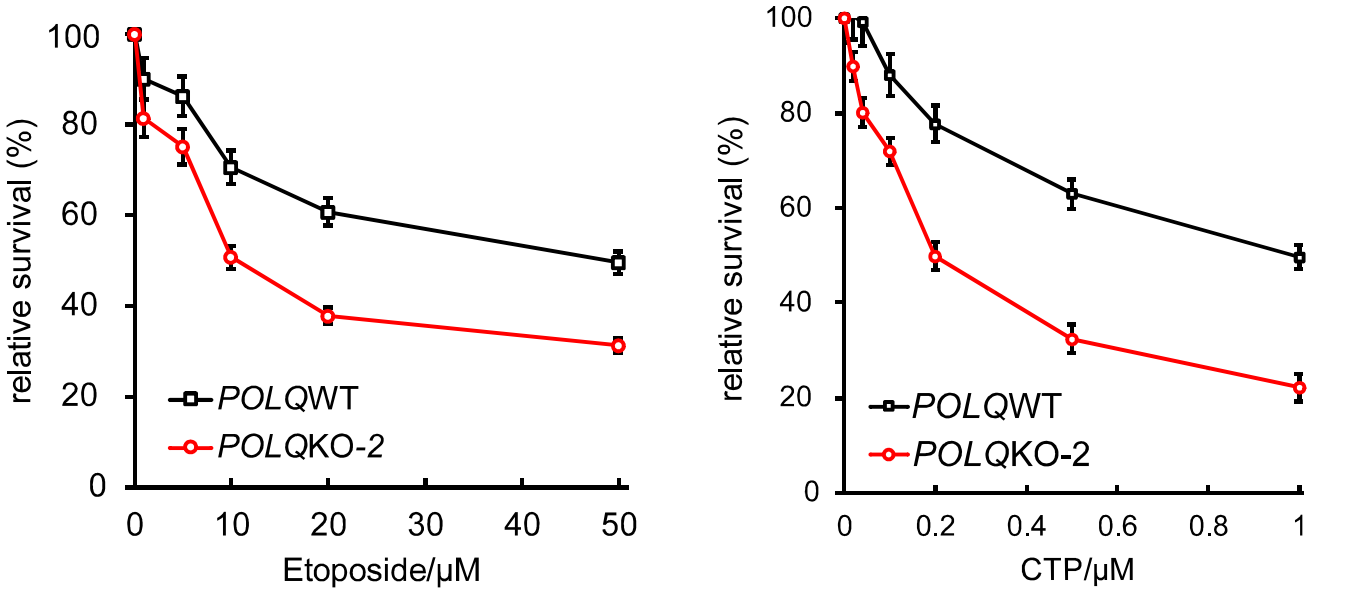
This supporting information included supplementary figure 1-6

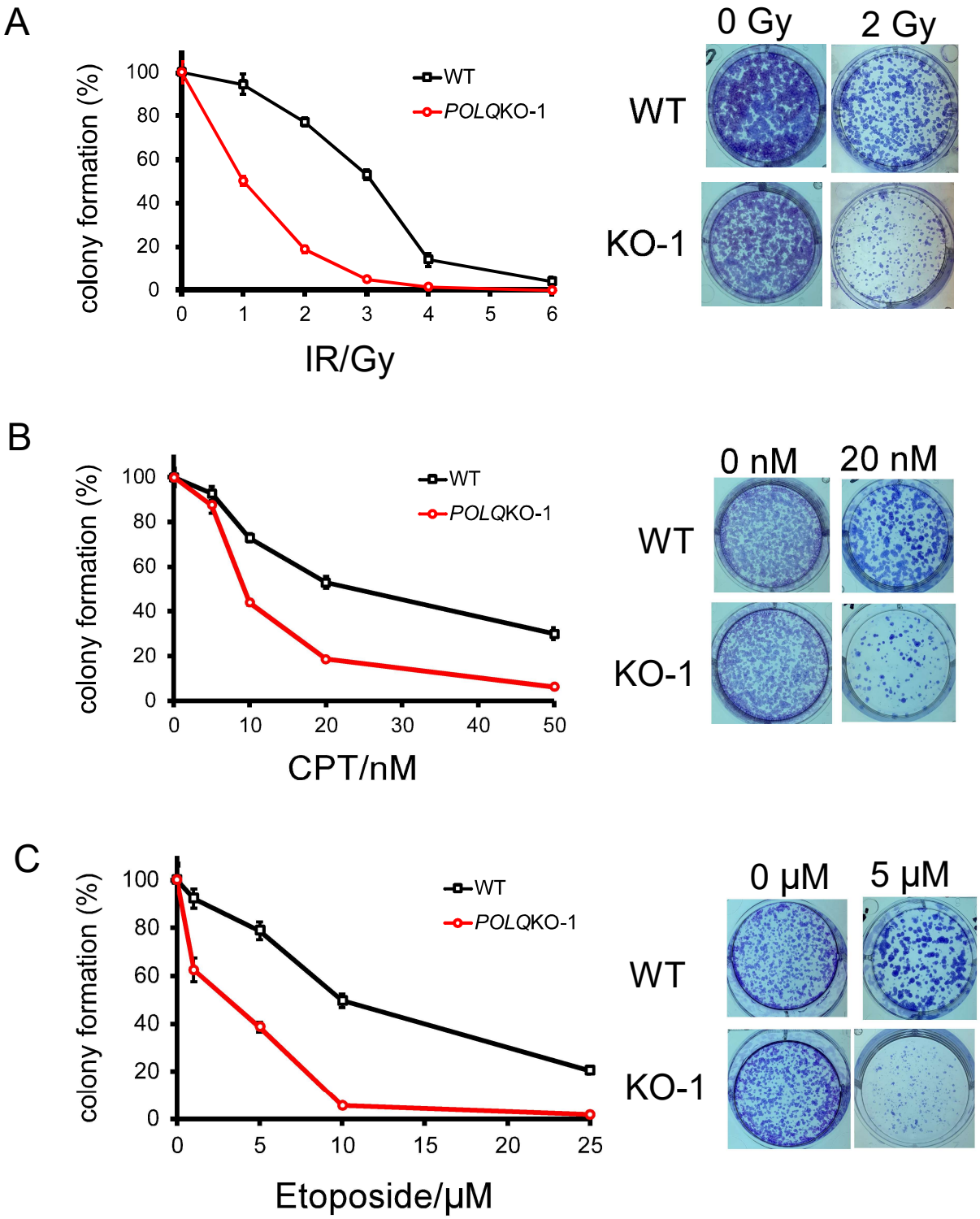
A *POLQ*KO-2



B

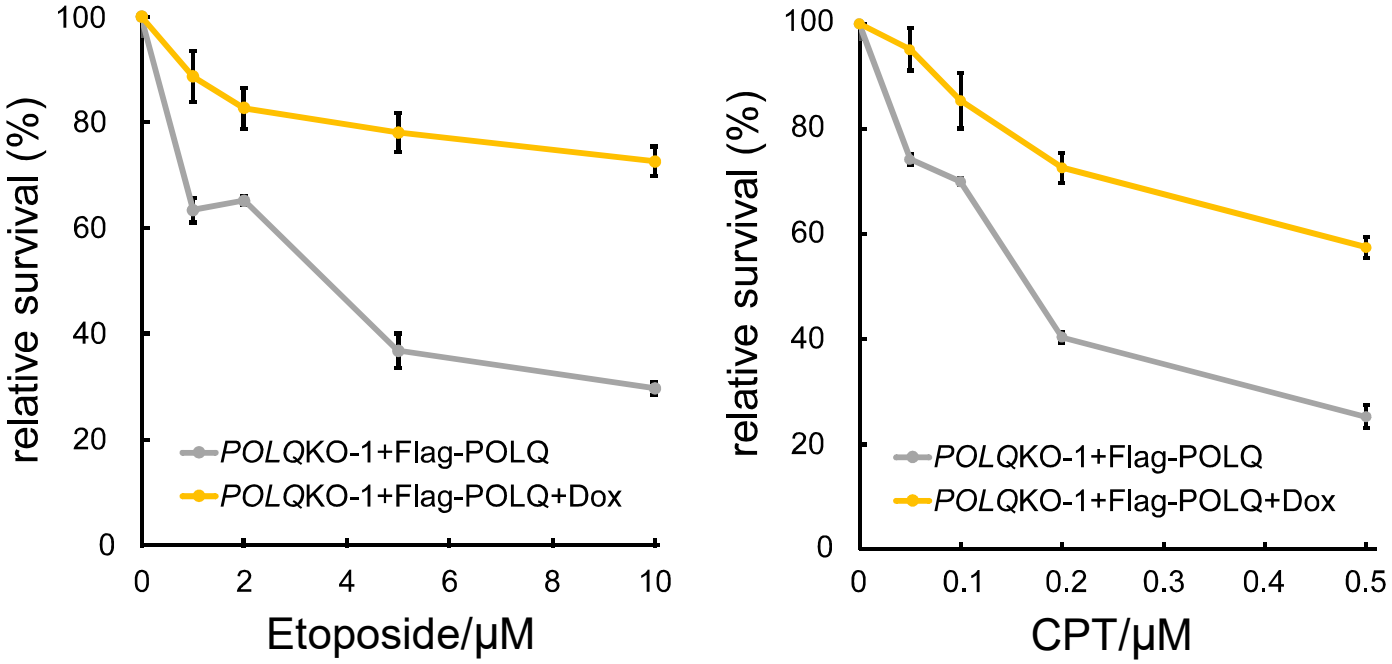


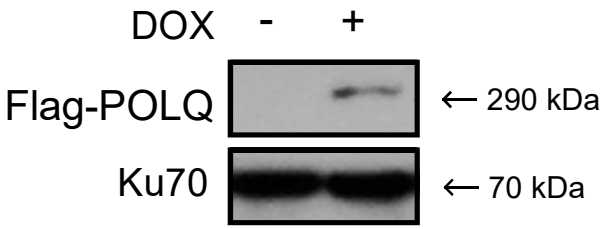
Supplementary Figure 1. (A). Sequence analysis of deletion and insertion at the *POLQ* genomic sites targeted by gRNA1 and gRNA2 in U2OS *POLQ*KO-2 clone. (B). U2OS and U2OS-derived *POLQ*KO-2 cells were treated with indicated concentration of Etoposide (left) and CPT (right) for 48 hours and cell viability assay were performed.



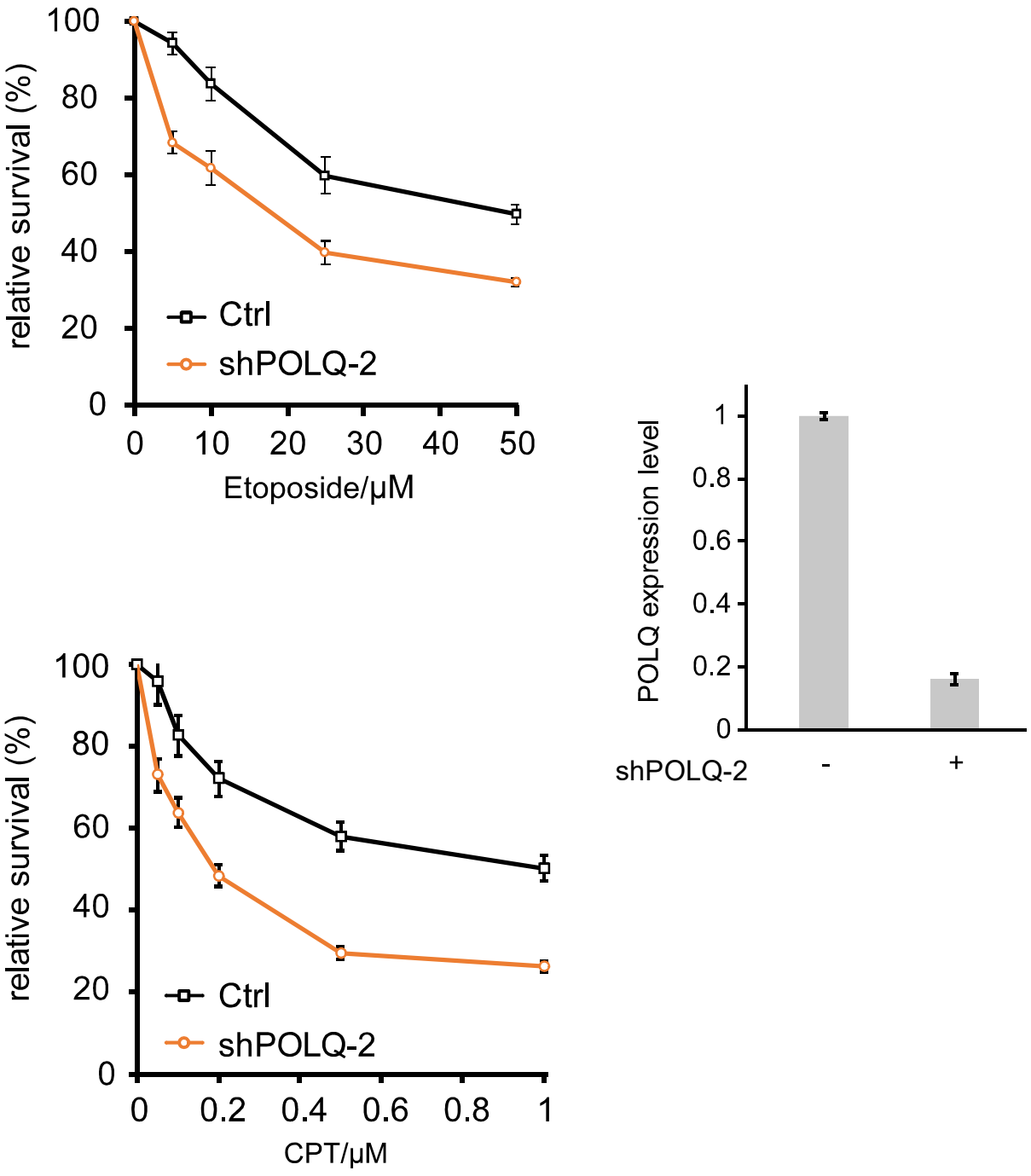
Supplementary Figure 2. Clonogenic assay was performed using U2OS cells and U2OS-derived *POLQ*KO-1 cells after treatment of IR (A), CPT for 24 hours (B) and Etoposide for 24 hours (C). Representative colony formation images without treatment and after IR, CPT or Etoposide treatment at indicated dose are shown on the right.

A

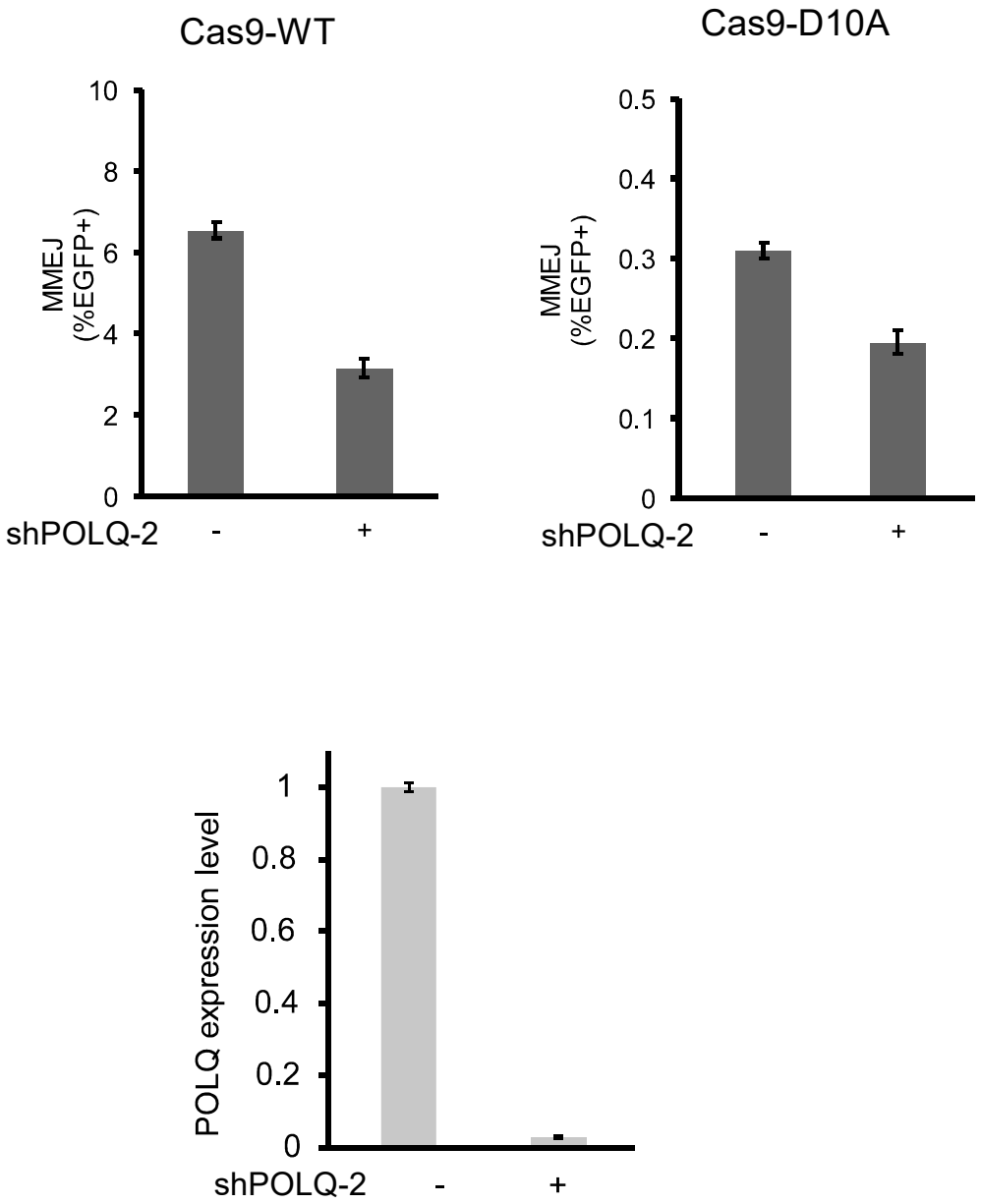




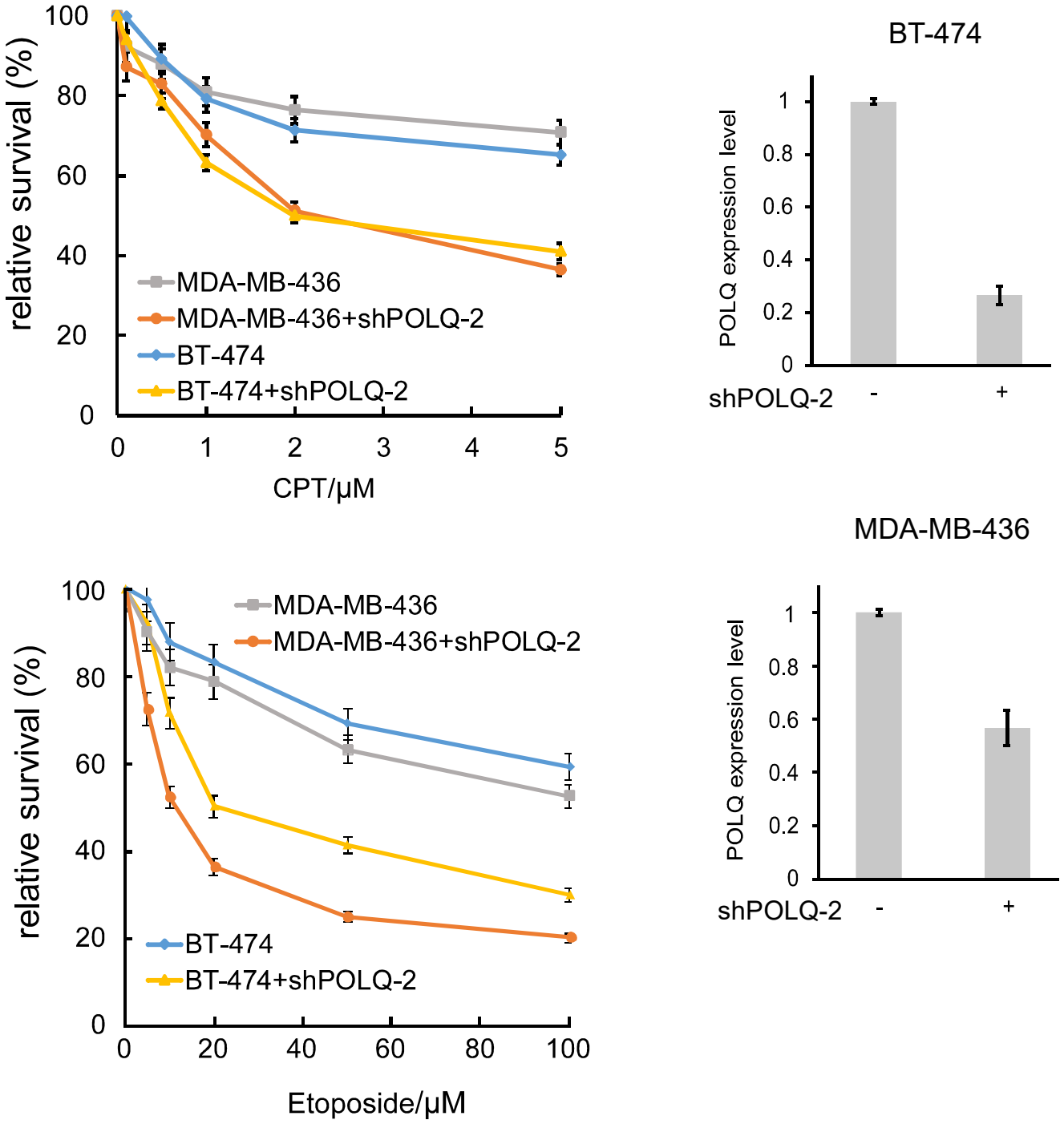
Supplementary Figure 3. Tet-on inducible Flag-POLQ was introduced to *POLQ*KO1 U2OS cells and single clones were obtained. 48 hours after induction of Flag-POLQ expression by doxycyclin (5 μg/ml), sensitivity to Etoposide and CPT was determined by cell viability assay 48 hours after treatment (top). Expression of Flag-POLQ in *POLQ*KO1 U2OS cells is shown by Western blot analysis with Ku70 as a loading control (bottom).



Supplementary Figure 4. U2OS cells expressing POLQ-shRNA2 or vector were treated with indicated concentrations of Etoposide and CPT for 48 hours and cell viability assays were performed (left). Inhibition of POLQ expression before and after expression of POLQ-shRNA2 was examined by qPCR (right).



Supplementary Figure 5. U2OS cells carrying EGFP-MMEJ reporter were infected with or without lentiviruses encoding POLQ shRNA2 and MMEJ was assayed 5 days after Cas9WT or Cas9D10A transfection (Top). The efficiency of POLQ knock-down was determined by qPCR (bottom).



Supplementary Figure 6. POLQ-shRNA2 or vector were expressed in MDA-MB-436 and BT-474 cells by lentiviral infection and sensitivity to CPT and Etoposide was determined by cell viability assay 48 hours after treatment (left). Inhibition of POLQ expression before and after expression of POLQ-shRNA2 was examined by qPCR (right).