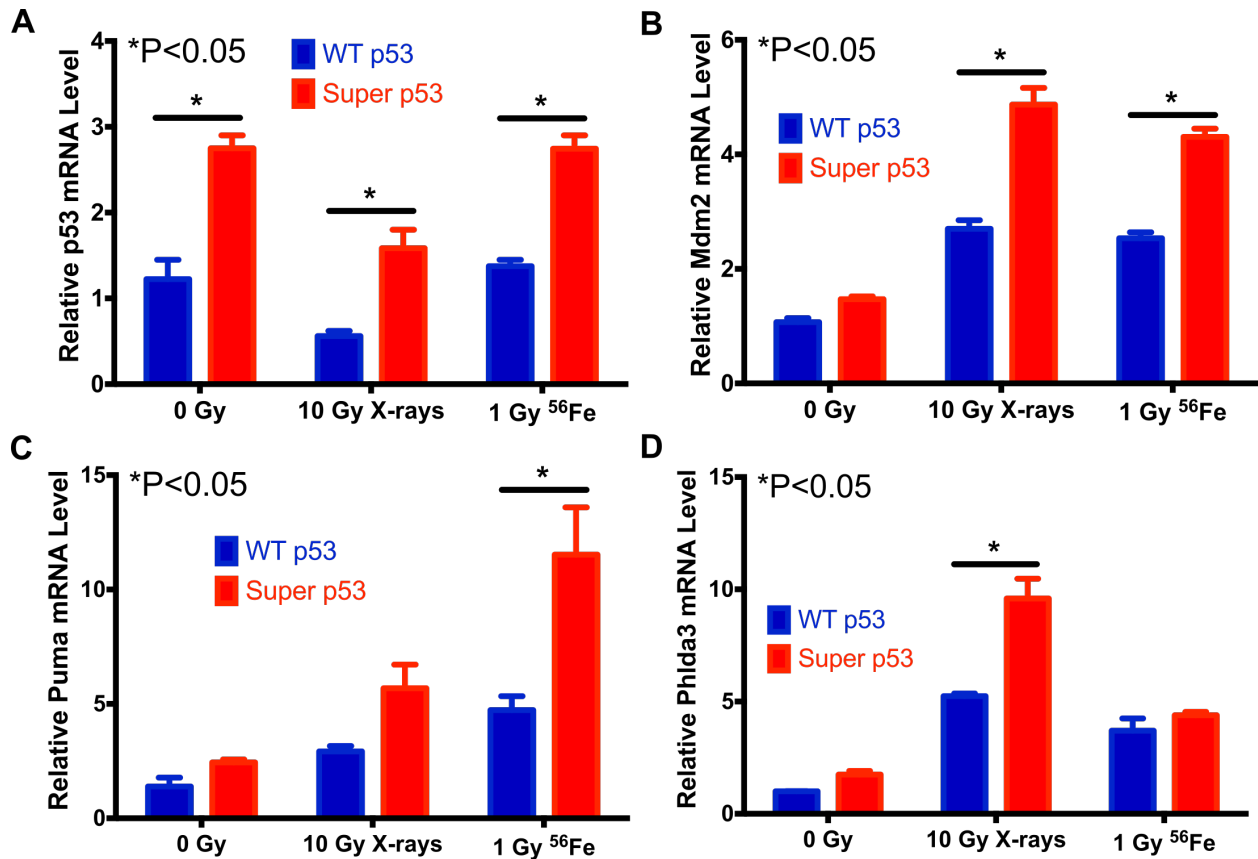
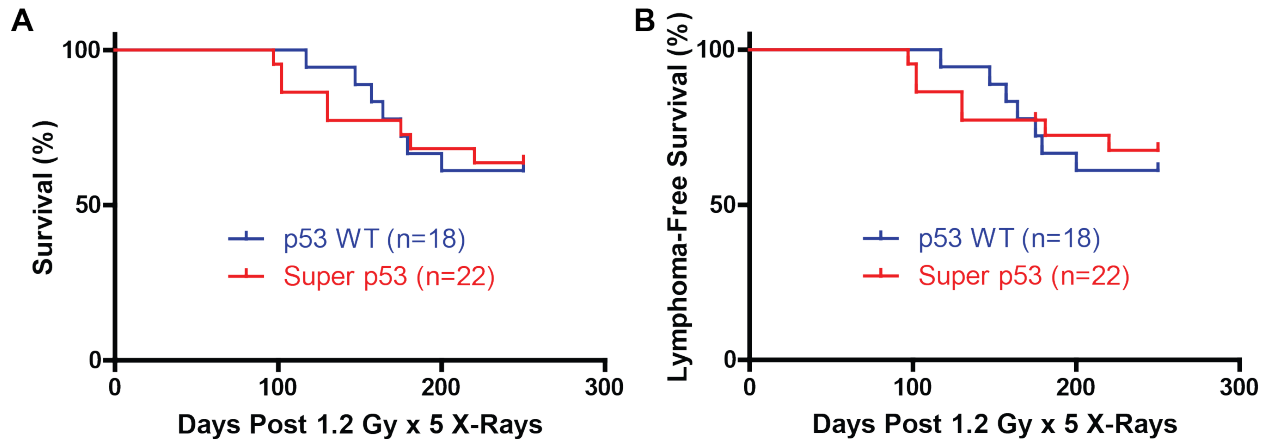


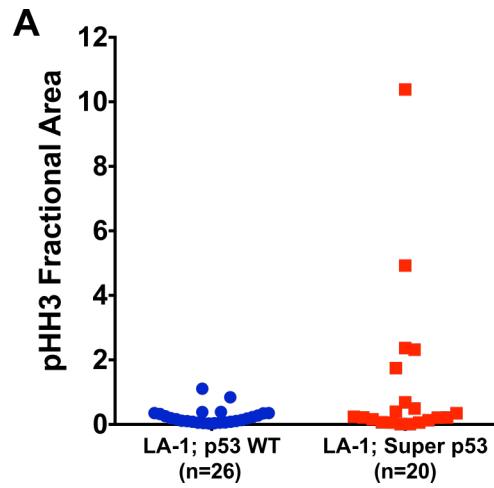
Supplementary Data



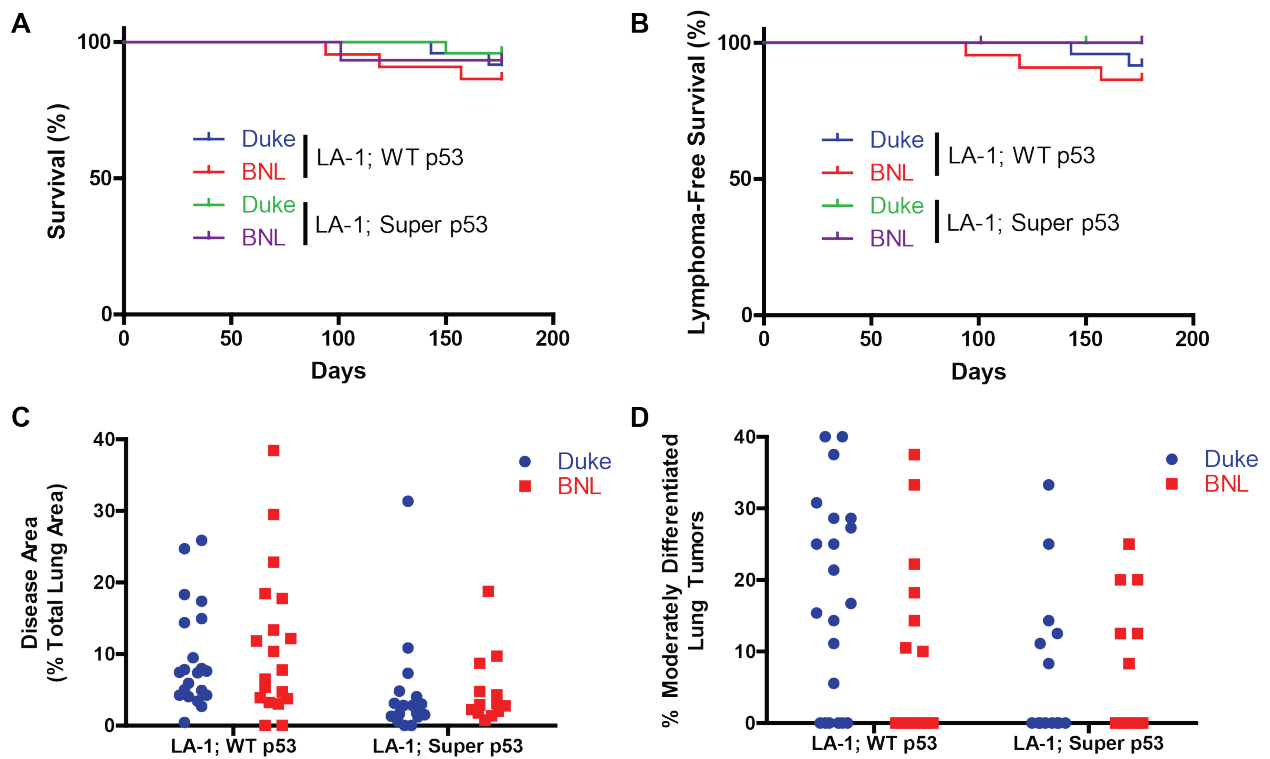
Supplementary Figure 1. *Super p53* mice have increased expression of *p53* target genes following radiation exposure. Relative mRNA levels of (A) *p53*, (B) *Mdm2*, (C) *Puma*, and (D) *Phlda3* in the lungs of *wild-type p53* and *super p53* mice measured by qPCR four hours following exposure to no irradiation, 10 Gy X-rays, or 1 Gy ⁵⁶Fe (n=2). Data represent mean plus SEM.



Supplementary Figure 2. An extra copy of *p53* does not protect mice from radiation-induced lymphomas. **(A)** Overall survival and **(B)** lymphoma-free survival in *WT p53* and *super p53* mice following exposure to five daily fractions of 1.2 Gy X-Rays. Each replicate represents one mouse.



Supplementary Figure 3. An extra copy of p53 does not affect the proportion of lung adenoma cells in mitosis. **(A)** Quantification of the mitosis marker phospho-histone H3 (pHH3) in lung tumors from *LA-1; WT p53* and *LA-1; super p53* mice. Each symbol represents one tumor.



Supplementary Figure 4. Shipping mice to Brookhaven National Laboratory (BNL) did not affect tumor development in *LA-1* mice. **(A)** Overall survival, **(B)** lymphoma-free survival (n=15-24), **(C)** lung tumor burden, and **(D)** lung tumor grade (n=13-21) in unirradiated *LA-1; WT p53* and *LA-1; super p53* mice maintained at Duke University or shipped to BNL. Each replicate represents one mouse.

Treatment	No Irradiation		1.2 Gy x 5 X-rays		0.2 Gy x 5 Fe	
Genotype	LA-1; WT p53	LA-1; Super p53	LA-1; WT p53	LA-1; Super p53	LA-1; WT p53	LA-1; Super p53
Total	46	39	42	42	53	40
Age at Irradiation (Days)	66 ± 13	71 ± 17	61 ± 12	61 ± 13	64 ± 17	63 ± 19
Age at Euthanasia for Lung Tumor Analysis (Days)	248 ± 15	251 ± 16	245 ± 14	240 ± 16	248 ± 18	248 ± 19
Lymphomas	5	0	20	18	11	5
Papillomas	0	1	0	0	1	1
Pneumonia	0	0	0	0	1	0
Rectal Prolapse	0	0	0	0	0	1

Supplementary Table 1. Characteristics of experimental mice.

Treatment	No Irradiation		1.2 Gy x 5 X-rays		0.2 Gy x 5 Fe	
Genotype	LA-1; WT p53	LA-1; Super p53	LA-1; WT p53	LA-1; Super p53	LA-1; WT p53	LA-1; Super p53
Lymphomas	0/1	N/A	0/4	0/4	0/4	0/4
Lung Tumors	0/5	0/5	0/4	0/5	0/4	0/5

Supplementary Table 2. *p53* mutations in tumors.

Number of tumors with *p53* mutations displayed over number of tumors sequenced for each genotype, treatment, and tumor type. No mutations were observed. N/A = no tumors were available for sequencing.