

Suppl. Table 1. Tumor frequency and calculated normalized tumor frequency in intestine

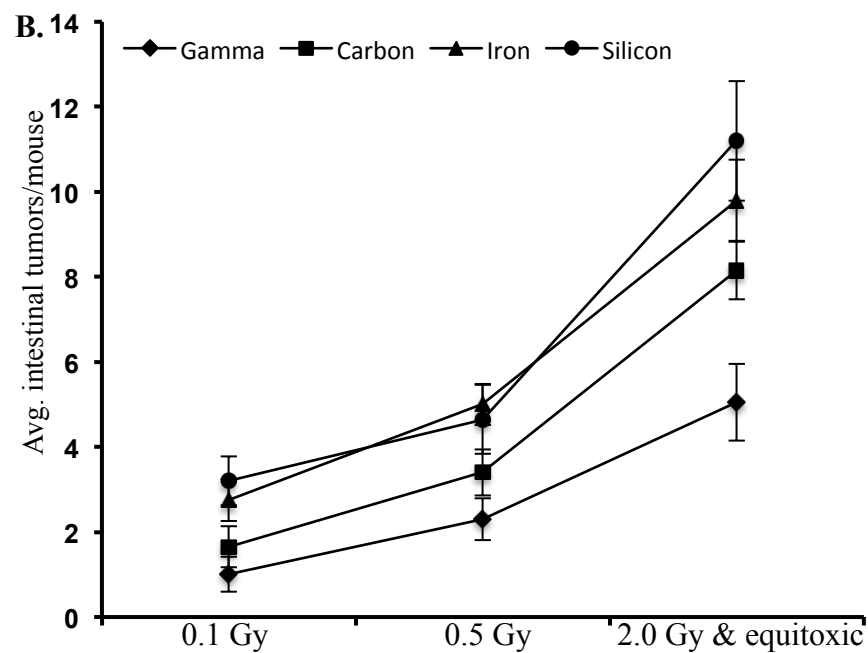
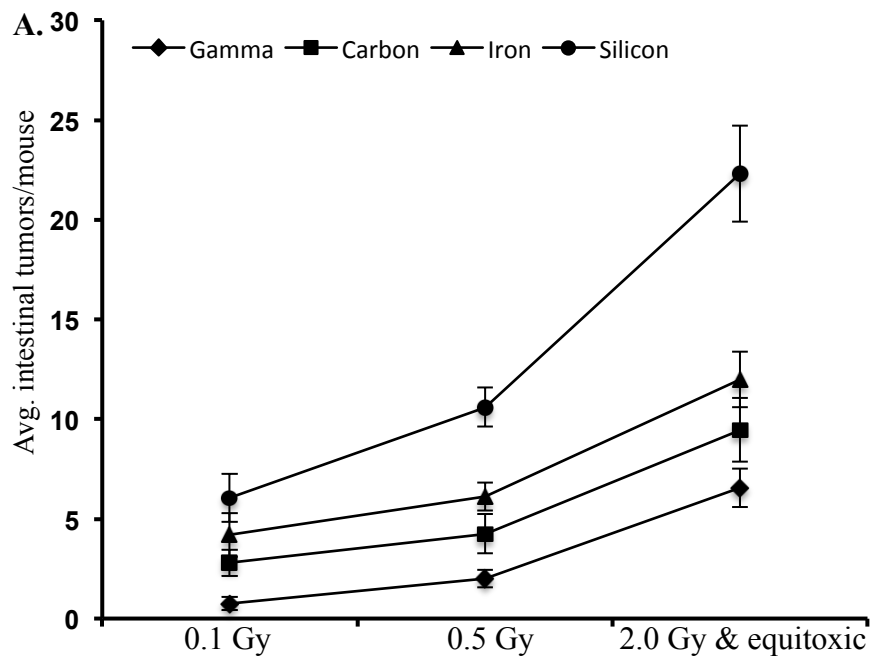
Radiation	Dose (Gy)	Intestinal tumors (Mean \pm SEM)		Normalized tumor frequency (Radiation – Spontaneous tumor)	
		Male	Female	Male	Female
γ rays	0	3.40 \pm 0.46	2.85 \pm 0.30		
	0.1	4.15 \pm 0.42	3.85 \pm 0.24	0.75 \pm 0.33	1.00 \pm 0.41
	0.5	5.40 \pm 0.48	5.15 \pm 0.42	2.00 \pm 0.44	2.30 \pm 0.49
	2.0	9.95 \pm 0.92	7.90 \pm 0.81	6.55 \pm 0.97	5.05 \pm 0.90
^{12}C	0.1	6.20 \pm 0.61	4.50 \pm 0.44	2.80 \pm 0.67	1.65 \pm 0.48
	0.5	7.65 \pm 0.92	6.25 \pm 0.46	4.25 \pm 0.99	3.40 \pm 0.54
	2.0	12.85 \pm 1.56	11.00 \pm 0.61	9.45 \pm 1.60	8.15 \pm 0.68
^{56}Fe	0.1	7.60 \pm 0.90	5.60 \pm 0.41	4.20 \pm 1.10	2.75 \pm 0.50
	0.5	9.50 \pm 0.61	7.85 \pm 0.38	6.10 \pm 0.70	5.00 \pm 0.49
	1.6	15.40 \pm 1.41	12.65 \pm 0.88	12.00 \pm 1.40	9.80 \pm 0.96
^{28}Si	0.1	9.45 \pm 1.35	6.05 \pm 0.51	6.05 \pm 1.20	3.20 \pm 0.58
	0.5	14.00 \pm 0.95	7.50 \pm 0.77	10.60 \pm 0.97	4.65 \pm 0.81
	1.4	25.70 \pm 2.25	14.05 \pm 1.36	22.30 \pm 2.40	11.20 \pm 1.41

Suppl. Table 2. Tumor frequency and calculated normalized tumor frequency in colon

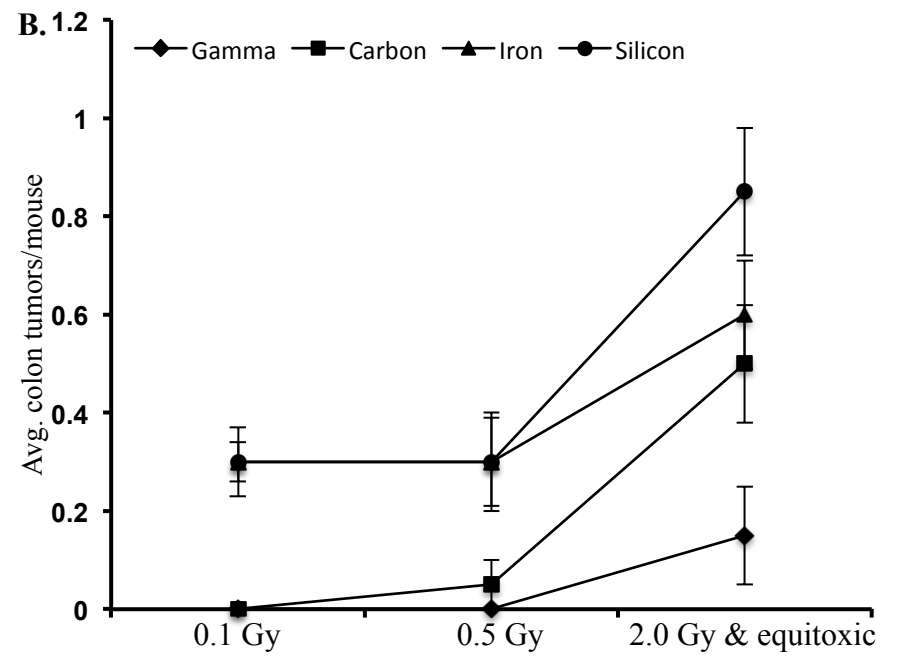
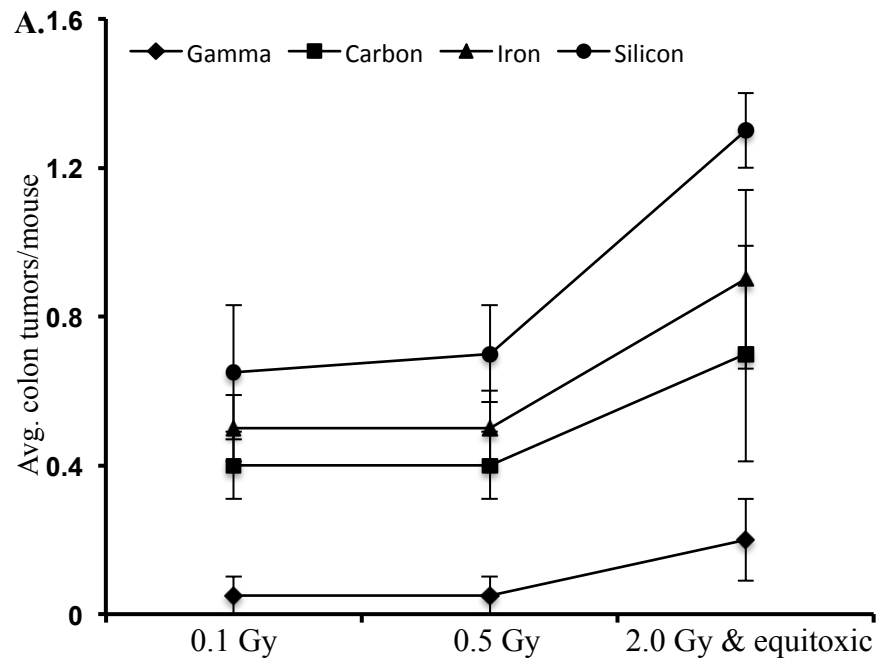
Radiation	Dose (Gy)	Colon tumors (Mean \pm SEM)		Normalized tumor frequency (Radiation – Spontaneous tumor)	
		Male	Female	Male	Female
Control	0	0	0		
γ rays	0.1	0.05 \pm 0.05	0	0.05 \pm 0.05	0
	0.5	0.05 \pm 0.05	0	0.05 \pm 0.05	0
	2.0	0.20 \pm 0.11	0.15 \pm 0.10	0.20 \pm 0.11	0.15 \pm 0.10
^{12}C	0.1	0.40 \pm 0.09	0	0.40 \pm 0.09	0
	0.5	0.40 \pm 0.09	0.05 \pm 0.05	0.40 \pm 0.09	0.05 \pm 0.05
	2.0	0.70 \pm 0.29	0.50 \pm 0.12	0.70 \pm 0.29	0.50 \pm 0.12
^{56}Fe	0.1	0.50 \pm 0.09	0.30 \pm 0.07	0.50 \pm 0.09	0.30 \pm 0.07
	0.5	0.50 \pm 0.10	0.30 \pm 0.09	0.50 \pm 0.10	0.30 \pm 0.09
	1.6	0.90 \pm 0.24	0.60 \pm 0.11	0.90 \pm 0.24	0.60 \pm 0.11
^{28}Si	0.1	0.65 \pm 0.18	0.30 \pm 0.04	0.65 \pm 0.18	0.30 \pm 0.04
	0.5	0.70 \pm 0.13	0.30 \pm 0.10	0.70 \pm 0.13	0.30 \pm 0.10
	1.4	1.30 \pm 0.10	0.85 \pm 0.13	1.30 \pm 0.10	0.85 \pm 0.13

Suppl. Table 3. Calculated RBE values for intestinal and colon tumorigenesis relative to γ radiation

Radiation	Dose (Gy)	Intestinal tumorigenesis RBE		Colon tumorigenesis RBE	
		Male	Female	Male	Female
^{12}C	0.1	3.73	1.65	8.00	-
	0.5	2.12	1.47	8.00	-
	2.0	1.44	1.61	3.50	3.33
^{56}Fe	0.1	5.60	2.75	10.00	-
	0.5	3.05	2.17	10.00	-
	1.6	2.29	2.42	5.62	5.00
^{28}Si	0.1	8.06	3.20	13.00	-
	0.5	5.30	2.02	14.00	-
	1.4	4.86	3.16	9.28	8.09



Supplementary Figure 1. Dose response of γ and heavy ion radiation-induced intestinal tumorigenesis in A) male and B) female mice.



Supplementary Figure 2. Dose response of γ and heavy ion radiation-induced colon tumorigenesis in A) male and B) female mice.