



Supplementary Fig. 1 (related to Fig. 2). Common differentially expressed genes (DEGs) between irradiated young male and irradiated young female mice (*left*) and irradiated old male and irradiated old female mice (*right*). Below the Venn diagrams, the total number of unique and common differentially expressed genes in both sexes is depicted and the percentage of common genes is calculated. M: male; F: female. MY-IR: male young-irradiated; FY: female young-irradiated; MO-IR: male-old-irradiated; FO-IR: female old-irradiated.

Table S1a. Immune cell death-related functions between young and old female irradiated mice.

	Young	Old
Diseases and Functions Annotation	z-score	
Cell death of immune cells	3.920	0.604
Cell death of blood cells	3.774	0.187
Cell death of B lymphocytes	2.706	0.000
Apoptosis of leukocytes	2.705	-0.449
Cell death of myeloid cells	2.537	0.000
Cell death of lymphocytes	2.370	0.000
Cell death of lymphatic system cells	2.198	0.000
Cell death of lymphoid cells	2.182	0.000
Cell death of mononuclear leukocytes	2.168	-0.033
Production of antibody	-2.346	-2.020
Quantity of immunoglobulin	-2.659	-2.204
Quantity of IgG1	-3.046	0.000
Quantity of lymphoid tissue	-2.378	-0.637
Quantity of B lymphocytes	-3.155	0.000
Quantity of IgG	-2.562	0.000

Table S1b. Immune cell death-related functions between young and old female and male irradiated mice.

	Female		Male	
	2-mo	24-mo	2-mo	21-mo
Diseases and Functions Annotation	z-score			
Cell death of immune cells	3.920	0.604	2.285	-0.276
Cell death of blood cells	3.774	0.187	2.152	-0.271
Cell death of B lymphocytes	2.706	0.000	2.973	1.646
Apoptosis of leukocytes	2.705	-0.449	2.700	0.411
Cell death of myeloid cells	2.537	0.000	0.000	0.000
Cell death of lymphocytes	2.370	0.000	3.063	1.051
Cell death of lymphatic system cells	2.198	0.000	2.774	1.131
Apoptosis of lymphoid cells	2.056	0.000	2.620	0.000
Apoptosis of mononuclear leukocytes	2.008	-0.033	2.632	0.697
Quantity of lymphoid tissue	-2.378	-0.637	-3.742	-2.028
Quantity of B lymphocytes	-3.155	0.000	-4.166	-3.120
Quantity of T lymphocytes	0.000	0.000	-2.538	-1.260
Quantity of lymphocytes	0.000	0.000	-3.206	-1.960

Table S2a. Phagocytosis-related functions between young and old female mice exposed to 4 Gy x-rays.

Diseases and Functions Annotations	Young	Old
	z-score	
Endocytosis	5.861	3.029
Cell movement of phagocytes	5.113	3.382
Engulfment of cells	5.100	3.082
Endocytosis by eukaryotic cells	5.068	2.496
Phagocytosis	5.061	2.470
Migration of phagocytes	4.519	2.150
Phagocytosis of cells	4.467	2.643
Chemotaxis of phagocytes	4.317	
Recruitment of phagocytes	4.266	3.052
Activation of phagocytes	3.958	
Phagocytosis of myeloid cells	3.678	
Engulfment of blood cells	3.595	
Engulfment of leukocytes	3.507	
Phagocytosis of blood cells	3.506	
Phagocytosis of leukocytes	3.415	
Phagocytosis of phagocytes	3.269	
Engulfment of phagocytes	2.971	
Degranulation of phagocytes	2.69	
Cell death of phagocytes	2.603	
Cellular infiltration by phagocytes	2.497	
Immune response of phagocytes	2.325	
Cell viability of phagocytes	2.259	
Apoptosis of phagocytes	2.073	
Binding of professional phagocytic cells		2.305

Table S2b. Comparison of phagocytosis-related functions between male and female mice exposed to 4 Gy x-rays.

Diseases or Functions Annotation	Young	Old
	z-score	
Phagocytosis	4.372	
Phagocytosis of cells	4.123	2.042
Engulfment of cells	3.943	
Internalization of cells	3.778	
Cell movement of phagocytes	3.712	
Endocytosis	3.519	
Endocytosis by eukaryotic cells	3.416	2.162
Cell death of phagocytes	3.163	
Phagocytosis of blood cells	3.145	
Phagocytosis of phagocytes	3.127	
Apoptosis of phagocytes	3.054	
Phagocytosis of myeloid cells	3.020	
Phagocytosis of leukocytes	3.008	
Engulfment of myeloid cells	2.925	
Migration of phagocytes	2.852	
Engulfment of blood cells	2.790	
Phagocytosis of antigen presenting cells	2.700	
Engulfment of leukocytes	2.648	
Engulfment of phagocytes	2.548	
Engulfment by macrophages	2.236	
Recruitment of phagocytes	2.112	

Table S3a. Neutrophil-associated functions among irradiated mice of different sex and age.

	female		male	
	2-mo	24-mo	2-mo	21-mo
Diseases or Functions Annotation	z-score			
Recruitment of neutrophils	3.829		2.944	
Cell movement of neutrophils	3.096	3.280		
Chemotaxis of neutrophils	4.523			
Migration of neutrophils	2.700			
Infiltration by neutrophils	2.200			
Degranulation of neutrophils	2.121			

Table S3c. Myeloid-associated functions among irradiated mice of different sex and age.

	female		male	
	2-mo	24-mo	2-mo	21-mo
Diseases or Functions Annotation	z-score			
Cell movement of myeloid cells	5.22	3.508	2.454	
Recruitment of myeloid cells	4.338			
Activation of myeloid cells	4.184		3.665	
Chemotaxis of myeloid cells	4.523	3.315		
Binding of myeloid cells	3.835	2.975	3.218	
Phagocytosis of myeloid cells	3.678			
Adhesion of myeloid cells	3.386			
Migration of myeloid cells	3.311			
Response of myeloid cells	3.155		3.089	
Cellular infiltration by myeloid cells	2.885			
Engulfment of myeloid cells			3.745	
Recruitment of myeloid cells			2.713	

Table S3b. Reactive oxygen species synthesis and metabolism-associated functions among irradiated mice of different sex and age.

	female		male	
	2-mo	24-mo	2-mo	21-mo
Diseases or Functions Annotation	z-score			
Metabolism of reactive oxygen species	5.821	2.278	3.489	
Synthesis of reactive oxygen species	5.645	2.267	3.291	
Production of reactive oxygen species	4.47	2.031	3.224	
Production of superoxide	2.684			