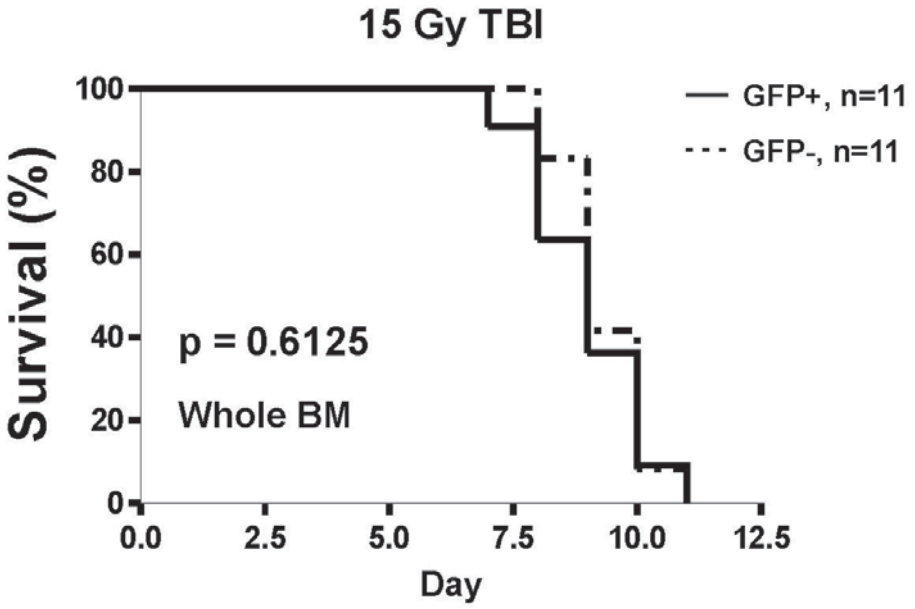
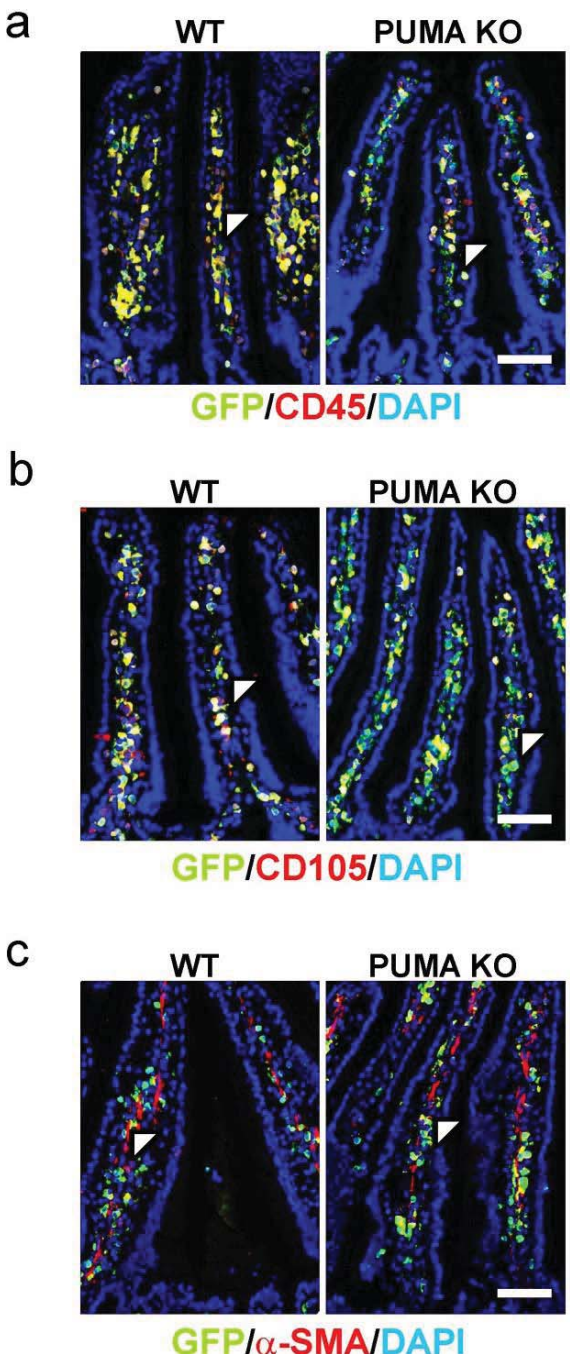
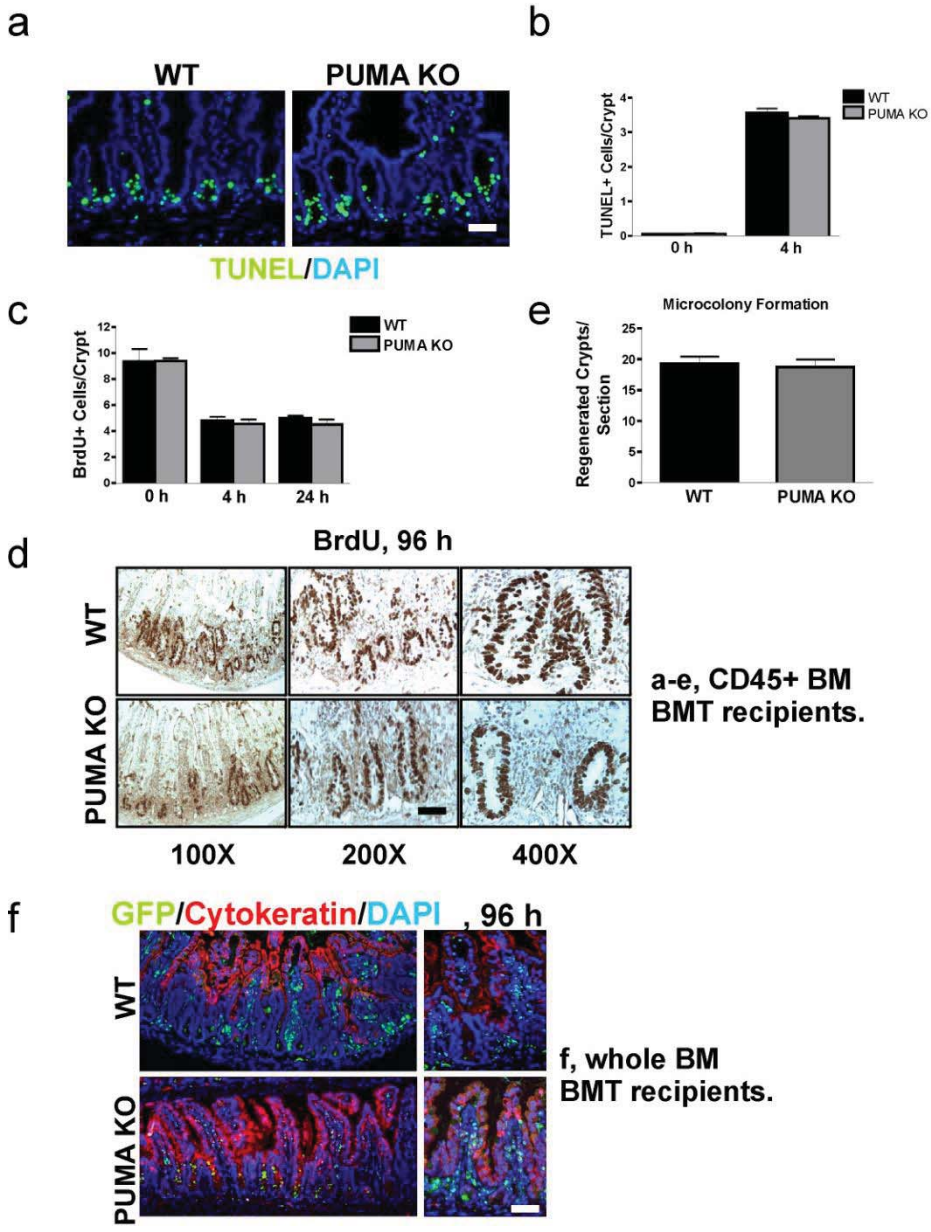


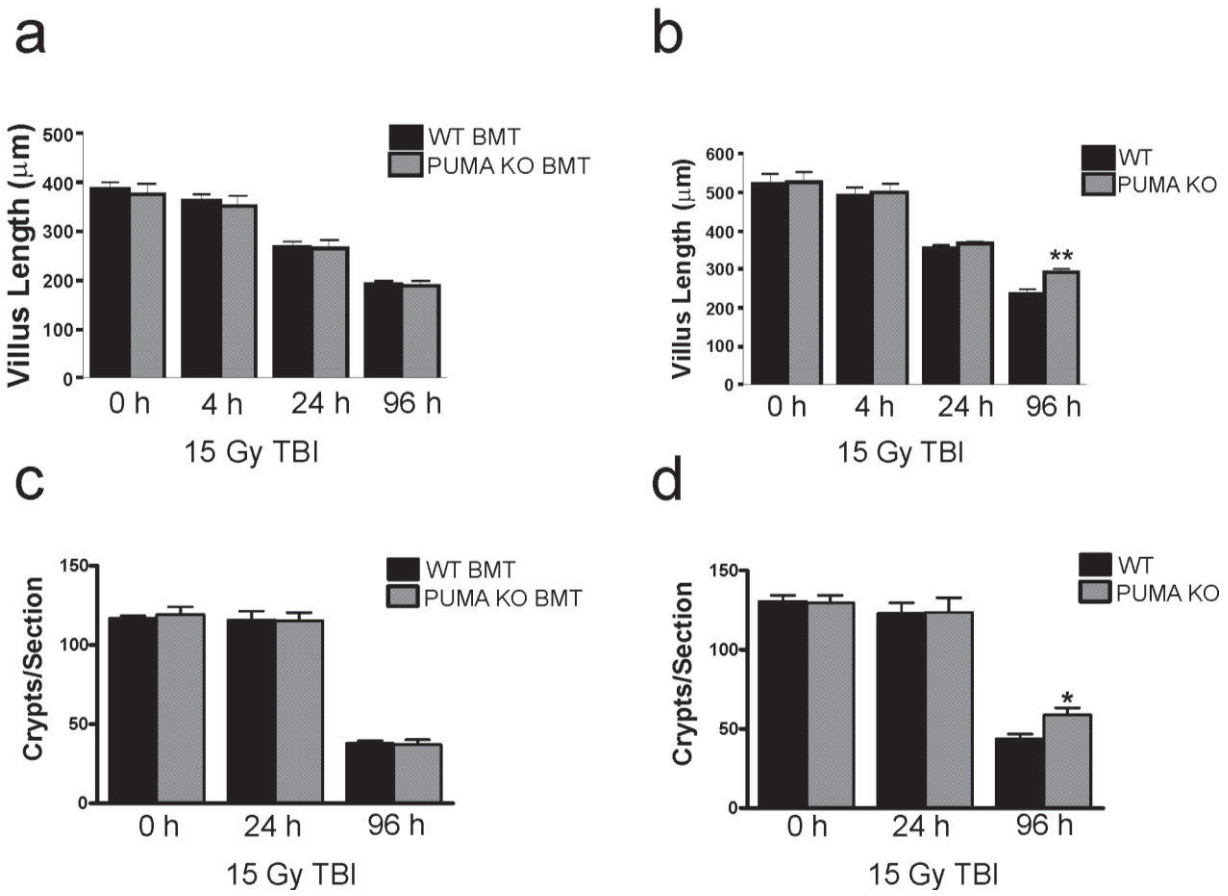
Supplementary Figure 1. Survival of GFP+ and GFP⁻ bone marrow transplanted WT recipients. Kaplan-Meier survival curve of GFP transgenic or non-transgenic litter mate (WT) BMT WT recipient mice after 15 Gy TBI. [log-rank test]



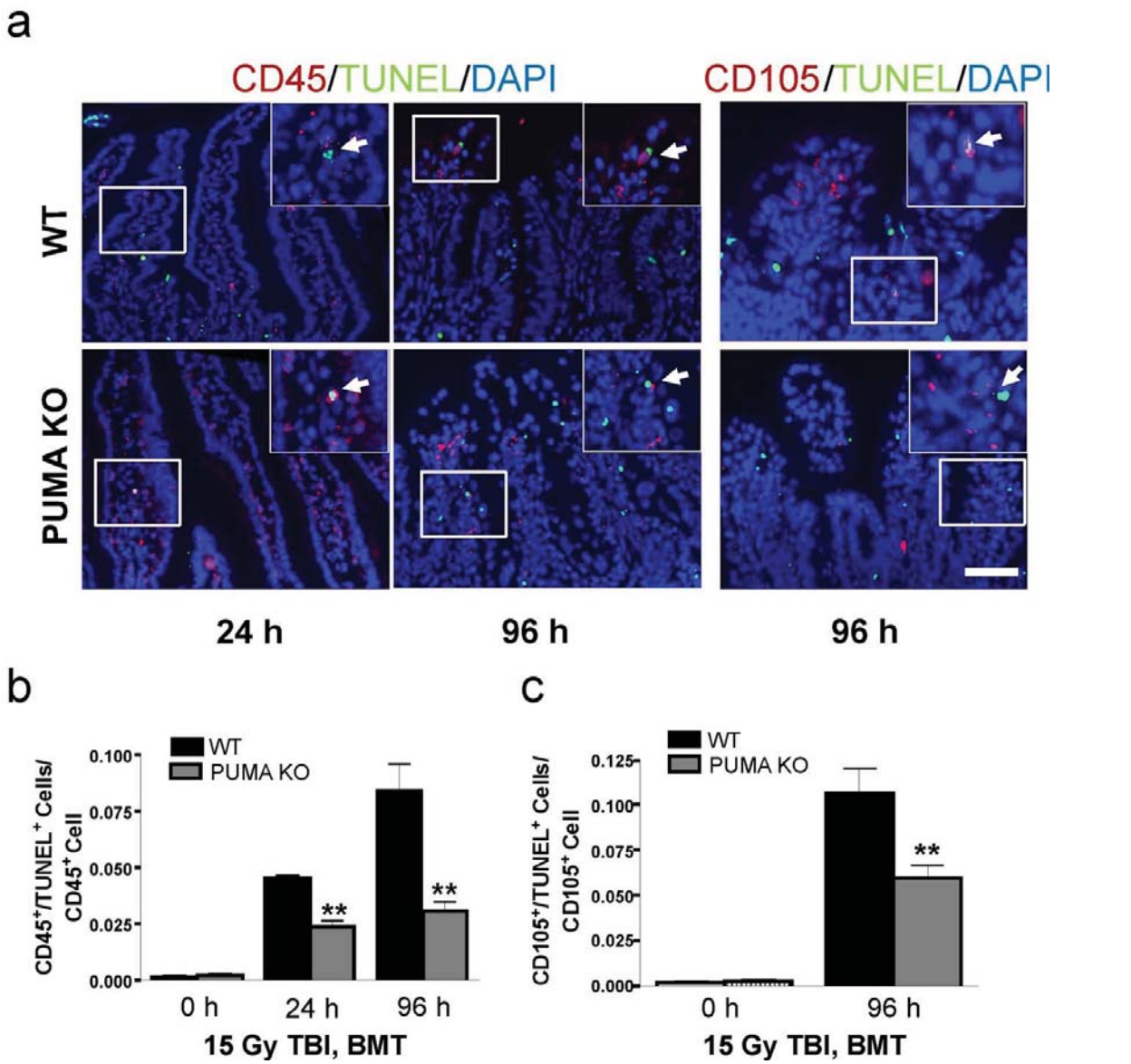
Supplementary Figure 2. Transplanted CD45+ bone-marrow contributions to intestinal cell lineages. WT and *PUMA* KO CD45+ (GFP+) BMT recipients. **(a)** GFP/CD45 double IF identifying the proportion of transplanted $CD45^+$ cells in intestinal villi. Bar, 50 μm. **(b)** GFP/CD105 double IF identifying the proportion of transplanted $CD105^+$ cells in intestinal villi. Bar, 50 μm. **(c)** GFP/α-SMA double IF identifying the proportion of transplanted α-SMA^+ cells in intestinal villi. (200X original magnification). Bar, 50 μm. Arrowheads indicate GFP/lineage double positive cells. Images are representative of n=3 mice per group.



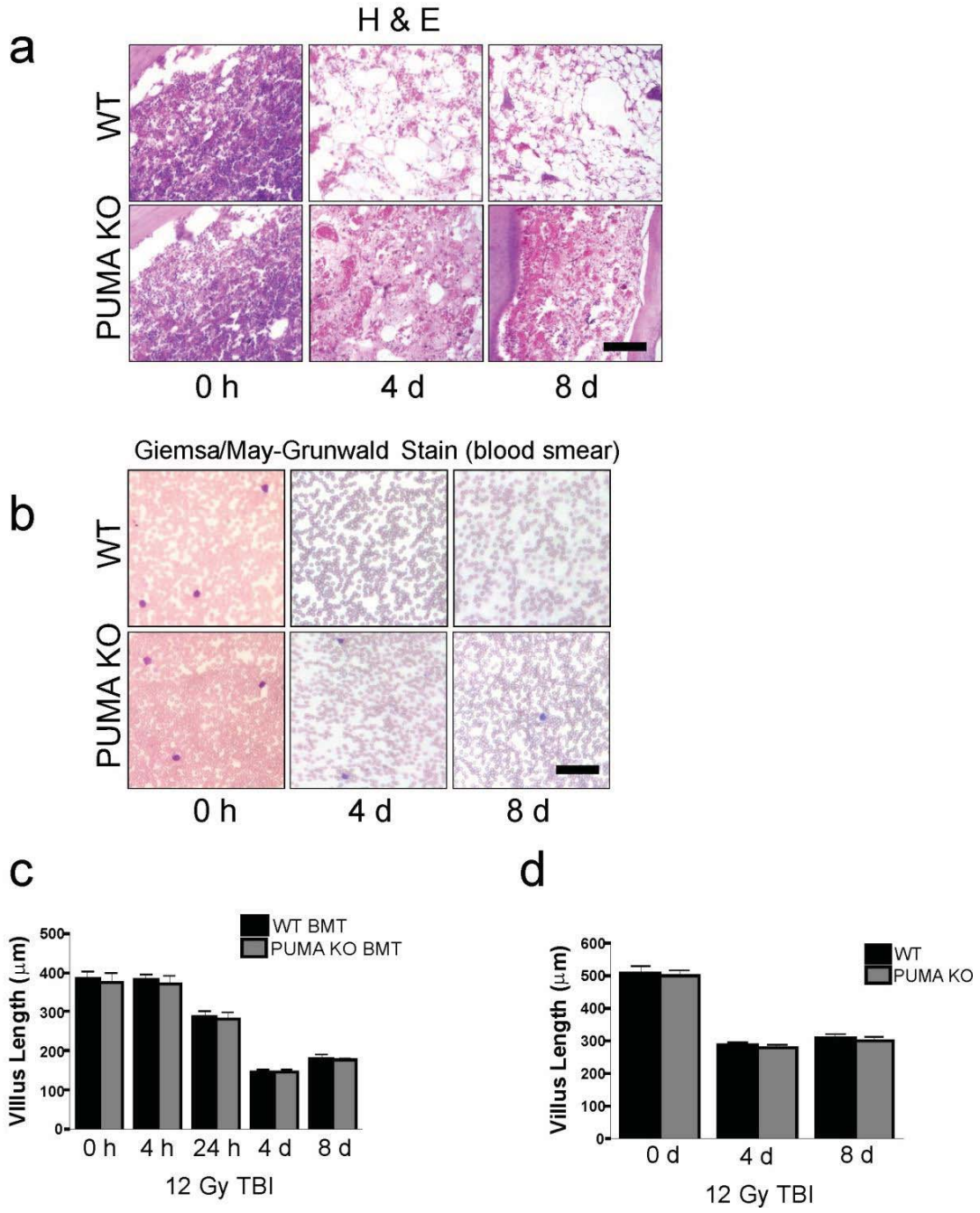
Supplementary Figure 3. Apoptosis-resistant bone marrow does not change intestinal epithelial response to ionizing radiation. **(a-e)** WT and *PUMA* KO CD45+ BMT recipients were exposed to 15 Gy TBI. **(a)** TUNEL IF in the intestine crypts at 4 hr. (200X magnification). Bar, 50 μm. **(b)** Quantitation of TUNEL-positive cells in the intestinal crypts at 0 and 4 h. **(c)** Quantitation of BrdU-positive cells in intestinal crypts at 0, 4 and 24 h. **(d)** BrdU staining labeled regenerated crypts at 96 h. Bar, 50 μm. **(e)** Quantitation of regenerated crypts in **d**. **(f)** BM (whole marrow) donor-derived GFP+ cells in the intestine at 96 h after 15 Gy TBI. GFP/Cytokeratin double IF (left; 100X magnification. Right; 200X magnification. Bar, 50 μm. Images are representative of n=3 mice per group. Values in **b,c** and **e** represent mean + s.d. for n=3 mice per group.



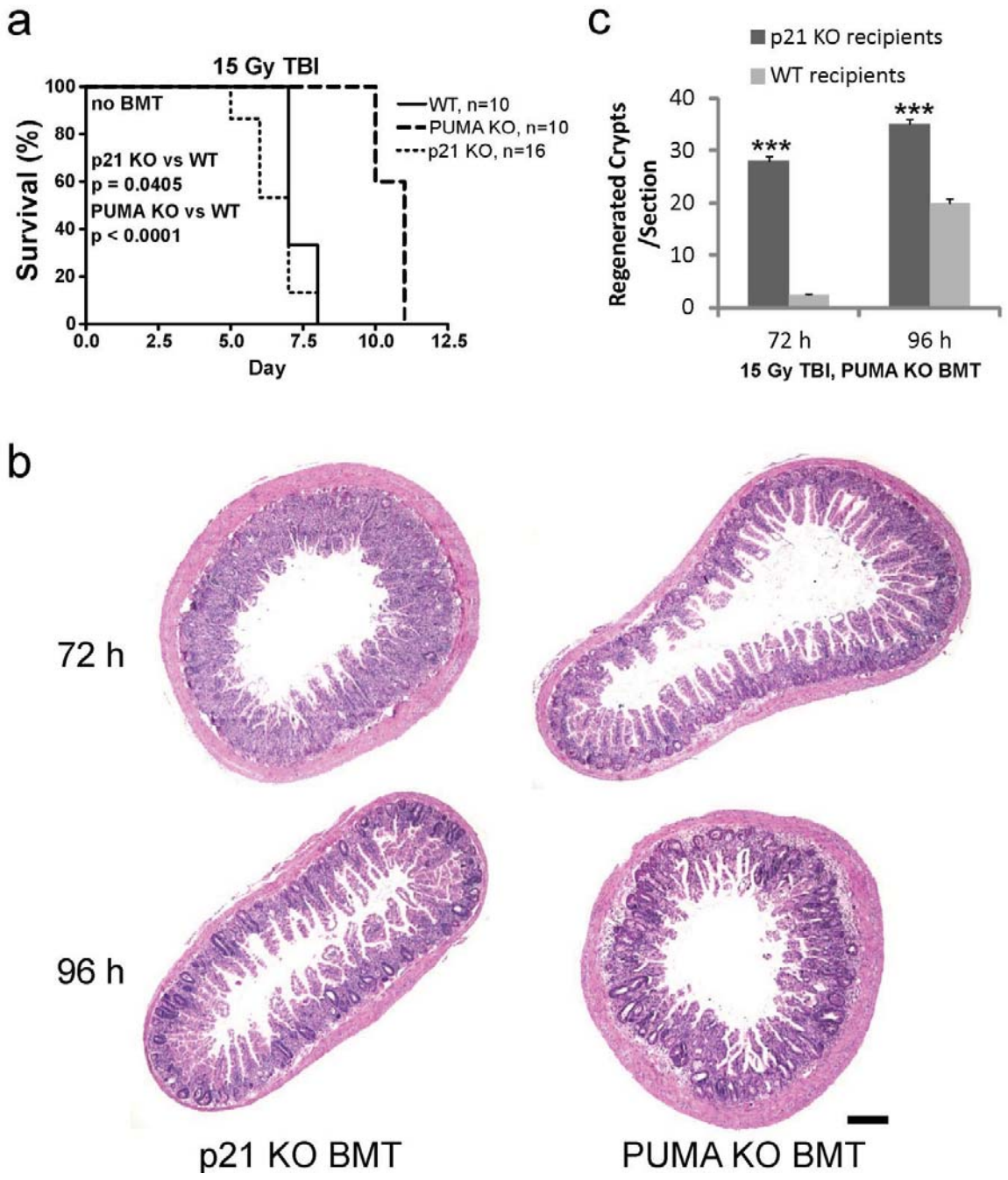
Supplementary Figure 4. Villus height and crypt numbers in BMT and non-BMT mice after 15 Gy TBI. **(a)** Average villus height for BMT mice at the indicated times after 15 Gy TBI. A minimum of 30 villi were measured from each mouse. **(b)** Average villus height for non-BMT mice at the indicated times after 15 Gy TBI. **(c)** Quantitation of total crypts per cross section of BMT mice after 15 Gy TBI. **(d)** Quantitation of total crypts per cross section of non-BMT mice after 15 Gy TBI. Values represent mean + s.e.m. for n =2 mice per group. *P < 0.05, **P < 0.01 [Student's t-test, two-tailed].



Supplementary Figure 5. ***PUMA*** **KO BMT protects the stroma against 15 Gy TBI**. WT or *PUMA* KO BMT recipients were exposed to 15 Gy TBI. **(a)** CD45/TUNEL double IF (left) and CD105/TUNEL double IF (right) at the indicated times after 15 Gy TBI. Arrows indicated examples of double positive cells. Bar, 50 μm. Images are representative of n=3 mice per group. Quantitation of **(b)** CD45/TUNEL double positive cells over CD45 positive cells, and **(c)** CD105/TUNEL double positive cells over CD105 positive cells after 15 Gy TBI. Values in **b** and **c** represent mean + s.d. for n=3 mice per group. **P < 0.01 [Student's t-test, two-tailed].



Supplementary Figure 6. ***PUMA*** **KO BMT confers BM but not GI protection after 12 Gy TBI.** **(a)** H & E staining of bone marrow from WT and *PUMA* KO BMT mice at the indicated times after 12 Gy TBI. Bar, 200 μm. **(b)** Giemsa/May-Grunwald staining of peripheral blood smears from WT and *PUMA* KO BMT mice at the indicated times after 12 Gy TBI. Bar, 100 μm. **(c)** Average villus height for BMT mice at the indicated times after 12 Gy TBI. **(d)** Average villus height for non-BMT WT and *PUMA* KO mice after 12 Gy TBI. Images are representative of n=2 mice per group. Values in **c** and **d** represent means + s.e.m. for n=2 mice per group.



Supplementary Figure 7. ***PUMA*** **KO bone marrow does not affect crypt regeneration in** ***p21*** **KO recipients.** **(a)** Kaplan-Meier survival curve of mice with indicated genotypes without BMT after 15 Gy TBI. [log-rank test] **(b)** H & E. staining of *p21* KO BMT mice 72 and 96 h after 15 Gy TBI. (40X magnification). Bar, 200 μm. Images are representative of n=3 mice per group. **(c)** Quantitation of regenerated crypts of *PUMA* KO BMT *p21* KO or WT recipients at 72 and 96 h after 15 Gy TBI. Values represent means + s.d for n=3 mice per group. ***P < 0.001, *p21* KO *vs*. WT recipients [Student's t-test, two-tailed].