

**Supplementary Table 1.**

	Mouse Cohort	Weight (g)	<i>n</i> per group
Male	WT Sham	24.63 ± 0.58	17
	WT Blast	25.18 ± 0.37	20
	IL-1 $\alpha$ -/- Sham	28.74 ± 0.75	16
	IL-1 $\alpha$ -/- Blast	28.03 ± 0.46	17
	IL-1 $\beta$ -/- Sham	26.44 ± 0.43	17
	IL-1 $\beta$ -/- Blast	25.20 ± 0.44	18
	IL-1R-/- Sham	25.53 ± 0.57	18
	IL-1R-/- Blast	25.10 ± 0.37	18
Female	WT Sham	19.09 ± 0.38	18
	WT Blast	19.54 ± 0.18	22
	IL-1 $\alpha$ -/- Sham	22.68 ± 0.61	17
	IL-1 $\alpha$ -/- Blast	22.28 ± 0.66	17
	IL-1 $\beta$ -/- Sham	19.10 ± 0.31	22
	IL-1 $\beta$ -/- Blast	19.64 ± 0.23	19
	IL-1R-/- Sham	22.32 ± 1.20	16
	IL-1R-/- Blast	22.69 ± 0.91	16

**Supplementary Table 1.** Total number of mice utilized in experiments. Number of mice in each group separated based on sex and genotype (total of 288). Average weight of mice in grams (g), recorded at the time of injury. All mice were aged 2 to 4 months and had a C57BL/6J background.

**Supplementary Table 2.**

Group 1	Group 2	Mean Difference (Group 1-Group 2)	95% Confidence Interval		Adjusted <i>P</i> Value
			Lower Bound	Upper Bound	
WT Male	WT Female	219	-51	488	0.1089
Blast	Sham	-1097	-1369	-824	<0.0001
WT Male Sham	WT Female Sham	102	-448	652	0.9594
WT Female Blast	WT Female Sham	-1216	-1744	-689	<0.0001
WT Male Blast	WT Female Sham	-889	-1400	-378	0.0002
WT Female Blast	WT Male Sham	-1318	-1831	-806	<0.0001
WT Male Blast	WT Male Sham	-991	-1487	-496	<0.0001
WT Male Blast	WT Female Blast	327	-144	798	0.2606

**Supplementary Table 2.** Quantitative analysis of BRN3A<sup>+</sup> retinal ganglion cell density in male and female wild-type (WT) mice five weeks post-blast. Two-way ANOVA with interaction effect followed by Tukey HSD posttest. Significant relationships determined at level 0.05.

**Supplementary Table 3.**

Group 1	Group 2	Mean Difference ( $\mu\text{m}$ ) (Group 1-Group 2)	95% Confidence Interval		Adjusted <i>P</i> Value
			Lower Bound	Upper Bound	
WT Male	WT Female	-0.12	-2.01	1.76	0.8977
Blast	Sham	-8.34	-10.23	-6.46	<0.0001
WT Male Sham	WT Female Sham	-0.21	-3.68	3.27	0.9986
WT Female Blast	WT Female Sham	-8.99	-12.52	-5.45	<0.0001
WT Male Blast	WT Female Sham	-7.97	-11.39	-4.55	<0.0001
WT Female Blast	WT Male Sham	-8.78	-12.41	-5.15	<0.0001
WT Male Blast	WT Male Sham	-7.76	-11.28	-4.24	<0.0001
WT Male Blast	WT Female Blast	1.02	-2.56	4.60	0.8768

**Supplementary Table 3.** Change in RGC complex layer thickness from baseline, five weeks post-blast, in male and female wild-type (WT) mice. Two-way ANOVA with interaction effect followed by Tukey HSD posttest. Values obtained via optical coherence tomography. Significant relationships determined at level 0.05.

**Supplementary Table 4.**

Group 1	Group 2	Mean Difference ( $\mu$ V) (Group 1-Group 2)	95% Confidence Interval		Adjusted <i>P</i> Value
			Lower Bound	Upper Bound	
WT Male	WT Female	1.37	-1.02	3.76	0.2558
Blast	Sham	-9.85	-12.26	-7.44	<0.0001
WT Male Sham	WT Female Sham	0.60	-4.21	5.40	0.9878
WT Female Blast	WT Female Sham	-10.09	-14.64	-5.55	<0.0001
WT Male Blast	WT Female Sham	-9.07	-13.71	-4.44	<0.0001
WT Female Blast	WT Male Sham	-10.69	-15.07	-6.30	<0.0001
WT Male Blast	WT Male Sham	-9.67	-14.15	-5.20	<0.0001
WT Male Blast	WT Female Blast	1.02	-3.17	5.21	0.9182

**Supplementary Table 4.** RGC function five weeks post-blast in male and female wild-type (WT) mice. Two-way ANOVA with interaction effect followed by Tukey HSD posttest. Values obtained via pattern electroretinography. Significant relationships determined at level 0.05.

**Supplementary Table 5.**

Group 1	Group 2	Mean Difference (Group 1-Group 2)	95% Confidence Interval		Adjusted <i>P</i> Value
			Lower Bound	Upper Bound	
WT Blast	WT Sham	-1094	-1552	-636	<0.0001
IL-1 $\alpha$ -/- Blast	IL-1 $\alpha$ -/- Sham	-601	-1030	-171	0.0008
IL-1 $\beta$ -/- Blast	IL-1 $\beta$ -/- Sham	-337	-786	112	0.2985
IL-1RI-/- Blast	IL-1RI-/- Sham	-761	-1215	-308	<0.0001
IL-1 $\alpha$ -/- Blast	WT Blast	501	81	922	0.0080
IL-1 $\beta$ -/- Blast	WT Blast	1071	625	1516	<0.0001
IL-1RI-/- Blast	WT Blast	207	-223	636	0.8189

**Supplementary Table 5.** Quantitative analysis of BRN3A<sup>+</sup> retinal ganglion cell quantification five weeks post-blast. Two-way ANOVA with interaction effect followed by Tukey HSD posttest. Significant relationships determined at level 0.05.

**Supplementary Table 6.**

Group 1	Group 2	Mean Difference ( $\mu\text{m}$ ) (Group 1-Group 2)	95% Confidence Interval		Adjusted <i>P</i> Value
			Lower Bound	Upper Bound	
WT Blast	WT Sham	0.21	-1.49	1.92	0.9999
IL-1 $\alpha$ -/- Blast	IL-1 $\alpha$ -/- Sham	0.01	-1.81	1.82	1.0000
IL-1 $\beta$ -/- Blast	IL-1 $\beta$ -/- Sham	-0.04	-1.86	1.77	1.0000
IL-1RI/- Blast	IL-1RI/- Sham	0.10	-1.61	1.80	1.0000
IL-1 $\alpha$ -/- Blast	WT Blast	3.14	1.37	4.92	<0.0001
IL-1 $\beta$ -/- Blast	WT Blast	2.67	0.85	4.50	0.0003
IL-1RI/- Blast	WT Blast	2.09	0.37	3.80	0.0060

**Supplementary Table 6.** Pre-blast baseline measurement of RGC complex. Two-way ANOVA with interaction effect followed by Tukey HSD posttest. Values obtained via optical coherence tomography. Significant relationships determined at level 0.05.

**Supplementary Table 7. Change in RGC complex layer thickness from baseline five weeks post-blast.**

Group 1	Group 2	Mean Difference ( $\mu\text{m}$ ) (Group 1-Group 2)	95% Confidence Interval		Adjusted <i>P</i> Value
			Lower Bound	Upper Bound	
WT Blast	WT Sham	-8.35	-10.99	-5.71	<0.0001
IL-1 $\alpha$ -/- Blast	IL-1 $\alpha$ -/- Sham	-5.06	-7.87	-2.24	<0.0001
IL-1 $\beta$ -/- Blast	IL-1 $\beta$ -/- Sham	-3.27	-6.08	-0.46	0.0107
IL-1RI/- Blast	IL-1RI/- Sham	-5.57	-8.21	-2.93	<0.0001
IL-1 $\alpha$ -/- Blast	WT Blast	2.81	0.06	5.56	0.0410
IL-1 $\beta$ -/- Blast	WT Blast	3.85	1.03	6.68	0.0011
IL-1RI/- Blast	WT Blast	1.84	-0.82	4.50	0.4092

**Supplementary Table 7.** Change in RGC complex layer thickness from baseline five weeks post-blast. Two-way ANOVA with interaction effect followed by Tukey HSD posttest. Values obtained via optical coherence tomography. Significant relationships determined at level 0.05.

**Supplementary Table 8.**

Group 1	Group 2	Mean Difference ( $\mu\text{V}$ ) (Group 1-Group 2)	95% Confidence Interval		Adjusted <i>P</i> Value
			Lower Bound	Upper Bound	
WT Blast	WT Sham	-0.08	-0.22	0.06	0.6305
IL-1 $\alpha$ -/- Blast	IL-1 $\alpha$ -/- Sham	-0.01	-0.17	0.15	1.0000
IL-1 $\beta$ -/- Blast	IL-1 $\beta$ -/- Sham	0.05	-0.10	0.19	0.9778
IL-1RI/-/- Blast	IL-1RI/-/- Sham	-0.02	-0.17	0.13	0.9997
IL-1 $\alpha$ -/- Blast	WT Blast	0.18	0.04	0.32	0.0043
IL-1 $\beta$ -/- Blast	WT Blast	-0.01	-0.15	0.13	1.0000
IL-1RI/-/- Blast	WT Blast	0.12	-0.02	0.25	0.1757

**Supplementary Table 8.** Pre-blast baseline measurement of RGC function. Two-way ANOVA with interaction effect followed by Tukey HSD posttest. Values obtained via pattern electroretinography. Significant relationships determined at level 0.05.



**Supplementary Table 9.**

Group 1	Group 2	Mean Difference ( $\mu\text{V}$ ) (Group 1-Group 2)	95% Confidence Interval		Adjusted <i>P</i> Value
			Lower Bound	Upper Bound	
WT Blast	WT Sham	-9.93	-14.08	-5.78	<0.0001
IL-1 $\alpha$ -/- Blast	IL-1 $\alpha$ -/- Sham	-4.88	-9.39	-0.36	0.0239
IL-1 $\beta$ -/- Blast	IL-1 $\beta$ -/- Sham	-5.45	-9.66	-1.24	0.0024
IL-1RI-/- Blast	IL-1RI-/- Sham	-5.18	-9.57	-0.78	0.0089
IL-1 $\alpha$ -/- Blast	WT Blast	8.44	4.36	12.52	<0.0001
IL-1 $\beta$ -/- Blast	WT Blast	4.07	-0.04	8.18	0.0548
IL-1RI-/- Blast	WT Blast	5.13	1.05	9.21	0.0037

**Supplementary Table 9.** RGC function five weeks post-blast. Two-way ANOVA with interaction effect followed by Tukey HSD posttest. Values obtained via pattern electroretinography. Significant relationships determined at level 0.05.