

Supplemental Materials

Figure S1. *Rps27l* inactivation reduces proliferation and induces apoptosis in the spleen and thymus of *Trp53*^{+/-} mice upon radiation exposure.

(A) *Rps27l* inactivation inhibits proliferation of splenocytes in *Trp53*^{+/-} mice upon radiation. BrdU was i.p. injected into WT littermates and *Rps27l* mutants 2 hours before mice being sacrificed. Spleens were harvested, followed by BrdU staining. Scale bar represents 200 μm .

(B-D) *Rps27l* inactivation induces apoptosis in small intestine (B), thymuses (C) and spleens (D) from *Trp53*^{+/-} mice upon radiation. Mice with indicated genotypes were sacrificed at indicated time points post irradiation. Tissues were harvested and subjected to IHC staining with cleaved caspase-3 antibody. Scale bar represents 100 μm .

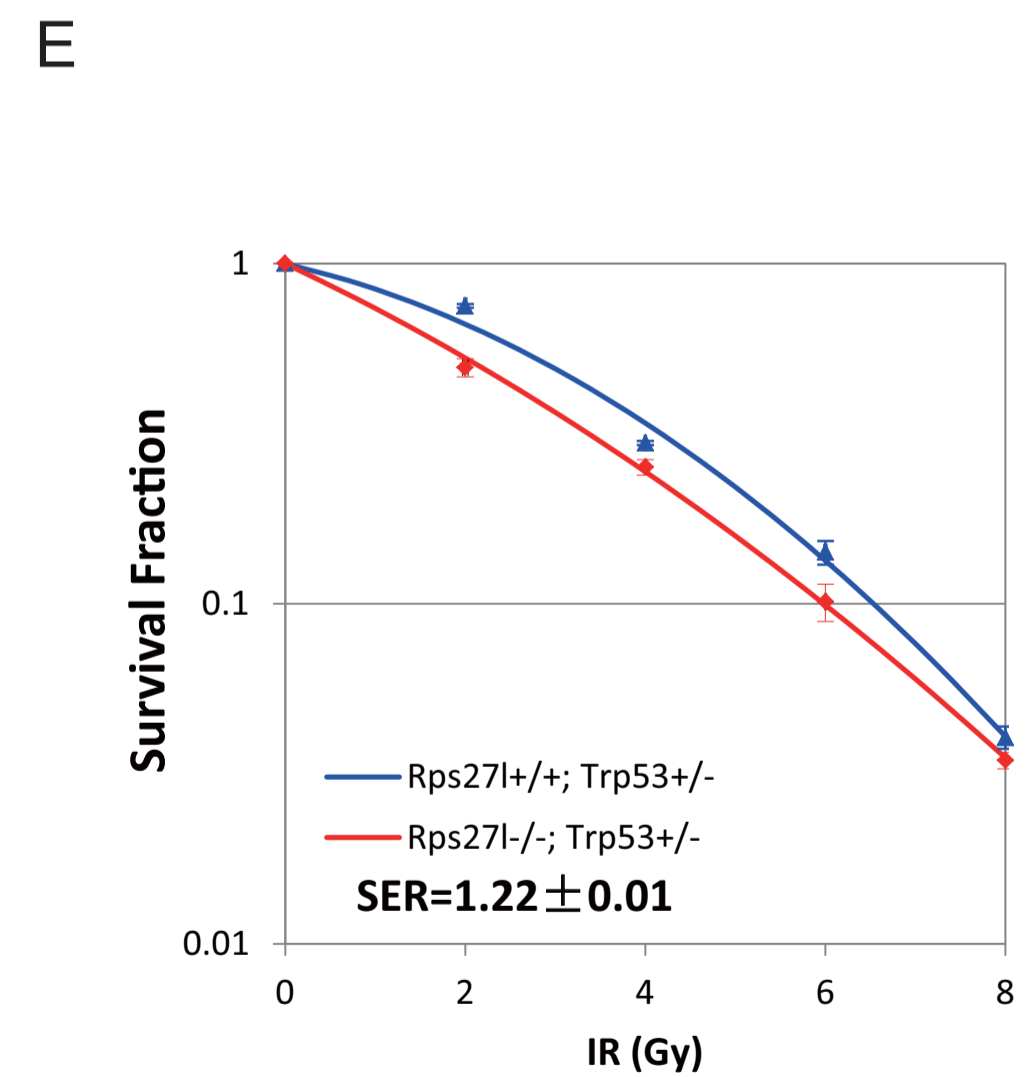
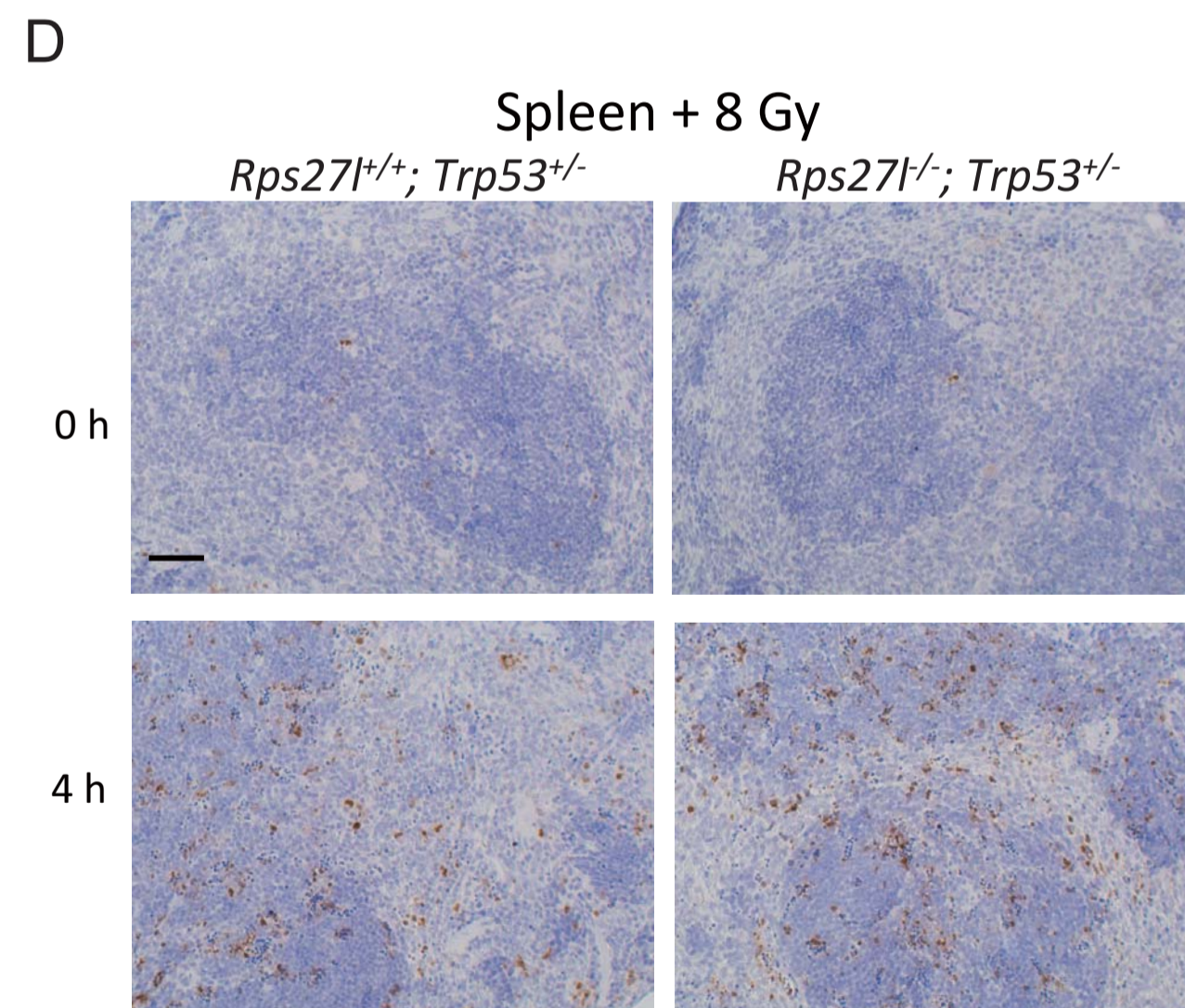
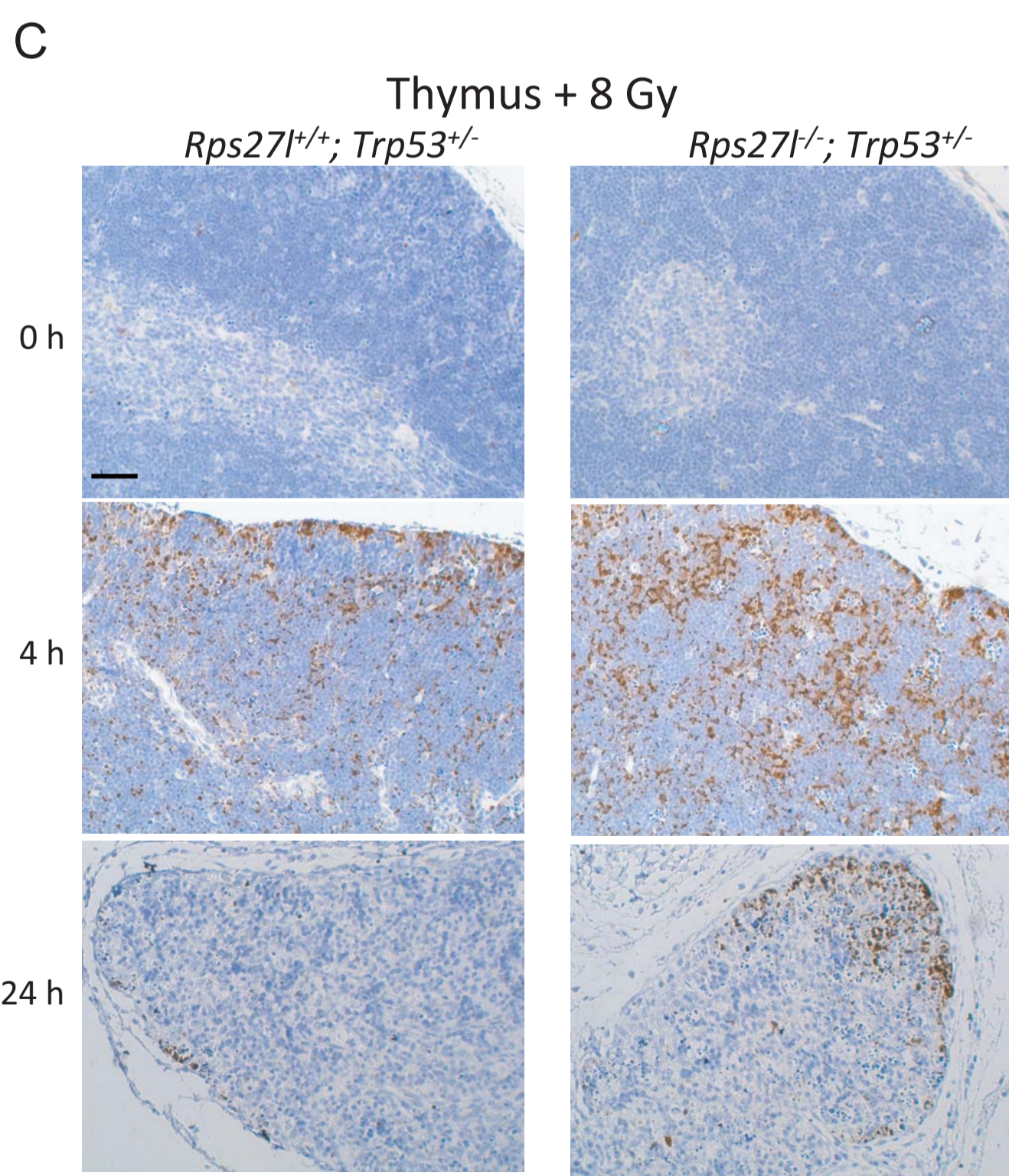
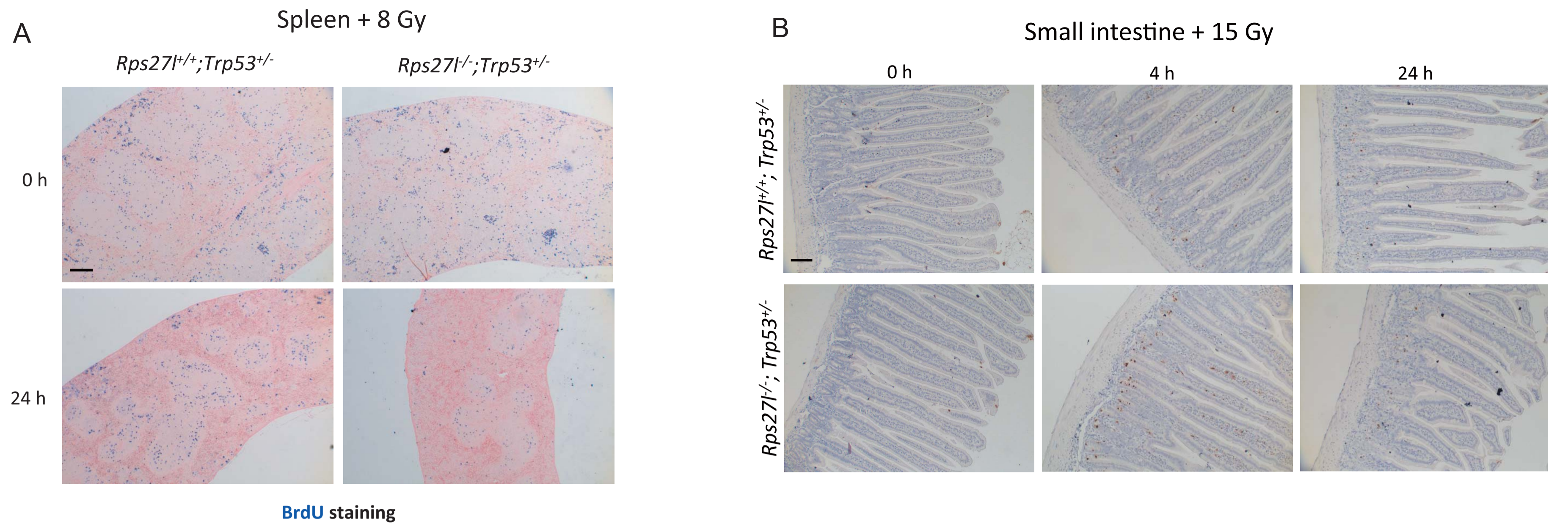
(E) Inactivation of *Rps27l* sensitizes *Trp53*^{+/-} MEFs to radiation. Immortalized MEFs were seeded in 60 mm dishes in triplicate and irradiated. The colonies with more than 50 cells were counted after 7 days. Surviving fraction was calculated as the proportion of seeded cells following irradiation to form colonies relative to that of *Rps27l*^{+/+}; *Trp53*^{+/-} MEFs (mean \pm SEM, n= 3).

Figure S2. *Rps27l* inactivation causes an increase of p53 and its targets upon radiation.

(A&B) *Rps27l* inactivation increases p53 staining in the thymus (A) and bone marrow (B) of *Trp53*^{+/-} mice upon radiation exposure. Mice with indicated genotypes were irradiated at 8 Gy, thymuses were harvested or femurs from hind limb were fixed at indicated time points, followed by IHC staining with p53 antibody. Scale bar represents 20 μm .

Figure S3. Heterozygous deletion of Mdm2 shortens the survival of Rps27l-null mice under *Trp53*^{+/-} background.

Kaplan–Meier survival curves of mice with genotype of *Rps27l*^{-/-};*Trp53*^{+/+}, *Rps27l*^{-/-};*Trp53*^{+/-} and *Rps27l*^{-/-};*Trp53*^{+/-};*Mdm2*^{+/-}. The number in the parenthesis indicates the numbers of mice in each group. Log-rank test, $p < 0.0001$.

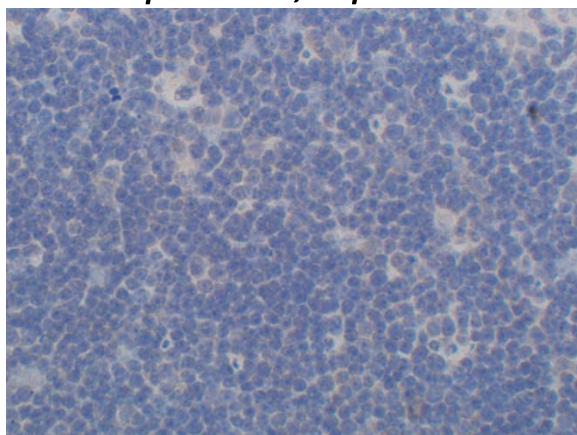
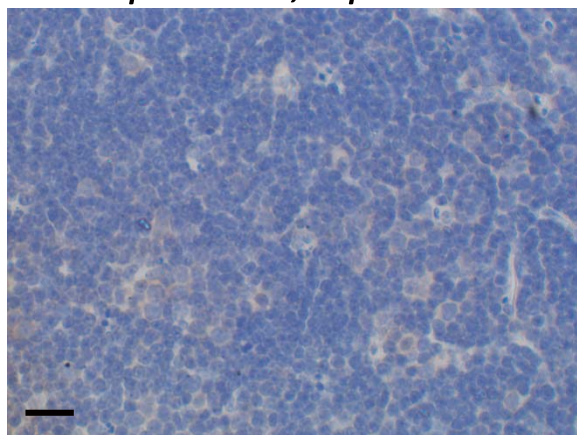


A

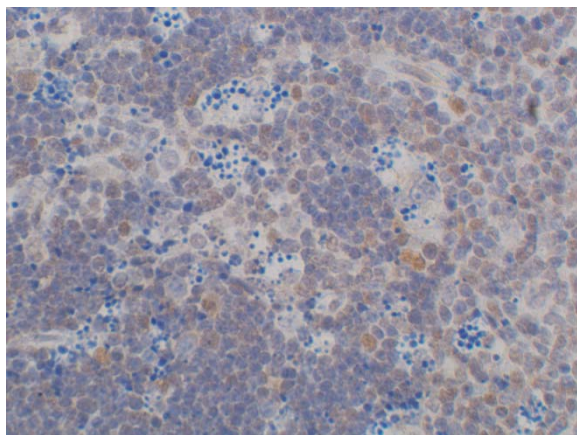
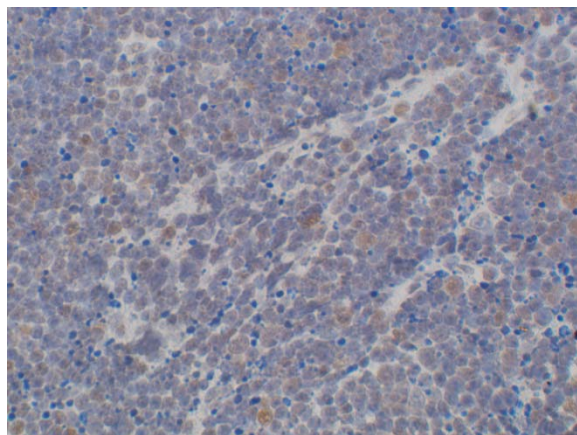
Thymus + 8 Gy

*Rps27l^{+/+};Trp53^{+/-}**Rps27l^{-/-};Trp53^{+/-}*

0 h



4 h

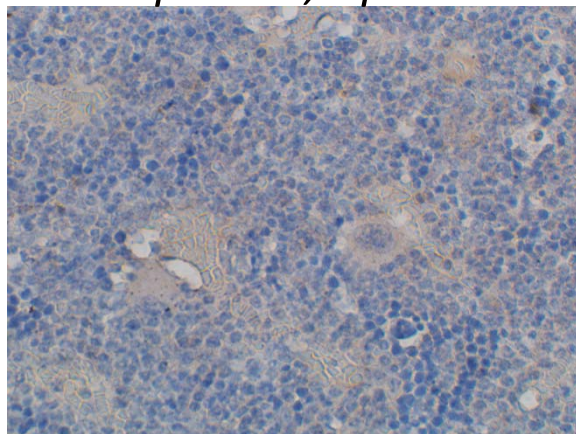
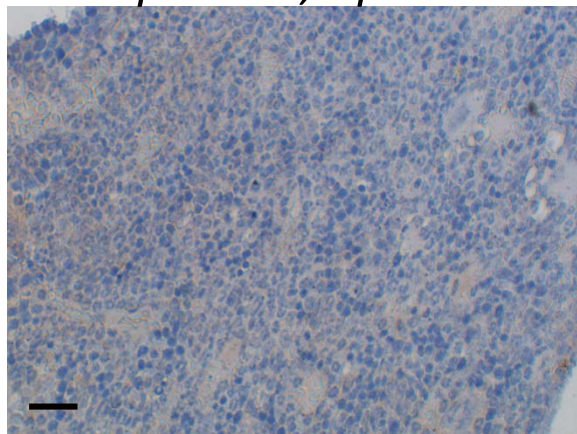


B

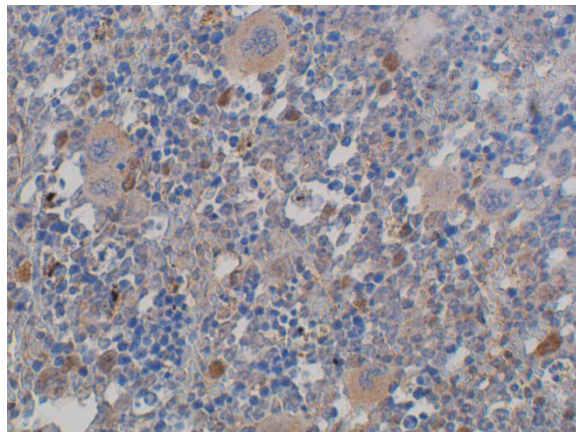
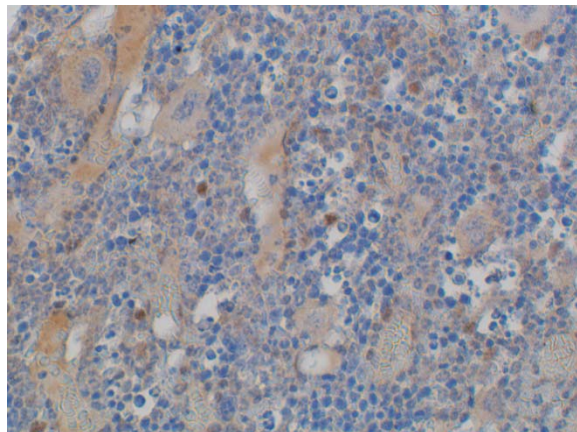
Bone Marrow + 8 Gy

*Rps27l^{+/+};Trp53^{+/-}**Rps27l^{-/-};Trp53^{+/-}*

0 h



4 h



24 h

