

SUPPLEMENTARY FIGURE LEGENDS

Supplementary Figures S1–S6: (n = 4/genotype for Serpinb3a^{-/-} and Serpinb3a^{+/+}Balb/c background strain)

Fig. S1. Percentage confluence of Serpinb3a^{-/-} and Serpinb3a^{+/+} Balb/c background bone marrow cells.

Fig. S2. Numbers of cobblestone islands for Serpinb3a^{-/-} and Serpinb3a^{+/+} Balb/c background bone marrow cells.

Fig. S3. Day 7 cell colony counts for Serpinb3a^{-/-} and Serpinb3a^{+/+} Balb/c background bone marrow cells.

Fig. S4. Day 14 cell colony counts for Serpinb3a^{-/-} and Serpinb3a^{+/+} Balb/c background bone marrow cells.

Fig. S5. Increased 10 Gy radiation-induced mRNA for transcription factors in Serpinb3a^{-/-} mouse cells.

Fig. S6. Panel A: Serpinb3a^{-/-} mouse plasma proteins over 5 days after 8 Gy TBI. Panel B: Marrow stromal cell line proteins over 24 h after 10 Gy irradiation.

SUPPLEMENTARY TABLES

Table S1. Weekly measurement of percentage confluence of adherent layer of Serpinb3a^{-/-} mouse LTBMCS.

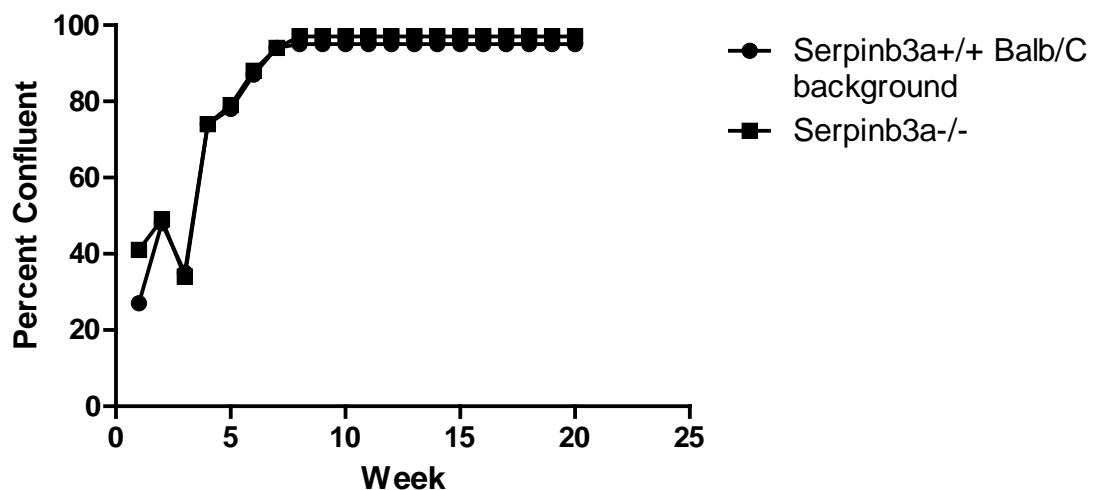
Table S2. Weekly cobblestone islands in adherent layer of Serpinb3a^{-/-} LTBMCS.

Table S3. Weekly production of nonadherent cells per flask of Serpinb3a^{-/-} mouse LTBMCS.

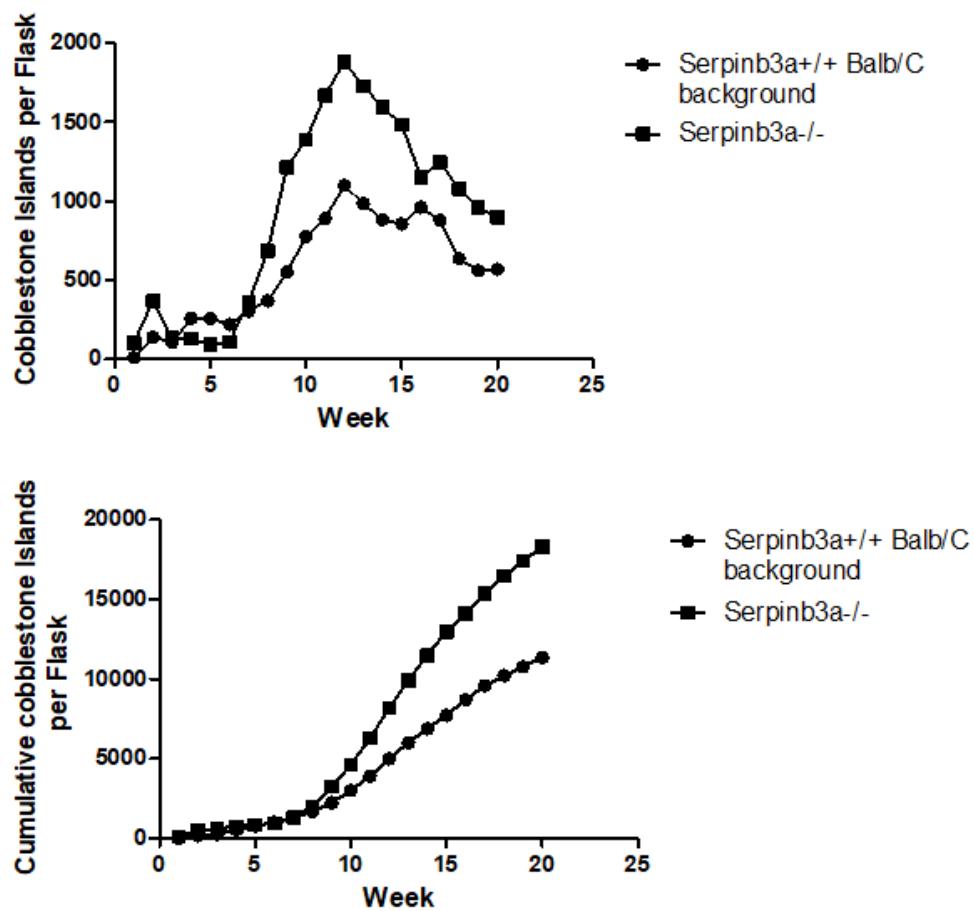
Table S4. Weekly production of nonadherent cells per flask that contain day 7 colony-forming hematopoietic progenitor cells.

Table S5. Weekly production of nonadherent cells per flask that contain day 14 colony-forming hematopoietic progenitor cells.

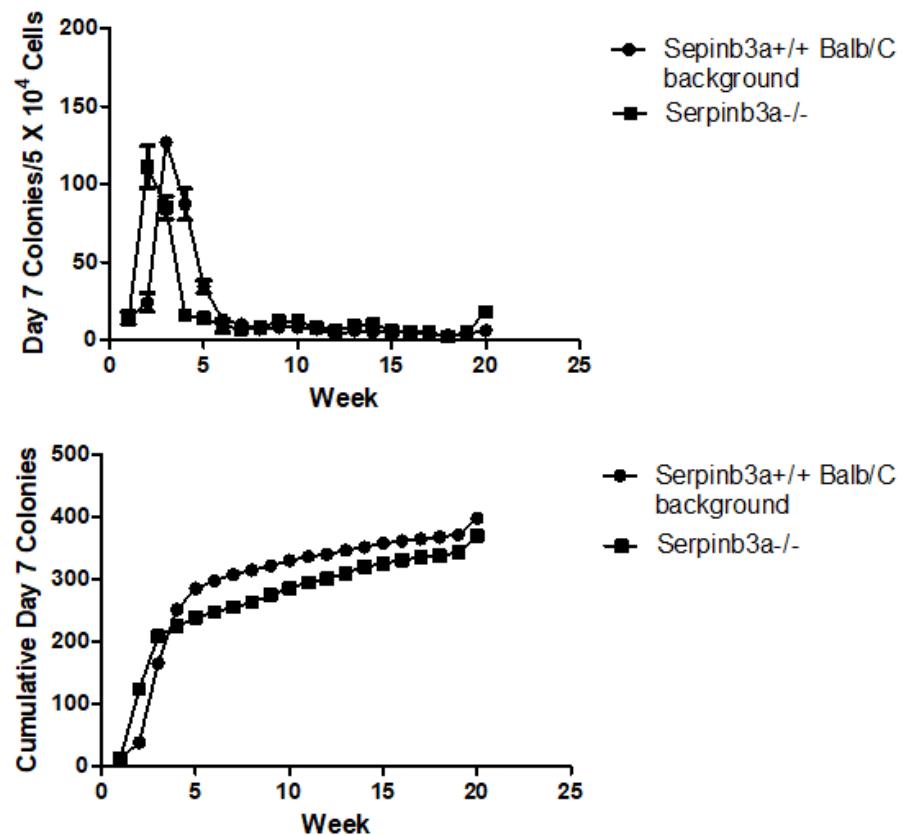
Supplementary Figure S1:



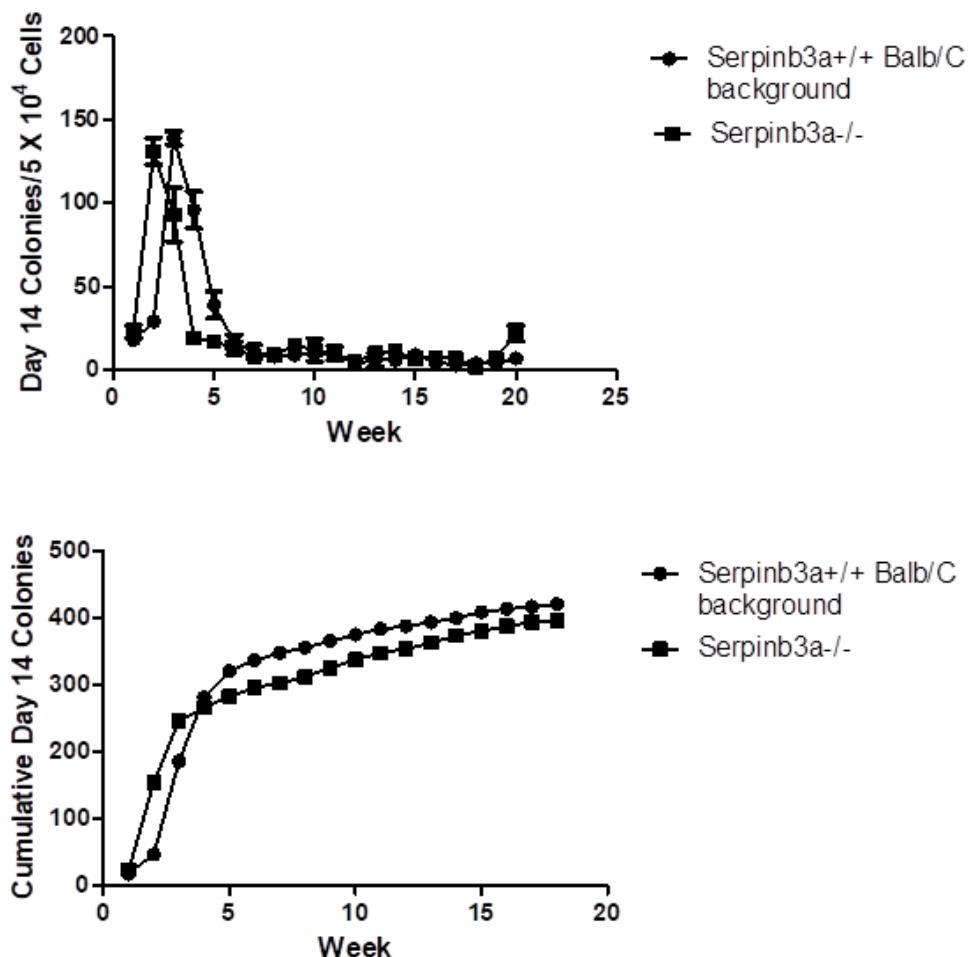
Supplementary Figure S2:



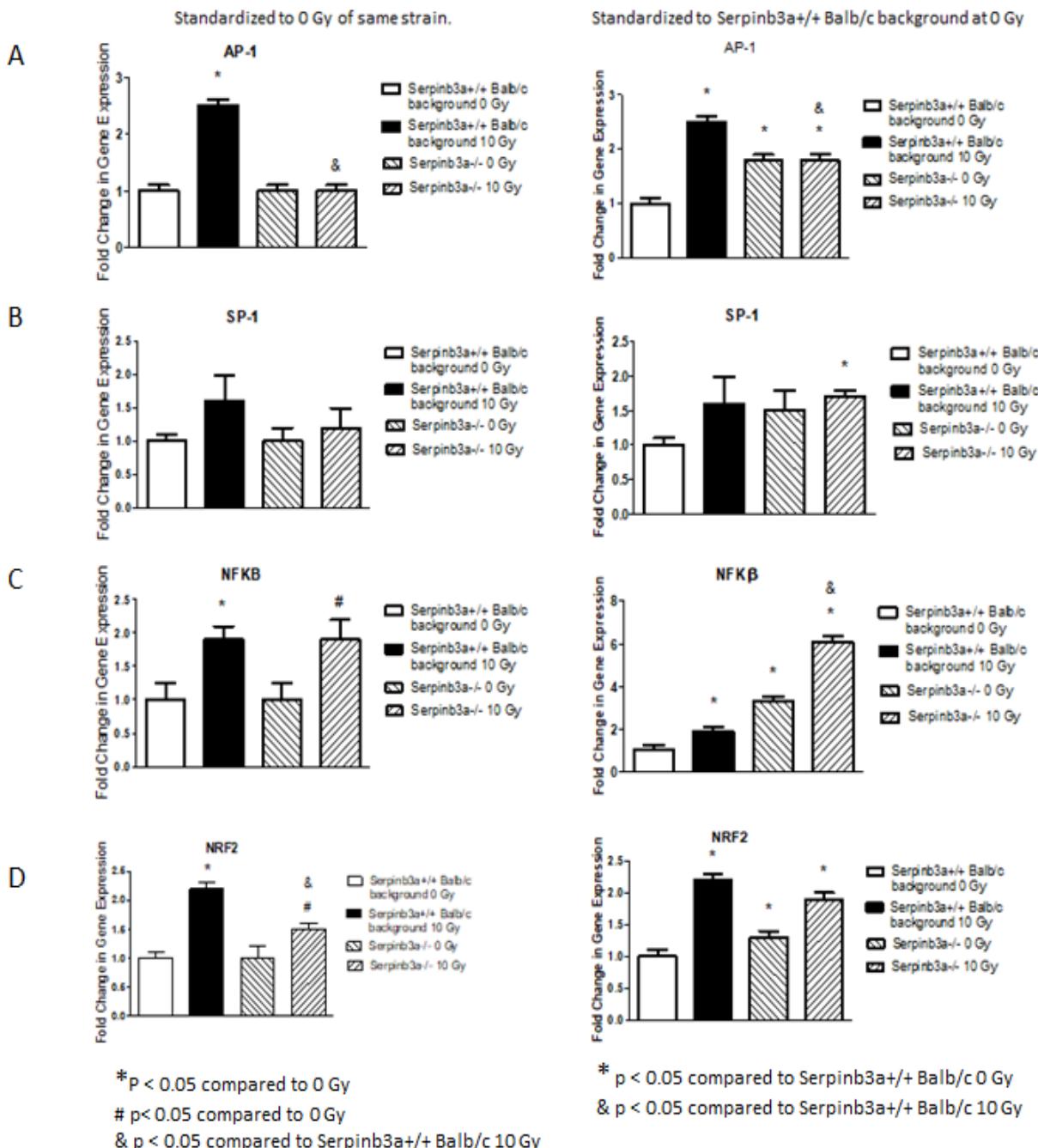
Supplementary Figure S3:

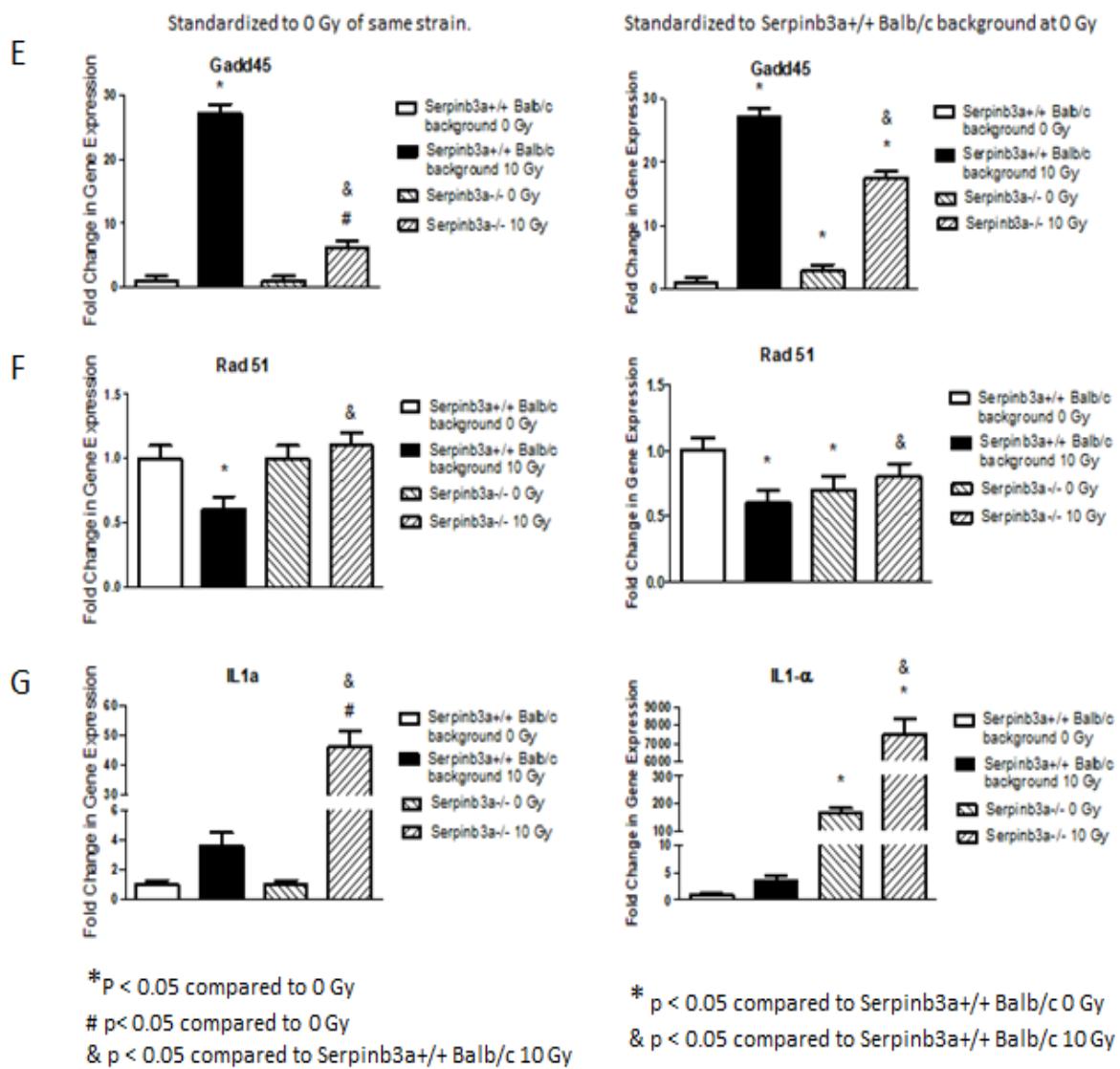


Supplementary Figure S4:



Supplementary Figure S5: Increased 10 Gy Irradiation-Induced mRNA for Transcription Factors in Serpinb3a^{-/-} Mouse Cells.





Supplementary Figure S6: A) Serpinb3a-/ Mouse Plasma Proteins Over 5 Days Post-8 Gy TBI; and B) Marrow Stromal Cell Line Proteins Over 24 Hours After 10 Gy Irradiation.

A.

Mouse Plasma Protein Levels				
Serpинb3a+/+ Balb/C Background				
	Day 1	Day 2	Day 3	Day 5
G-CSF	0.0100	<0.0001	<0.0001	<0.0001
MCP-1	0.3993	<0.0001	0.0179	0.8605
IL-6	0.0667	<0.0001	0.1051	0.0242
KC	0.0811	<0.0001	0.0153	0.0002
Exotoxin	0.6202	0.0256	<0.0001	0.0002
RANTES	0.0641	0.7574	0.3134	0.1007
MIC	0.0889	0.1717	0.0019	0.00925
IP-10	0.2975	0.7964	0.41895	0.4762
LIF	1.000	1.000	1.000	1.000
GM-CSF	0.4922	0.3005	0.6771	0.7728
IFN-Beta	0.8949	0.0628	0.7644	0.7326
IL-1a	0.4002	0.5306	0.4583	0.9463
IL-1b	0.9953	0.1353	0.8548	0.4805
IL-2	0.9173	0.2170	0.5937	0.2621
IL-5	0.4572	0.0022	<0.0001	<0.0001
IL-7	0.6024	0.0545	0.5262	0.4506
IL-9	0.0168	0.0748	0.0817	0.0384
IL-10	0.2929	0.1092	0.4427	0.4027
IL-12 p40	0.7787	0.4223	0.6270	0.1580
IL-12-p70	0.7394	0.3529	0.9115	0.4860
IL-13	0.2644	0.5864	0.6963	0.4718
LIX	0.0928	0.5083	0.2623	0.3087
IL-15	0.6973	0.0357	0.7647	0.7152
MIP1a	0.3014	0.0168	0.1224	0.7591
MIP1b	0.1545	0.0024	0.5900	0.9638
MIP 2	0.7374	0.0963	0.5300	0.7167
MCSF	0.6842	0.0310	0.5647	0.7047
TNF	0.9390	0.1912	0.1326	0.4226
IL-3	1.000	0.8458	0.8458	1.000
IL-4	1.000	1.000	1.000	1.000
IL-17	0.3250	0.0027	0.0449	0.1723
VEGF	0.3345	0.7096	0.2572	0.1351

Serpинb3a-/				
	Day 1	Day 2	Day 3	Day 5
G-CSF	0.0272	0.302	<0.0001	<0.0001
MCP-1	0.7993	0.0888	0.3979	0.0661
IL-6	1.000	1.060	1.006	0.0001
KC	0.3109	0.5658	0.5030	<0.0001
Exotoxin	0.5822	0.2113	0.5758	0.8511
RANTES	0.9326	0.1297	0.1664	0.3746
MIC	0.0786	0.7098	0.0008	0.1482
IP-10	0.0859	0.3746	0.0016	0.1254
LIF	0.5853	0.5083	0.5083	0.5183
GM-CSF	1.000	0.3677	0.9251	0.5324
IFN-Beta	0.2431	0.1446	0.1405	0.0004
IL-1a	0.2153	0.3616	0.2915	0.2414
IL-1b	0.04678	0.7103	0.2810	0.4568
IL-2	0.1892	0.0898	0.0004	0.5247
IL-5	0.4535	0.0244	0.0006	0.0002
IL-7	0.4616	0.5118	0.3041	0.3843
IL-9	0.0793	0.9759	0.4574	0.8654
IL-16	0.4595	0.2571	0.3493	1.000
IL-12 p40	0.9609	0.1853	0.4489	0.2689
IL-12-p70	0.1940	0.3776	0.3407	0.4509
IL-13	0.0200	0.0048	0.0533	0.8553
LIX	0.0109	0.6015	0.8944	0.0262
IL-15	0.3922	0.5310	0.2604	0.1954
MIP1a	0.9697	0.3155	0.8960	0.8430
MIP1b	0.0482	0.0402	0.1172	0.0624
MIP 2	0.5159	0.9057	0.6204	0.7920
MCSF	0.7442	0.4323	0.3415	0.1560
TNF	0.5090	0.5911	0.7438	0.0641
IL-3	0.1455	0.0863	0.1704	0.1975
IL-4	1.000	1.000	1.000	1.000
IL-17	0.5041	0.5801	0.7132	0.0152
VEGF	0.5222	0.6871	0.8042	0.2215

Supplementary Figure S6B:

Stromal Cell Protein Levels				
Serpibn3a+/+ Balb/c Background				Serpibn3a-/-
Cytokine	Hour 1	Hour 3	Hour 24	
G-CSF	<0.0001	0.0009	0.0919	
GM-CSF	0.0024	0.0216	0.0469	
Exotoxin	0.0004	0.0082	0.0205	
IL-6	<0.0001	0.0002	0.6871	
LIF	0.0007	0.0019	0.6539	
KC	0.0009	0.0032	0.4456	
INF-Beta	0.6368	0.3269	0.3375	
IL-1a	0.1120	0.9571	0.8143	
IL-1b	<0.0001	<0.0001	0.1135	
IL-2	0.0476	0.0751	0.8407	
IL-4	0.6131	0.4393	0.0881	
IL-3	0.0128	0.0139	0.5831	
IL-5	0.0144	0.0026	0.5370	
IL-7	0.1227	0.0943	0.4867	
IL-9	0.0155	0.0194	0.2773	
IL-10	0.0590	0.0047	0.2943	
IL-12 p40	0.0584	0.0812	0.4105	
IL-12-p70	0.0517	0.0134	0.0656	
IL-13	0.4669	0.4336	0.349	
LIX	<0.0001	0.0004	0.0085	
IL-15	0.3835	0.3268	0.2810	
IL-17	0.0147	0.0002	0.0186	
IP-10	0.0046	0.0108	0.2143	
MCP 1	0.0008	0.0034	0.7019	
MIP1a	<0.0001	<0.0001	0.6122	
MIP1b	0.7768	0.0073	0.2410	
MCSF	0.0489	0.0423	0.7163	
MIP2	0.0036	0.0002	0.0676	
MIG	<0.0001	<0.0001	0.2115	
RANTES	0.4788	0.0095	0.9937	
VEGF	<0.0001	<0.0001	0.0053	
TNF	0.0018	0.0021	0.0136	
TGF-Beta	0.2070	0.6704	0.2283	

0.05>P>0.01	0.01 > P > 0.001	0.001 > P > 0.0001	P < 0.0001
0.05>P>0.01	0.01 > P > 0.001	0.001 > P > 0.0001	P < 0.0001

Supplementary Tables S1 - 5:

Supplementary Table S1: Weekly measurement of percent confluence of adherent layer of Serpinb3a-/- mouse LTBMCS.

group	Week 1	Week 2	Week 3	Week 4	Week 5
Serpibn3a-/-	41.9±6.6 (n=4)	48.8±6.3 (n=4)	34.4±3.1 (n=4)	74.4±5.5 (n=4)	78.8±6.6 (n=4)
Serpibn3a+/+ Balb/c	26.9±2.4 (n=4) p=0.0052	48.1±2.4 (n=4) p=0.8588	41.9±2.4 (n=4) p=0.0090	75.6±1.3 (n=4) p=0.6872	78.1±2.4 (n=4) p=0.8648
group	Week 6	Week 7	Week 8	Week 9	Week 10
Serpibn3a-/-	88.1±4.3 (n=4)	93.8±1.4 (n=4)	95.0±0.0 (n=4)	95.0±0.0 (n=4)	95.0±0.0 (n=4)
Serpibn3a+/+ Balb/c	86.9±3.8 (n=4) p=0.6754	94.4±1.2 (n=4) p=0.5370	95.0±0.0 (n=4) p=1.0000	95.0±0.0 (n=4) p=1.0000	95.0±0.0 (n=4) p=1.0000
group	Week 11	Week 12	Week 13	Week 14	Week 15
Serpibn3a-/-	95.0±0.0 (n=4)	95.0±0.0 (n=4)	95.0±0.0 (n=4)	95.0±0.0 (n=4)	95.0±0.0 (n=4)
Serpibn3a+/+ Balb/c	95.0±0.0 (n=4) p=1.0000	95.0±0.0 (n=4) p=1.0000	95.0±0.0 (n=4) p=1.0000	95.0±0.0 (n=4) p=1.0000	95.0±0.0 (n=4) p=1.0000
group	Week 16	Week 17	Week 18	Week 19	Week 20
Serpibn3a-/-	95.0±0.0 (n=4)	95.0±0.0 (n=4)	95.0±0.0 (n=4)	95.0±0.0 (n=4)	95.0±0.0 (n=4)
Serpibn3a+/+B alb/c	95.0±0.0 (n=4) p=1.0000	95.0±0.0 (n=4) p=1.0000	95.0±0.0 (n=4) p=1.0000	95.0±0.0 (n=4) p=1.0000	95.0±0.0 (n=4) p=1.0000

Analysis of weekly percent confluence of adherent cells, where data are summarized as mean ± standard deviation, n is the number of mice used, and p is the p-value for comparison between Serpinb3a-/- and Serpinb3a+/+ Balb/c background strain groups with the two-sided two sample t-test. Significant p-values are shown in red color.

Supplementary Table S2: Weekly cobblestone islands in adherent layer of

Serpinb3a-/- LTBMCS.

group	Week 1	Week 2	Week 3	Week 4	Week 5
Serpinb3a-/-	99.6±41.4 (n=4)	354.3±106.4 (n=4)	121.9±64.2 (n=4)	110.5±45.4 (n=4)	85.1±26.6 (n=4)
Serpinb3a+/+ Balb/c	13.0±5.0 (n=4) p=0.0239	140.0±46.3 (n=4) p=0.0102	106.5±18.5 (n=4) p=0.6617	258.5±39.2 (n=4) p=0.0026	257.5±89.6 (n=4) p=0.0102
group	Week 6	Week 7	Week 8	Week 9	Week 10
Serpinb3a-/-	97.8±44.6 (n=4)	332.9±126.4 (n=4)	621.5±293.9 (n=4)	1107.6±511.3 (n=4)	1222.3±425.5 (n=4)
Serpinb3a+/+ Balb/c	223.0±45.2 (n=4) p=0.0076	306.3±55.8 (n=4) p=0.7132	371.0±126.0 (n=4) p=0.1682	553.3±145.0 (n=4) p=0.0820	778.0±197.8 (n=4) p=0.1071
group	Week 11	Week 12	Week 13	Week 14	Week 15
Serpinb3a-/-	1454.9±540.9 (n=4)	1637.5±735.0 (n=4)	1533.6±544.2 (n=4)	1452.8±428.4 (n=4)	1315.9±368.2 (n=4)
Serpinb3a+/+ Balb/c	891.5±82.7 (n=4) p=0.1275	1100.0±224.6 (n=4) p=0.2114	985.0±193.7 (n=4) p=0.1062	884.5±272.6 (n=4) p=0.0665	857.5±256.5 (n=4) p=0.0871
group	Week 16	Week 17	Week 18	Week 19	Week 20
Serpinb3a-/-	962.0±364.6 (n=4)	1082.6±482.0 (n=4)	946.3±463.5 (n=4)	837.9±432.9 (n=4)	760.5±308.9 (n=4)
Serpinb3a+/+ Balb/c	962.0±99.7 (n=4) p=1.0000	880.5±99.1 (n=4) p=0.4673	638.0±215.6 (n=4) p=0.2732	563.5±211.6 (n=4) p=0.2981	570.0±311.8 (n=4) p=0.4187

Analysis of the numbers of cobblestone islands, where data are summarized as mean ± standard deviation, n is the number of mice used, and p is the p-value for comparison between Serpinb3a-/- and Serpinb3a+/+ Balb/c background strain groups with the two-sided two sample t-test. Significant p-values are shown in red color.

Supplementary Table S3: Weekly production of nonadherent cells per flask of Serpinb3a-/- mouse LTBMCs.

group	Week 1	Week 2	Week 3	Week 4	Week 5
Serpibn3a-/-	3.6±0.3 (n=4)	2.3±0.9 (n=4)	8.1±3.7 (n=4)	13.1±3.3 (n=4)	16.7±3.2 (n=4)
Serpibn3a+/+ Balb/c	3.3±0.5 (n=4) <i>p=0.3401</i>	1.1±0.2 (n=4) <i>p=0.0669</i>	1.0±0.3 (n=4) <i>p=0.0295</i>	2.9±0.8 (n=4) <i>p=0.0069</i>	11.5±2.5 (n=4) <i>p=0.0466</i>
group	Week 6	Week 7	Week 8	Week 9	Week 10
Serpibn3a-/-	15.0±1.8 (n=4)	13.0±3.9 (n=4)	10.4±2.7 (n=4)	12.2±3.7 (n=4)	10.0±1.0 (n=4)
Serpibn3a+/+ Balb/c	11.5±1.5 (n=4) <i>p=0.0255</i>	7.4±2.4 (n=4) <i>p=0.0520</i>	5.3±2.1 (n=4) <i>p=0.0260</i>	4.7±1.9 (n=4) <i>p=0.0109</i>	5.2±1.1 (n=4) <i>p=0.0006</i>
group	Week 11	Week 12	Week 13	Week 14	Week 15
Serpibn3a-/-	8.7±2.3 (n=4)	9.2±2.2 (n=4)	7.1±1.2 (n=4)	5.2±2.2 (n=4)	5.3±2.2 (n=4)
Serpibn3a+/+ Balb/c	5.7±1.2 (n=4) <i>p=0.0579</i>	7.0±1.1 (n=4) <i>p=0.1199</i>	4.2±1.7 (n=4) <i>p=0.0296</i>	3.7±2.3 (n=4) <i>p=0.3884</i>	3.6±1.7 (n=4) <i>p=0.2648</i>
group	Week 16	Week 17	Week 18	Week 19	Week 20
Serpibn3a-/-	3.6±1.8 (n=4)	4.2±1.1 (n=4)	3.3±1.1 (n=4)	2.2±0.2 (n=4)	2.4±0.2 (n=4)
Serpibn3a+/+ Balb/c	3.2±1.2 (n=4) <i>p=0.6837</i>	3.4±1.3 (n=4) <i>p=0.4293</i>	2.0±0.9 (n=4) <i>p=0.1120</i>	1.7±1.0 (n=4) <i>p=0.3894</i>	2.0±0.9 (n=4) <i>p=0.4531</i>

Analysis of weekly non-adherent cell number ($\times 1000000$) data, where data are summarized as mean \pm standard deviation, n is the number of mice used, and p is the p-value for comparison between Serpinb3a-/- and Serpinb3a+/+ Balb/c background strain groups with the two-sided two sample t-test. Significant p-values are shown in red color.

Supplementary Table S4: Weekly production of nonadherent cells per flask that contain day 7 colony forming hematopoietic progenitor cells.

group	Week 1	Week 2	Week 3	Week 4	Week 5
Serpinb3a/-	13.0±2.6 (n=3)	111.3±13.6 (n=3)	84.7±7.4 (n=3)	16.0±3.5 (n=3)	14.3±1.5 (n=3)
Serpinb3a+/+ Balb/c	13.7±3.8 (n=3) <i>p=0.8149</i>	24.3±6.4 (n=3) <i>p=0.0006</i>	126.7±1.5 (n=3) <i>p=0.0006</i>	87.0±10.4 (n=3) <i>p=0.0004</i>	33.7±3.8 (n=3) <i>p=0.0012</i>
group	Week 6	Week 7	Week 8	Week 9	Week 10
Serpinb3a/-	8.7±3.8 (n=3)	6.7±0.6 (n=3)	8.0±2.6 (n=3)	12.0±2.0 (n=3)	11.7±2.5 (n=3)
Serpinb3a+/+ Balb/c	12.7±0.6 (n=3) <i>p=0.2065</i>	9.7±2.3 (n=3) <i>p=0.0944</i>	7.0±1.7 (n=3) <i>p=0.6130</i>	7.7±2.9 (n=3) <i>p=0.0994</i>	7.7±2.1 (n=3) <i>p=0.1012</i>
group	Week 11	Week 12	Week 13	Week 14	Week 15
Serpinb3a/-	8.3±3.2 (n=3)	6.3±0.6 (n=3)	9.3±1.5 (n=3)	9.7±2.3 (n=3)	5.7±2.9 (n=3)
Serpinb3a+/+ Balb/c	7.3±1.2 (n=3) <i>p=0.6388</i>	3.0±1.7 (n=3) <i>p=0.0341</i>	6.3±3.2 (n=3) <i>p=0.2181</i>	5.3±1.5 (n=3) <i>p=0.0535</i>	6.0±1.7 (n=3) <i>p=0.8722</i>
group	Week 16	Week 17	Week 18	Week 19	Week 20
Serpinb3a/-	5.3±1.2 (n=3)	5.0±2.0 (n=3)	1.7±1.2 (n=3)	5.3±0.6 (n=3)	17.7±2.9 (n=3)
Serpinb3a+/+ Balb/c	3.7±1.2 (n=3) <i>p=0.1518</i>	3.7±1.2 (n=3) <i>p=0.3739</i>	3.0±1.0 (n=3) <i>p=0.2051</i>	3.7±1.2 (n=3) <i>p=0.0890</i>	5.7±1.5 (n=3) <i>p=0.0031</i>

Analysis of day 7 colony counts at each week, where data are summarized as mean ± standard deviation, n is the sample size, and p is the p-value for comparison between Serpinb3a/- and Serpinb3a+/+ Balb/c background strain groups with the two-sided two sample t-test. Significant p-values are shown in red color.

Supplementary Table S5: Weekly production of nonadherent cells per flask that contain day 14 colony forming hematopoietic progenitor cells.

group	Week 1	Week 2	Week 3	Week 4	Week 5
Serpinb3a/-	23.0±4.4 (n=3)	130.7±8.0 (n=3)	93.0±15.7 (n=3)	19.3±2.1 (n=3)	17.0±2.0 (n=3)
Serpinb3a+/+ Balb/c	17.7±0.6 (n=3) p=0.1661	29.0±3.0 (n=3) p<0.0001	139.0±3.6 (n=3) p=0.0078	96.0±11.3 (n=3) p=0.0003	39.0±7.8 (n=3) p=0.0091
group	Week 6	Week 7	Week 8	Week 9	Week 10
Serpinb3a/-	12.7±3.8 (n=3)	7.7±1.2 (n=3)	9.0±2.0 (n=3)	13.7±1.5 (n=3)	12.3±6.7 (n=3)
Serpinb3a+/+ Balb/c	16.7±3.8 (n=3) p=0.2653	11.0±3.6 (n=3) p=0.2020	8.0±1.0 (n=3) p=0.4818	9.3±1.5 (n=3) p=0.0255	9.7±2.1 (n=3) p=0.5441
group	Week 11	Week 12	Week 13	Week 14	Week 15
Serpinb3a/-	10.0±4.0 (n=3)	5.3±1.2 (n=3)	9.7±1.2 (n=3)	11.0±3.6 (n=3)	6.7±2.5 (n=3)
Serpinb3a+/+ Balb/c	8.7±1.5 (n=3) p=0.6183	4.0±1.7 (n=3) p=0.3295	6.3±4.0 (n=3) p=0.2415	6.0±1.0 (n=3) p=0.0816	8.7±2.5 (n=3) p=0.3855
group	Week 16	Week 17	Week 18	Week 19	Week 20
Serpinb3a/-	6.7±0.6 (n=3)	6.7±2.3 (n=3)	2.0±1.7 (n=3)	7.3±1.5 (n=3)	21.7±4.7 (n=3)
Serpinb3a+/+ Balb/c	5.0±1.0 (n=3) p=0.0668	3.3±0.6 (n=3) p=0.0723	4.0±1.0 (n=3) p=0.1583	4.3±0.6 (n=3) p=0.0335	7.0±0.0 (n=3) p=0.0329

Analysis of day 14 colony counts at each week, where data are summarized as mean ± standard deviation, n is the sample size, and p is the p-value for comparison between Serpinb3a/- and Serpinb3a+/+ Balb/c background strain groups with the two-sided two sample t-test. Significant p-values are shown in red color.