Supplementary

Table S1 Detailed primers used in the quantitative polymerase chain reaction

Gene	Forward and Reverse sequences (5'-3')
Mouse IL1β	F: GCAACTGTTCCTGAACTCAACT
	R: ATCTTTTGGGGTCCGTCAACT
Mouse IL6	F: TAGTCCTTCCTACCCCAATTTCC
	R: TTGGTCCTTAGCCACTCCTTC
Mouse CCL3	F: TTCTCTGTACCATGACACTCTGC
	R: CGTGGAATCTTCCGGCTGTAG
Mouse CCL2	F: TTAAAAACCTGGATCGGAACCAA
	R: GCATTAGCTTCAGATTTACGGGT
Mouse GAPDH	F: GTGAAGGTCGGTGTGAACGG
	R: GCCGTTGAATTTGCCGTGAG

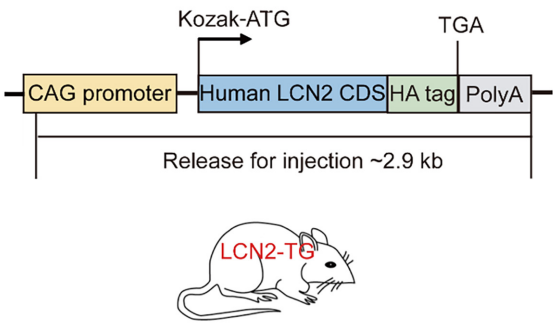

Figure S1 Schematic diagram of LCN2 transgenic mouse. Schematic diagram of *LCN2* transgenic (*LCN2-TG*) mouse generated with inserted human *LCN2* CDS.

https://dx.doi.org/10.21037/atm-22-3298

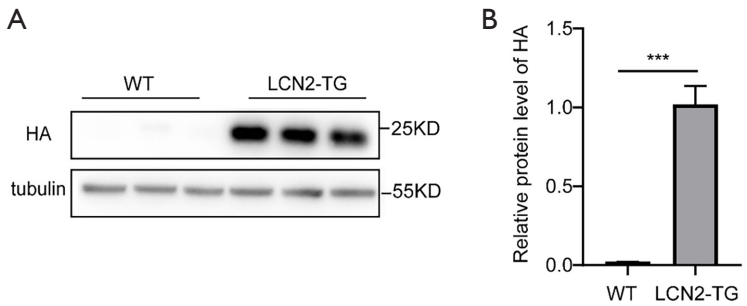

Figure S2 Western blot analysis of LCN2 in *LCN2-TG* mice. (A,B) The level of LCN2 in retinas of *LCN2-TG* mice were detected by western blotting. n=3 mice per group. All data represent mean ± SEM. ***, P<0.001. Statistical analysis was performed with unpaired two-tailed student's *t*-test.

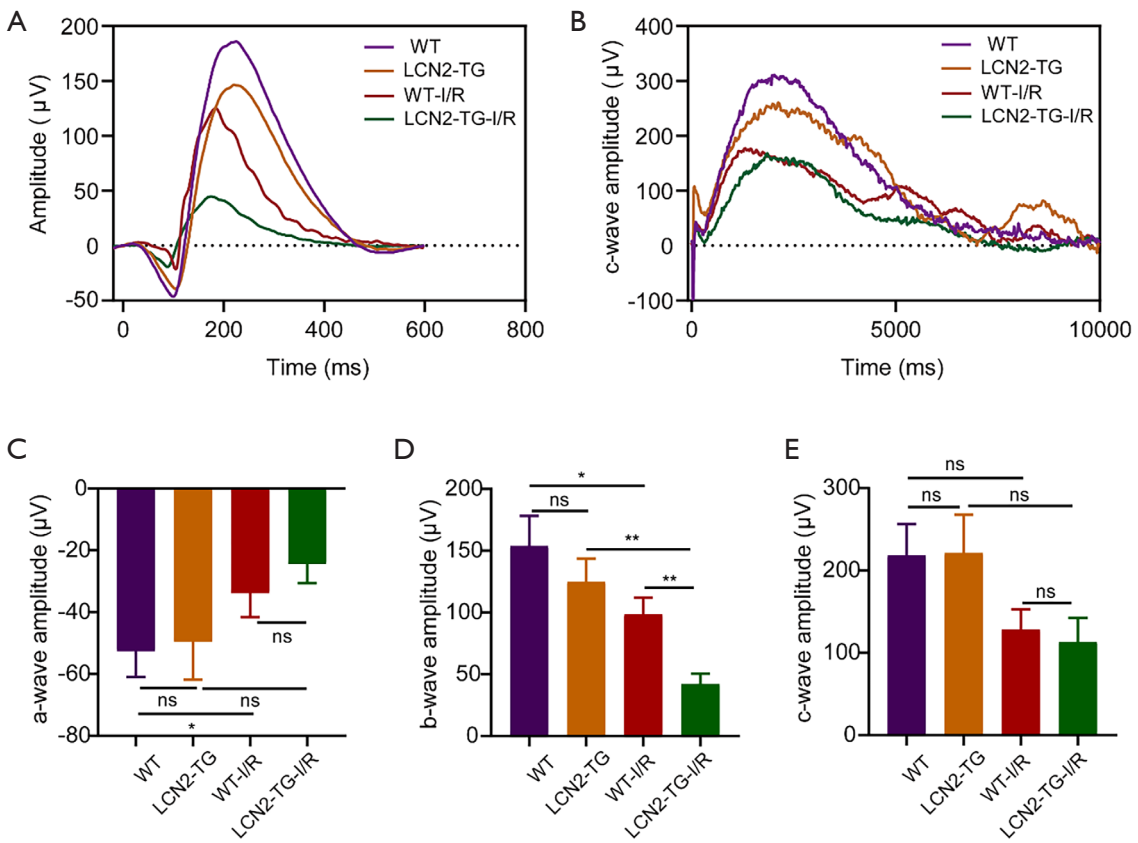

Figure S3 Electroretinography functional assessment. (A-E) Electroretinography responses of WT and *LCN2-TG* mice in left eyes (without RIR injury) and in right eyes (with RIR injury) showing a-, b- and c-wave. Shown in (A,B) are representative individual responses of a-, b- and c-wave, and (C-E) are amplitudes of a-, b- and c-wave response peaks. n = 6 mice per group. All data represent mean ± SEM. *, P<0.05, **, P<0.01, ns: no significance. Statistical analysis was performed with unpaired two-tailed student's *t*-test.

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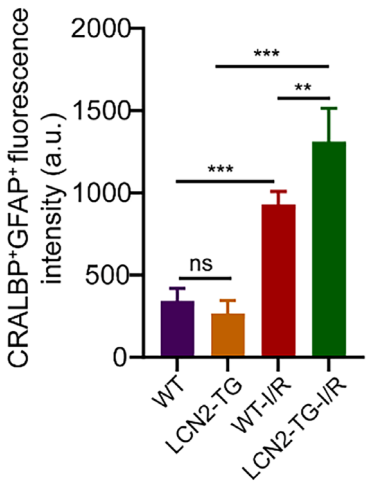

Figure S4 Double immunology staining for CRALBP and GFAP quantification measurements. Double immunology staining with CRALBP and GFAP in the retina. CRALBP$^+$GFAP$^+$ cells fluorescence quantification measurements are shown in supplementary figure 4. n = 6 mice per group. All data represent mean ± SEM. **, P<0.01, ***, P<0.001, ns: no significance. Statistical analysis was performed with unpaired two-tailed student's *t*-test.

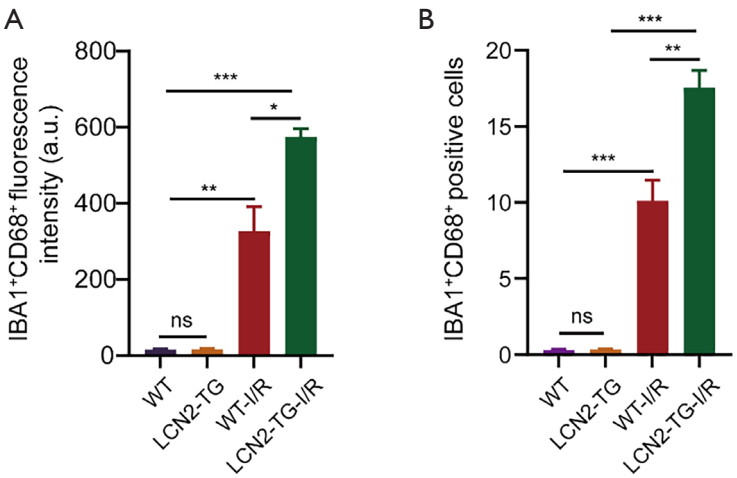

Figure S5 Double immunology staining for IBA1 and CD68 quantification measurements. (A,B) Double immunology staining with IBA1 and CD68 in the retina. IBA1$^+$CD68$^+$ cells fluorescence quantification measurements are shown in A. IBA1$^+$CD68$^+$ positive cells quantification measurements are shown in B. n = 4 mice per group. All data represent mean ± SEM. *P < 0.05,**P < 0.01, ***P<0.001, ns: no significance. Statistical analysis was performed with unpaired two-tailed student's *t*-test.

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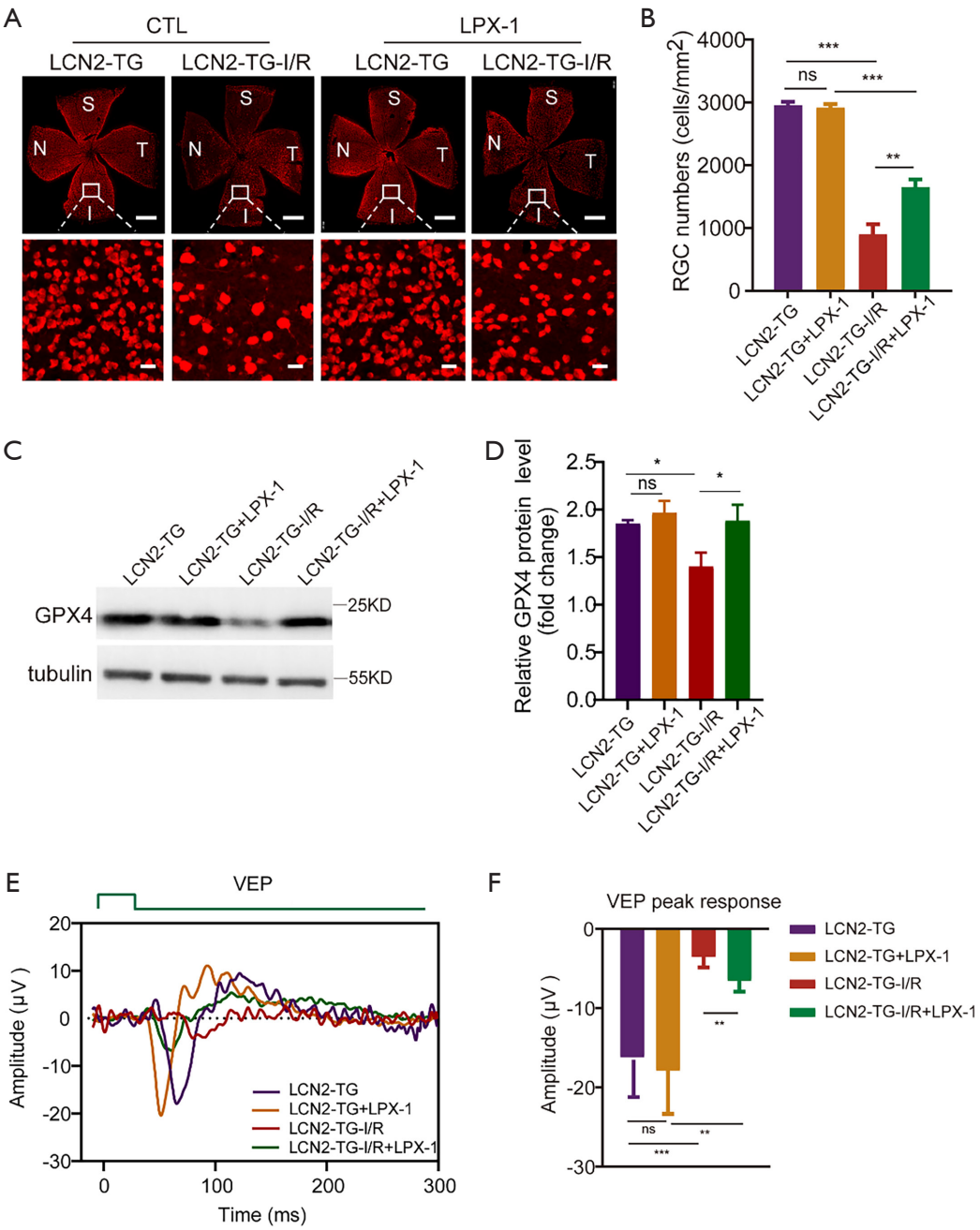

Figure S6 Overexpressed LCN2 induced RGC damage can be ameliorated by ferroptosis inhibitor. (A) TissueFaxs images of retinal flat mounts showed that the number of RGC in retina. RGCs were immunostained with an anti-RBPMS antibody. Scale bar: 500 μm (top). Scale bar: 20 μm (bottom). CTL: control. S, superior; I, inferior; N, nasal; and T, temporal. (B) Quantification of RGC performed for 200 × 200 μm area in 4 quadrants from the peripheral, middle and central retina and averaged for retinas per each control and experimental condition. n = 6 mice per group. All data represent mean ± SEM. **P < 0.01, ***P < 0.001, ns: no significance. (C,D) The protein level of GPX4 in retinas were detected by western blotting. n=3 mice per group. All data represent mean ± SEM. *P < 0.05, ns: no significance. (E,F) Visual evoked responses (VEPs) of *LCN2-TG* and *LCN2-TG*+LPX-1 mice in left eyes (without RIR injury) and in right eyes (with RIR injury). Shown in (E) are representative individual response and (F) are amplitudes of the VEPs responses peaks. n = 5 mice per group. All data represent mean ± SEM. **P < 0.01, ***P < 0.001, ns: no significance. Statistical analysis was performed with unpaired two-tailed student's *t*-test.

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