Figure S1 Huo et al.

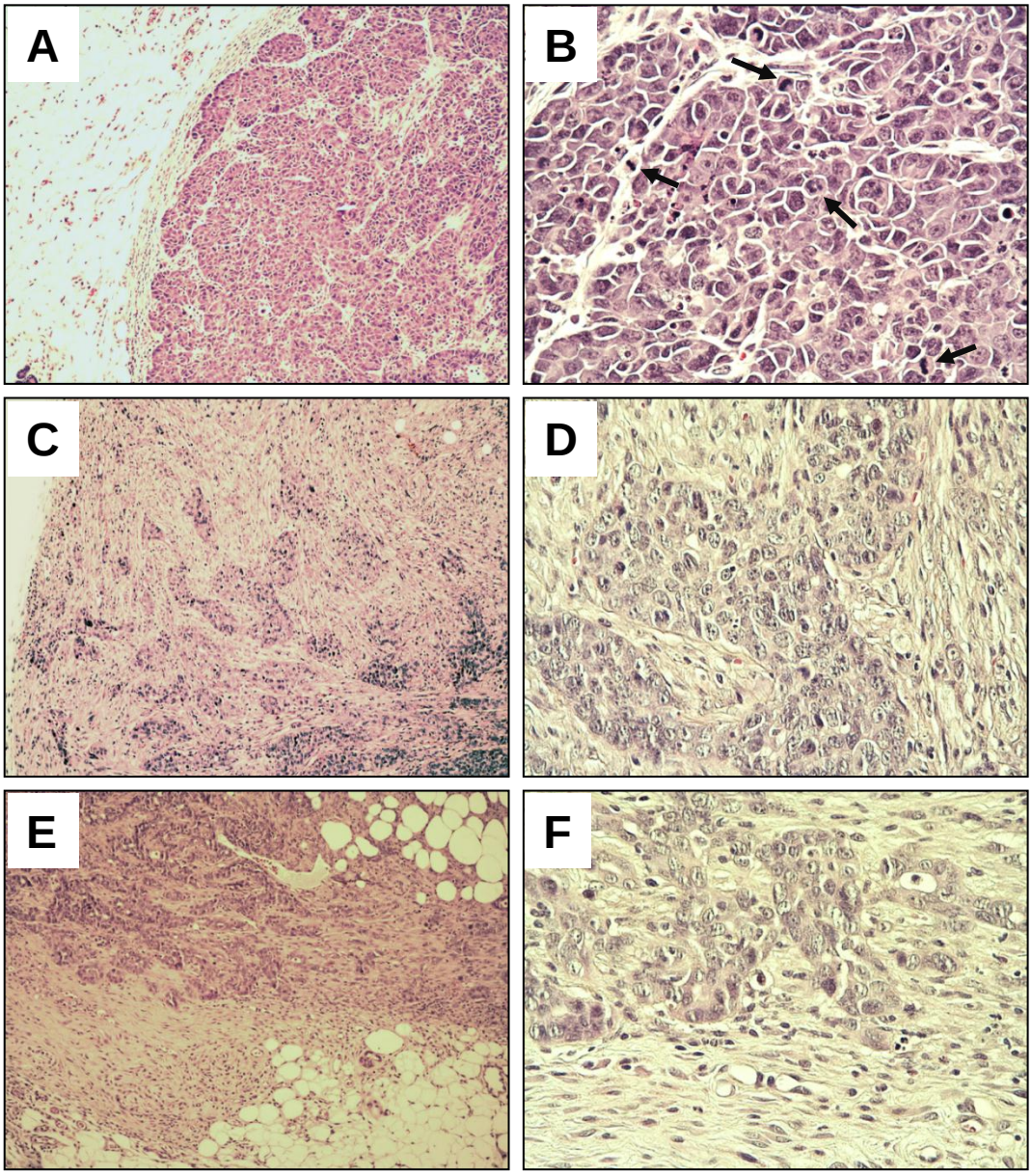


Figure S1. Additional views of the histology of *Palb2*-null mammary tumors. **A**, A solid tumor with pushing margin. **B**, Enlarged view of the center area of A, showing pleomorphic nuclei and high mitotic activity in the tumor. Mitotic figures are marked by arrows. **C**, A tumor of mixed sarcomatoid and solid patterns with seemingly ongoing epithelial to mesenchymal transition (EMT). **D**, Enlarged view of the center area of C, showing the nuclei of both cell types. **E**, The invading border of a mixed tumor invading into fat tissue. F, Enlarged view of the center area of E.

Figure S2 Huo et al.

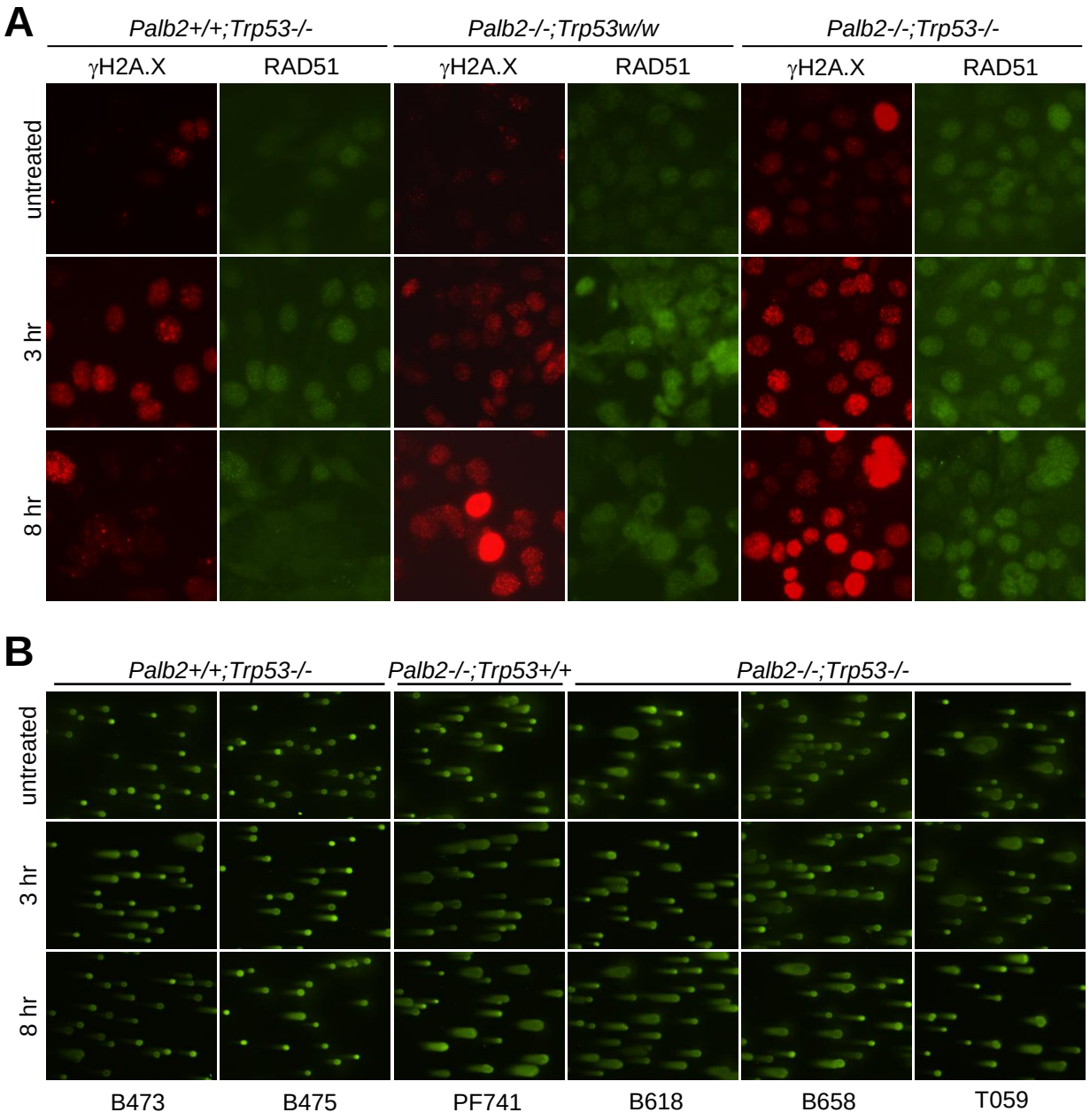


Figure S2. Defect of *Palb2*-null tumor cells in the repair of MMC-induced DNA damage. **A**, γH2A.X and RAD51 foci formation before and after MMC treatment. Tumor cells were treated with 1 μg/ml MMC for 1 hr and the drug was then removed. Cells were fixed either before treatment or at 3 and 8 hr after MMC removal and analyzed by IF. **B**, Levels of DNA breaks before and after MMC treatment. Cells were treated as above, collected at the same time points and analyzed by neutral comet assay.

Figure S3 Huo et al.

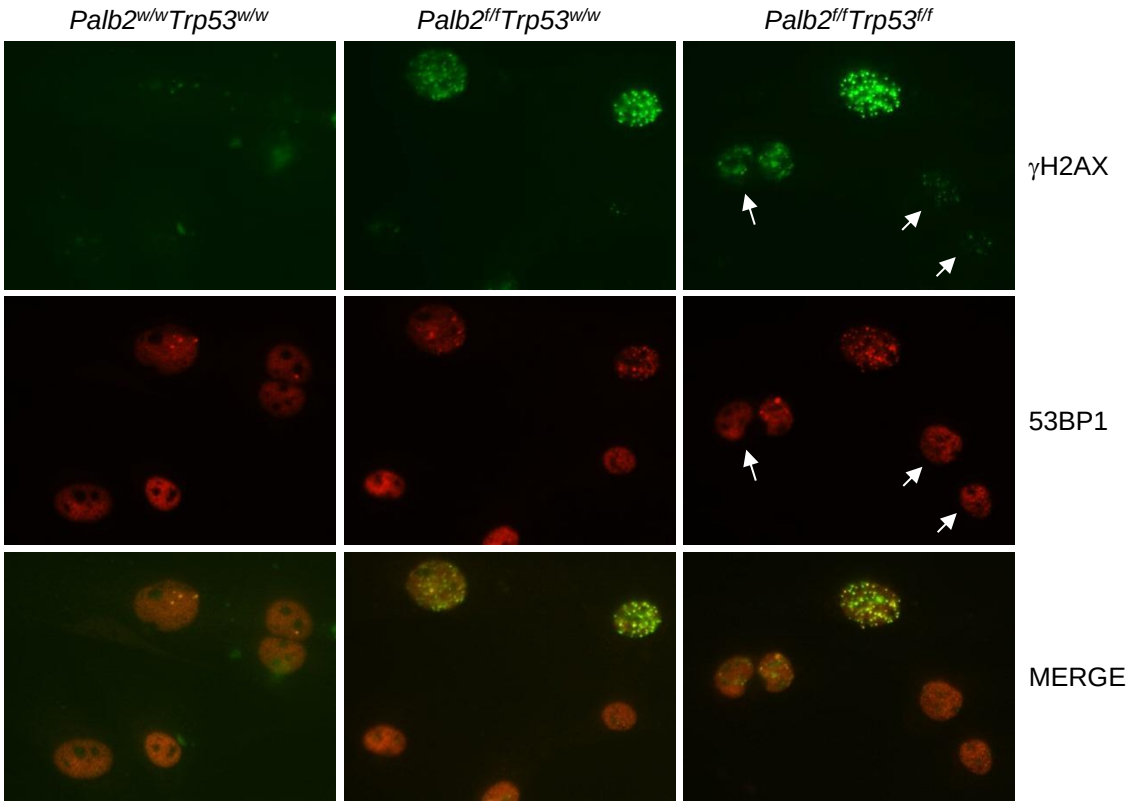


Figure S3. Co-staining of γH2A.X and 53BP1 in MEFs. The 2 proteins were co-stained in the wt, *Palb2*-/- and *Palb2*-/-;*Trp53*-/- mouse embryo fibroblasts (MEFs) during passage 3. Note that 53BP1 stained negative in some cells with multiple but weak γH2A.X foci.

Figure S4 Huo et al.

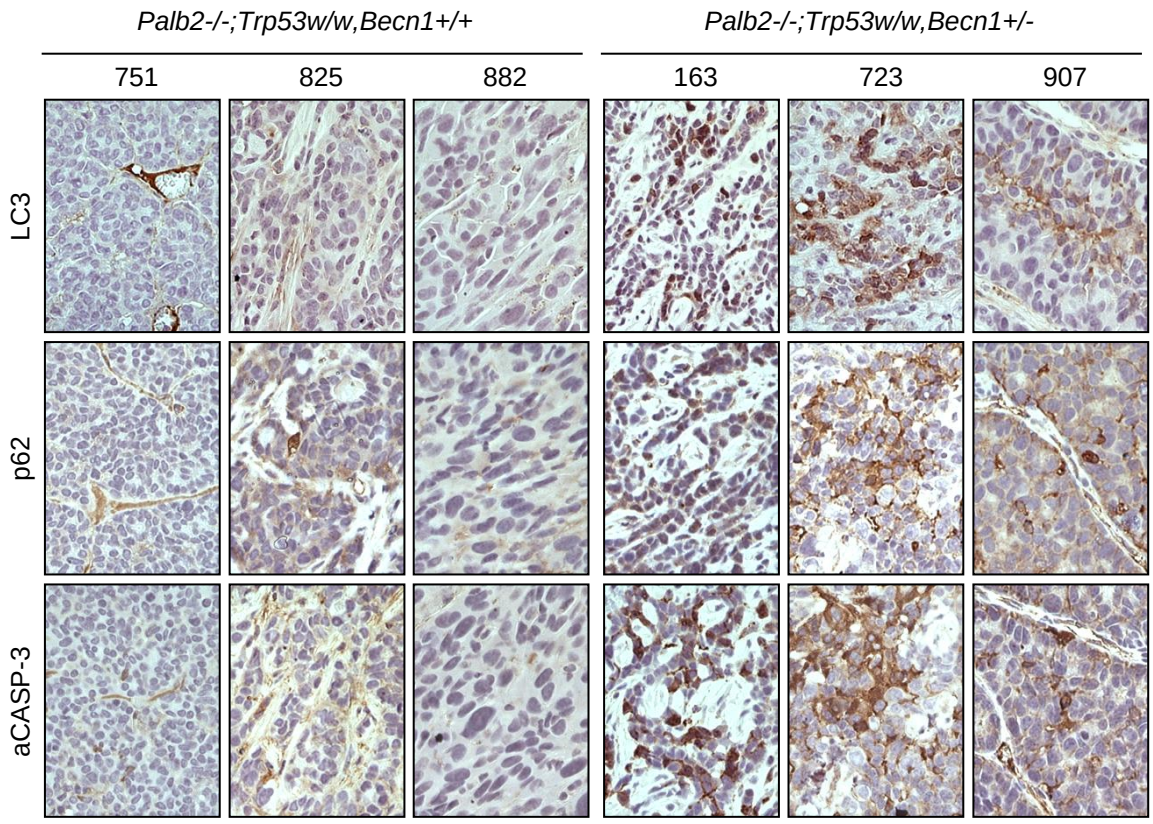
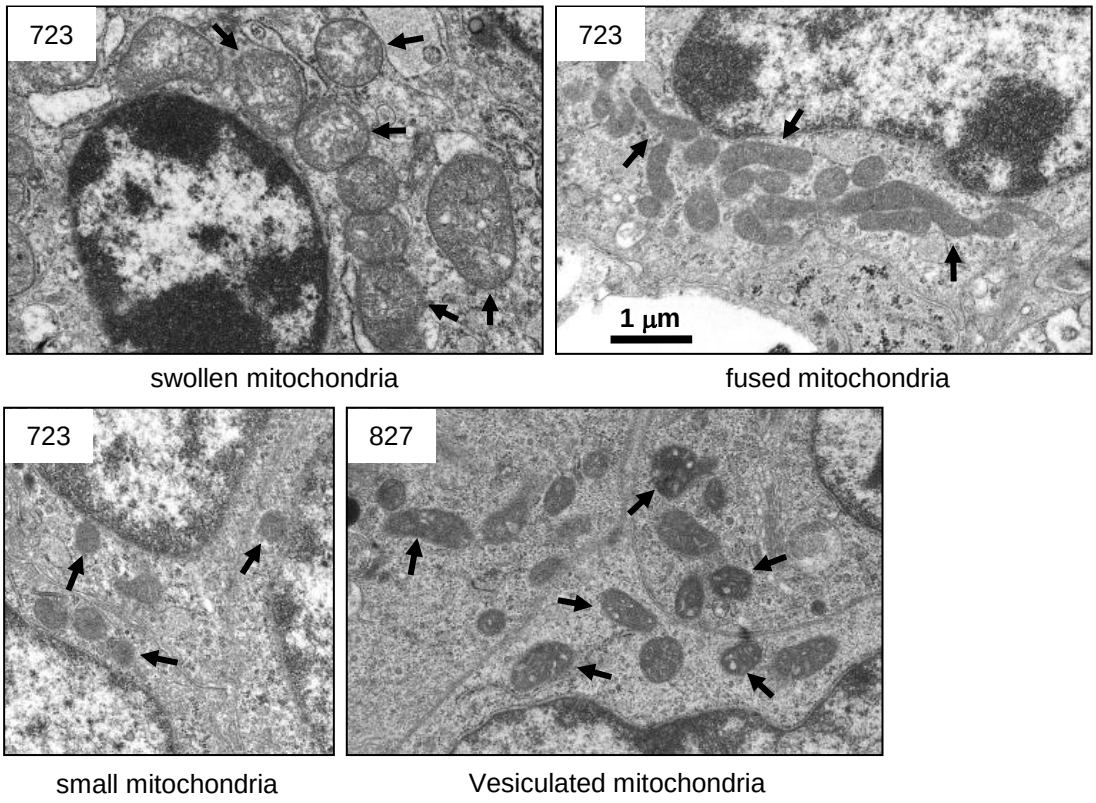


Figure S4. IHC analysis of autophgay and apoptosis markers. LC3, p62 and cleaved/activated caspase 3 (aCASP3) in *Palb2*-associated mammary tumors were analyzed by IHC. All six tumors retained wt *Trp53* (Table 1). All samples were analyzed in the same experiment and under the same condition.

Figure S5 Huo et al.

A



B

mouse ID	mouse genotype	autophagosomes	mitochondria			
			swollen	fused	small	vesiculated
751	*Palb2f/f Trp53w/w Becn1+/+*	++	++	++	++	++
827	*Palb2f/f Trp53w/w Becn1+/+*	++	+	++	++	+++
915	*Palb2f/f Trp53w/w Becn1+/+*	+	+	+	+	+
163	*Palb2f/f Trp53w/w Becn1+/-*	-	+	++	++	-
723	*Palb2f/f Trp53w/w Becn1+/-*	-	++++	+++	+++	-
907	*Palb2f/f Trp53w/w Becn1+/-*	+	+	+++	+++	+

Figure S5. Electron microscopic (EM) analyses of *Palb2*-null tumors with different *Trp53* and *Becn1* status. **A**, Examples of different mitochondria observed. Images were taken at 3800X magnification. **B**, Semi-quantitative description of the relative abundance of autophagosomes and different forms of mitochondria observed in approximately 15 fields of each tumor. Due to the high degree of heterogeneity of most samples and small areas of observation, it was not possible to scientifically quantify the results.