

**Table S1**Normalized abundance of compounds detected by GC-TOF-MS global profiling of NHP biofluids after 4 Gy  $\gamma$  radiation exposure.

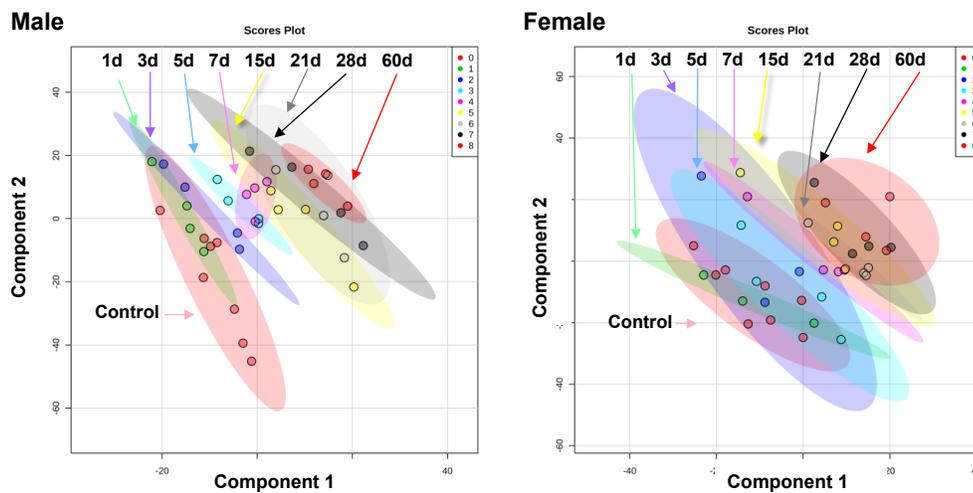
	<b>Metabolite name</b>	<b>Pre</b>	<b>1 d</b>	<b>3 d</b>	<b>5 d</b>	<b>7 d</b>	<b>15 d</b>	<b>21 d</b>	<b>28 d</b>	<b>60 d</b>
Urine	Allantoic acid	0.14 $\pm$ 0.05	0.10 $\pm$ 0.04	0.12 $\pm$ 0.07	0.02 $\pm$ 0.01	0.00 $\pm$ 0.00	0.01 $\pm$ 0.01	0.02 $\pm$ 0.02	0.00 $\pm$ 0.00	0.02 $\pm$ 0.02
	5-Hydroxyindoleacetic acid	0.01 $\pm$ 0.00	0.02 $\pm$ 0.01	0.01 $\pm$ 0.00	0.00 $\pm$ 0.00	0.00 $\pm$ 0.00	0.02 $\pm$ 0.01	0.02 $\pm$ 0.01	0.00 $\pm$ 0.00	0.04 $\pm$ 0.01
Serum	Oleic acid	0.23 $\pm$ 0.09	0.00 $\pm$ 0.00	0.59 $\pm$ 0.19	1.25 $\pm$ 0.25	1.06 $\pm$ 0.33	0.81 $\pm$ 0.13	0.92 $\pm$ 0.13	0.69 $\pm$ 0.11	0.69 $\pm$ 0.03
	Inosine	1.31 $\pm$ 0.32	0.96 $\pm$ 0.22	1.40 $\pm$ 0.46	0.96 $\pm$ 0.41	0.42 $\pm$ 0.22	0.00 $\pm$ 0.00	0.00 $\pm$ 0.00	0.36 $\pm$ 0.18	0.00 $\pm$ 0.00
	Leucine	2.20 $\pm$ 0.20	2.70 $\pm$ 0.46	4.97 $\pm$ 0.51	3.57 $\pm$ 0.44	3.43 $\pm$ 0.63	2.73 $\pm$ 0.36	3.86 $\pm$ 0.61	2.32 $\pm$ 0.40	3.09 $\pm$ 0.64
	Isoleucine	1.33 $\pm$ 0.09	1.68 $\pm$ 0.20	2.51 $\pm$ 0.17	1.78 $\pm$ 0.16	1.80 $\pm$ 0.24	1.57 $\pm$ 0.15	1.85 $\pm$ 0.27	1.44 $\pm$ 0.21	1.67 $\pm$ 0.32
	Valine	0.23 $\pm$ 0.09	0.00 $\pm$ 0.00	0.59 $\pm$ 0.19	1.25 $\pm$ 0.25	1.06 $\pm$ 0.33	0.81 $\pm$ 0.13	0.92 $\pm$ 0.13	0.69 $\pm$ 0.11	0.69 $\pm$ 0.03
	Serine	4.57 $\pm$ 0.41	4.69 $\pm$ 0.43	6.92 $\pm$ 0.53	5.32 $\pm$ 0.44	5.57 $\pm$ 0.55	4.71 $\pm$ 0.49	5.81 $\pm$ 0.46	4.20 $\pm$ 0.36	4.71 $\pm$ 0.73
	Threonine	4.92 $\pm$ 0.48	6.98 $\pm$ 0.67	7.58 $\pm$ 0.40	5.23 $\pm$ 0.54	5.71 $\pm$ 0.83	4.36 $\pm$ 0.35	4.90 $\pm$ 0.57	4.03 $\pm$ 0.41	5.66 $\pm$ 1.02
	Phenylalanine	2.45 $\pm$ 0.17	3.10 $\pm$ 0.27	3.38 $\pm$ 0.33	2.60 $\pm$ 0.24	2.83 $\pm$ 0.23	2.72 $\pm$ 0.17	3.26 $\pm$ 0.36	1.99 $\pm$ 0.18	2.51 $\pm$ 0.19

(Mean  $\pm$  SEM)

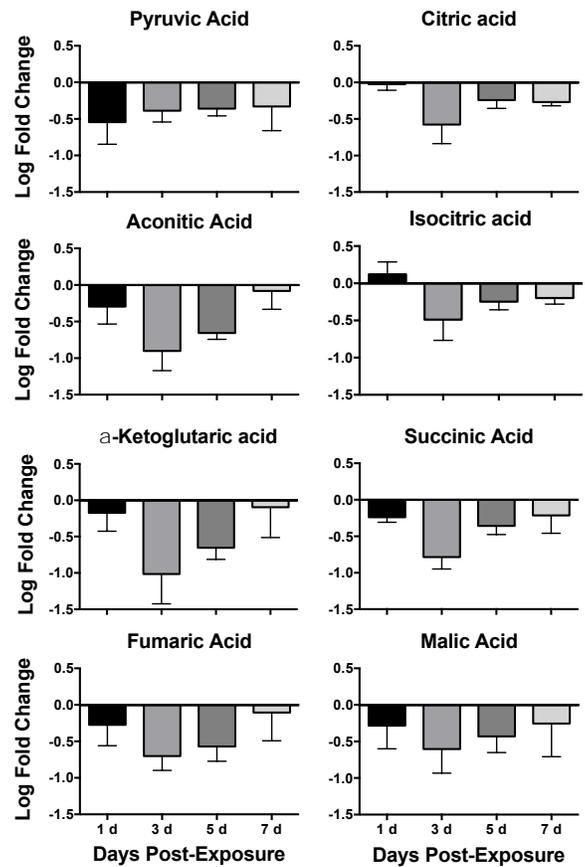
**Table S2**

Comparisons of log fold changes (logFC) of urinary TCA cycle intermediates at 7 d after a 4 Gy  $\gamma$  radiation exposure in a previous NHP cohort [25,26] and the current cohort.

<b>Biofluid</b>	<b>Metabolite</b>	<b>logFC Control vs. 7 d Previous Cohort</b>	<b>logFC Control vs. 7 d Current Cohort</b>
Urine	Citric acid	-0.35	-0.27
	Isocitric acid	-0.26	-0.20
	<i>cis</i> -Aconitic acid	-0.18	-0.08
	Malic acid	-0.11	-0.26
	Succinic acid	-0.13	-0.21
	Fumaric acid	0.05	-0.11



**Figure S1.** PLS-DA plots comparing pre-exposure to 1 – 60 d in urine for males and females after 4 Gy  $\gamma$ -ray TBI in NHPs. Similar separation is observed as grouped analysis, however, females show higher variation than males (graphs generated in MetaboAnalyst 4.0, pre-exposure samples [-8 and -3 d] were averaged for the control group).



**Figure S2.** Log fold change of urinary TCA cycle intermediates significantly perturbed after 4  $\gamma$  Gy TBI in NHPs from 1 – 7 d. (pyruvic acid [P=0.085], citric acid [P=0.027], isocitric acid [P=0.041], succinic acid [P=0.004], *cis*-aconitic acid [P=0.047], fumaric acid [P=0.131], malic acid [P=0.196],  $\alpha$ -ketoglutaric acid [P=0.033]; P < 0.05 determined by a Kruskal-Wallis test, mean  $\pm$  SEM, pre-exposure samples [-8 and -3 d] were averaged for the control group).