

Figure S1. Experimental design and set-up. A) Timeline schematic of experiments performed. B) Representational proton port film of the area irradiated.

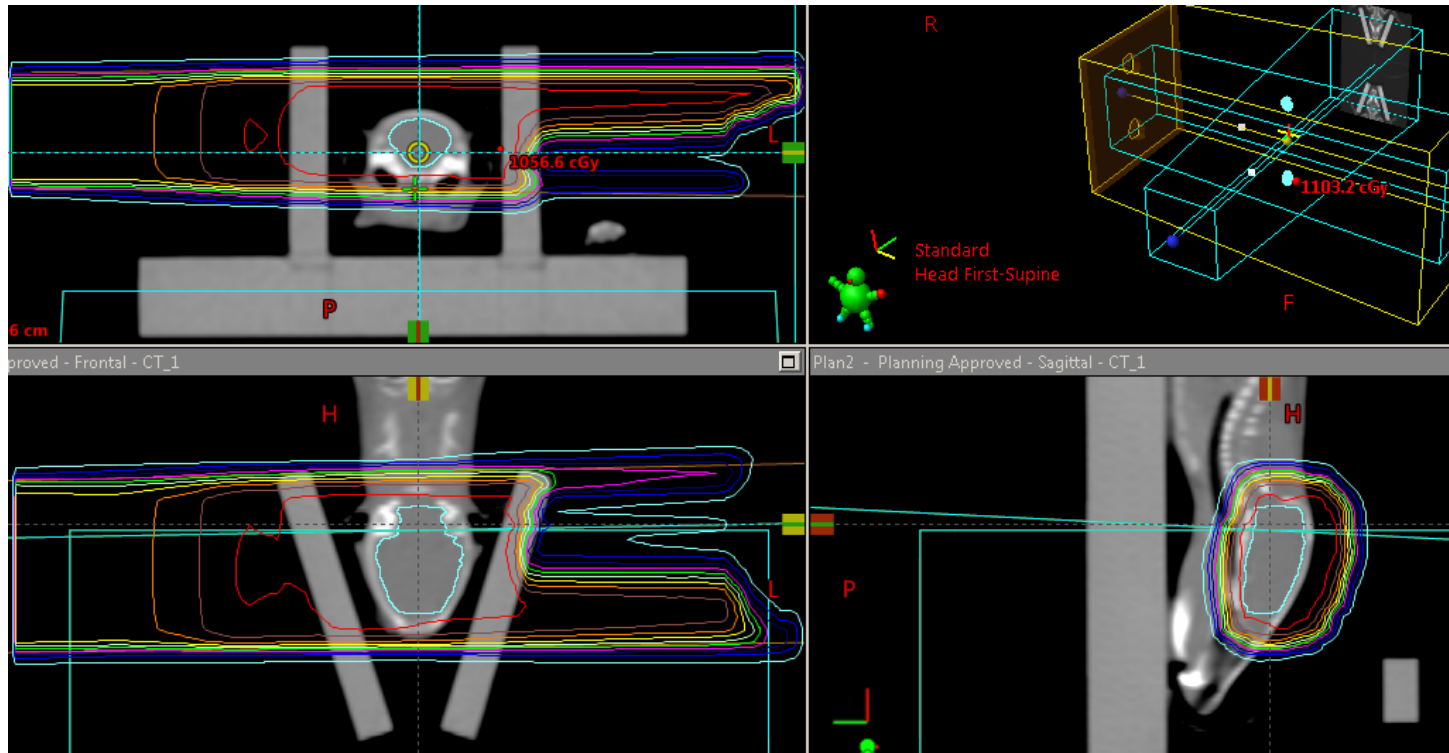


Figure S2. In order to achieve a uniform dose within the rat's brain, the proton beam range was selected in such a way that beam overshoots by at least 0.7 cm thus minimizing any end of range RBE enhancement effect. The rat's right brain side is located in the proximal side of the SOBP and the left side is located on the distal side. The rat's brain largest extend was measured to be 1.2cm. Thus, the right entrance side of the brain was in a depth of 0.4 proximal to the center of the SOBP and the exit point of the brain's left side was 0.8 cm distal to the center of the SOBP.

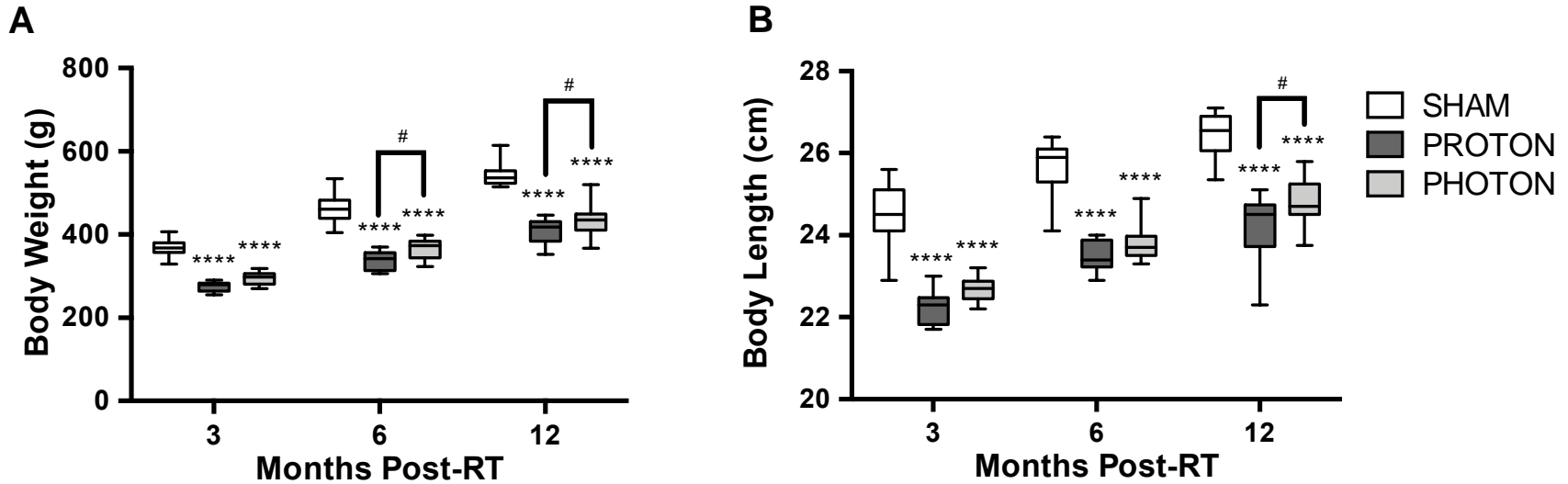


Figure S3. A radiation-induced phenotype included significant reductions in body weight and length compared to sham animals. In addition, proton irradiated animals were significantly lighter than photon irradiated animals at 6 and 12 months post-irradiation and shorter in stature at 12 months. (Mean±SEM are shown, N=15-12/group. ****P<0.0001 compared to sham, # P<0.05)

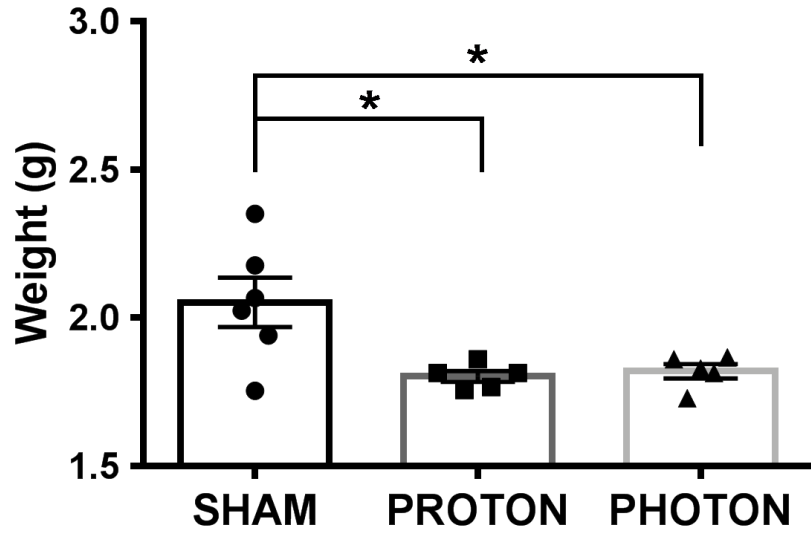
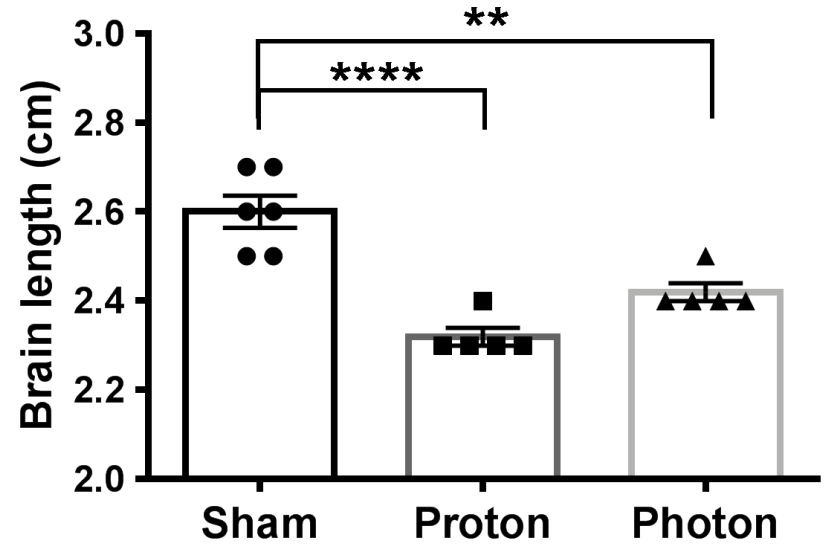
A**B**

Figure S4. Brain growth was stunted at 12 months post-CRT. Irradiated brains were A) lighter and B) shorter compared to Sham animals. (Mean \pm SEM are shown, N=5-6/group. *P<0.05, **P<0.01, ****P<0.0001)

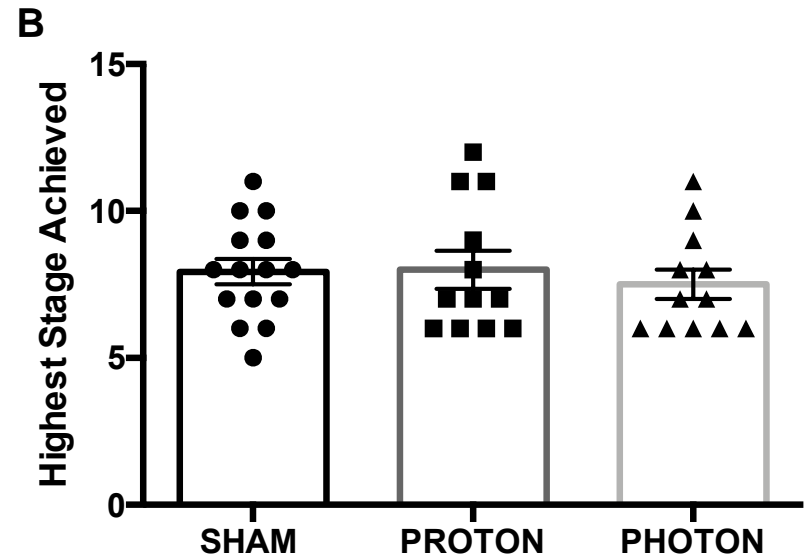
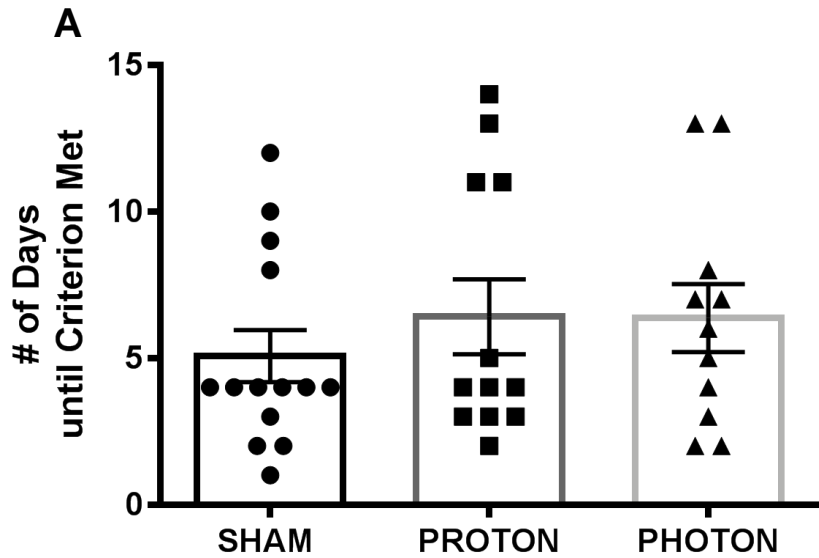


Figure S5. 5-Choice serial reaction timed task baseline training results A) Irradiated animals spent more time in stage 5 than sham animals and B) highest stage achieved among groups (Mean±SEM are shown, N=15-12/group)

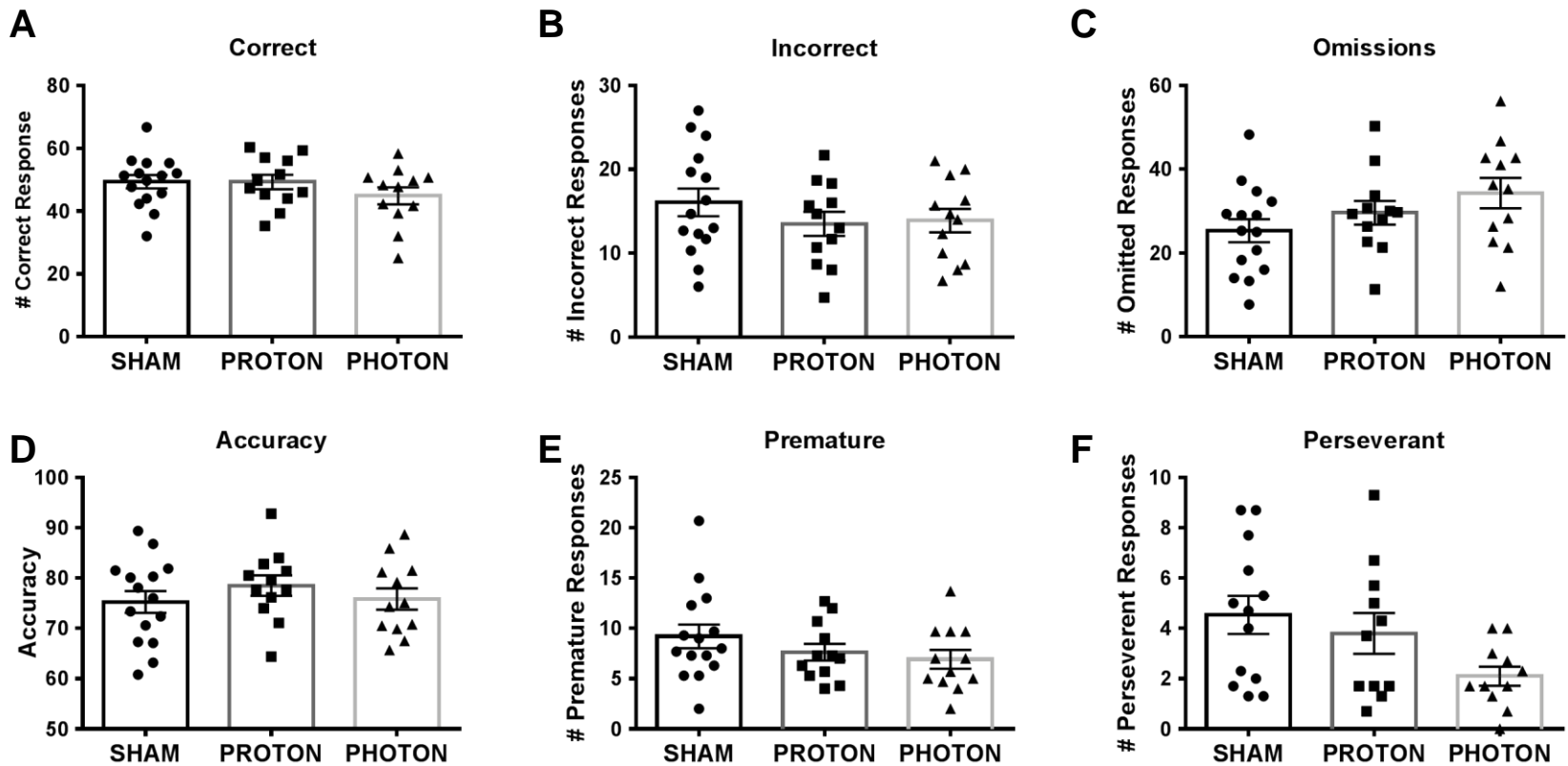


Figure S6. Six months 5-choice serial reaction timed task testing results from stage 7. Several metrics were measured including A) correct responses, B) incorrect responses, C) Omissions, D) Accuracy, E) Premature responses and F) Perseverant responses. Trends were observed towards irradiated animals having for perseverant behavior

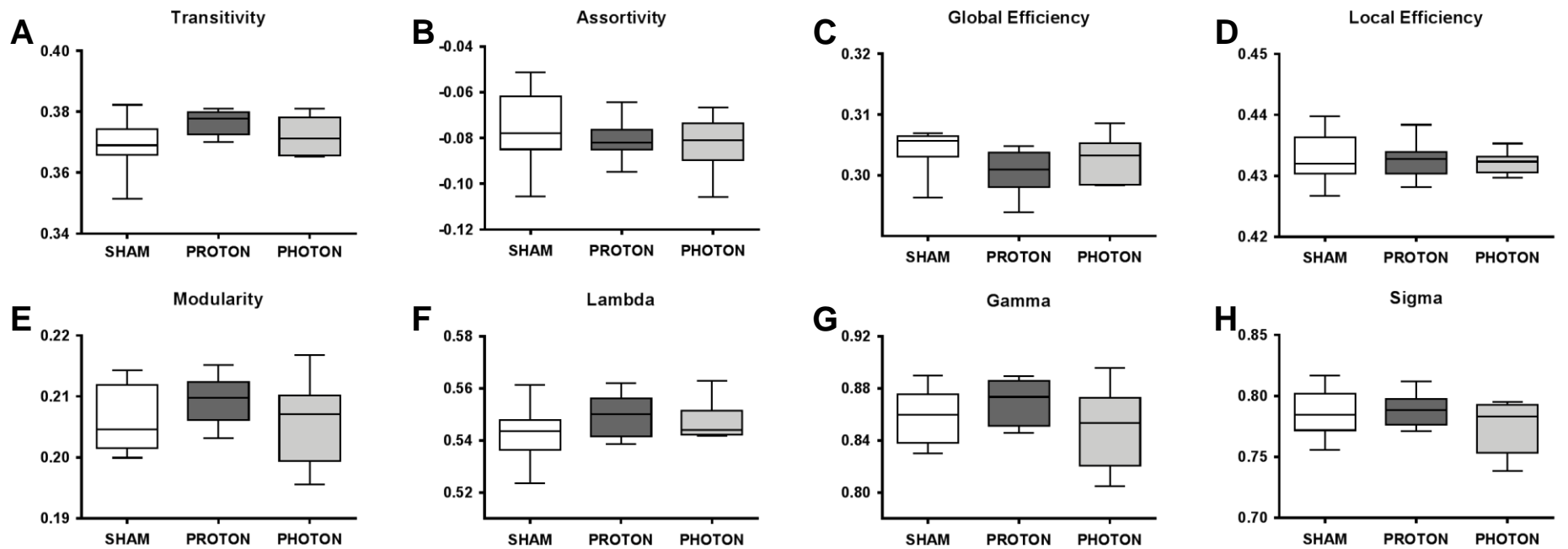


Figure S7. Conetomic changes at 12 months post-CRT. Trends towards differences in global conetomic measures between irradiated and sham animals.