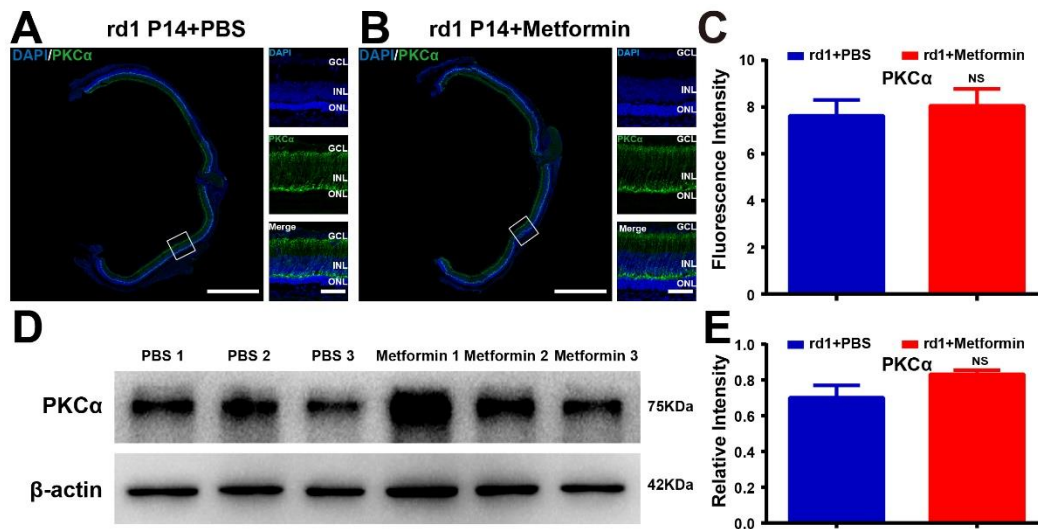
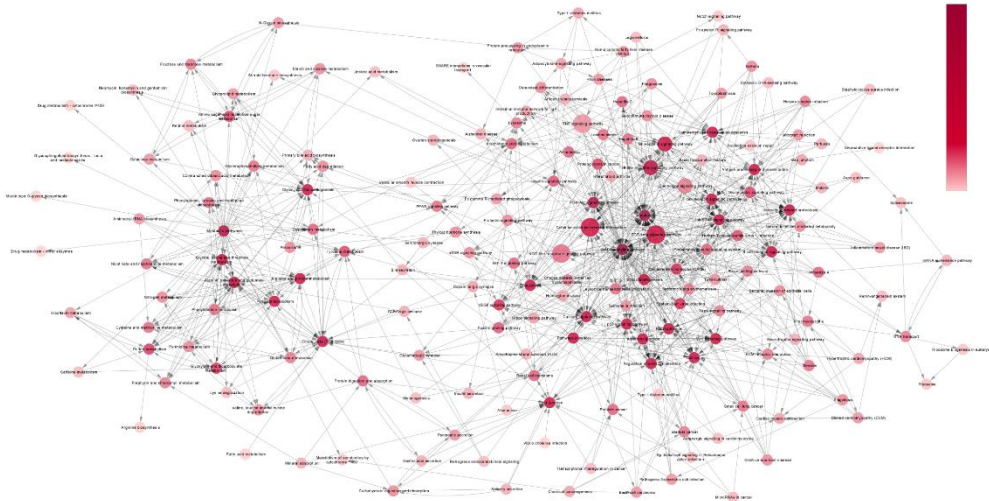


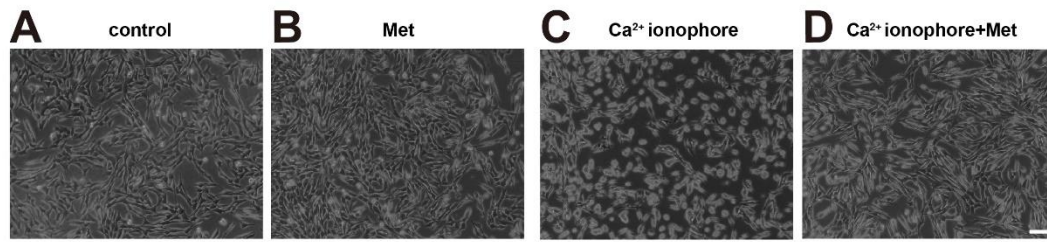
Supplementary material Figure 1: Metformin has little effect on the latency of a- and b-wave in C57 and rd1 mice. Comparison the latency of a- and b-wave in the control and metformin treatment groups at different periods. **A.** C57 mice; **B.** rd1 mice. \*P < 0.05. n = 5 mice per group.



Supplementary material Figure 2. metformin has no significant effect on bipolar cells in the retina of rd1 mice at P14. **A, B.** Low magnification field of view and enlarged view of PKC $\alpha$  in the middle of the retina in the control group (A) and the Met group (B). **C.** Comparison of the relative fluorescence intensities of PKC $\alpha$  in approximately 400  $\mu$ m from the optic papilla. n = 5 mice per group. **D.** Representative Western blot bands of PKC $\alpha$  versus  $\beta$ -actin. **E.** Comparison of a protein grayscale semi-quantitative analysis between the control group and the Met group. n = 3 mice per group. GCL, retinal ganglion cell layer; INL, inner nuclear layer; ONL, outer nuclear layer. Data are presented as the mean  $\pm$  SEM. NS, no statistical difference. Scale bar: whole retinal map, 500  $\mu$ m; enlarged view 50  $\mu$ m.



Supplementary material Figure 3: Pathway-act-network analysis of the retina in metformin-treated and PBS-treated rd1 mice at P14. A pathway-act network was constructed according to the interactions within pathways identified in the KEGG database. Each node (red circle) represents a signaling pathway. Arrows represent interactive relationships between two signaling pathways.



Supplementary material Figure 4: Representative images of different treatments of 661W in the visual field. Scale bars: 100  $\mu\text{m}$ .