

Supporting Information

Graphene-Ag Based Near-Infrared Defined Accurate Anti-Scarring Strategy for Ocular Glaucoma Surgery

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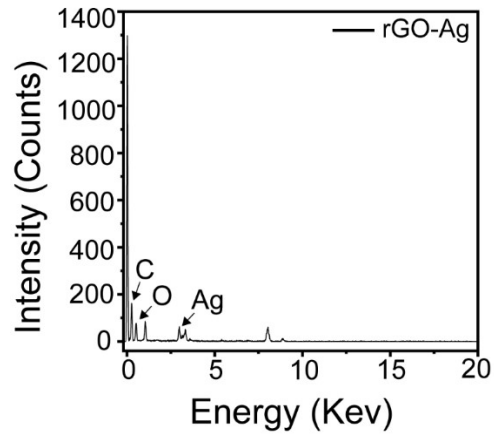


Figure S1. EDS spectrum of rGO-Ag.

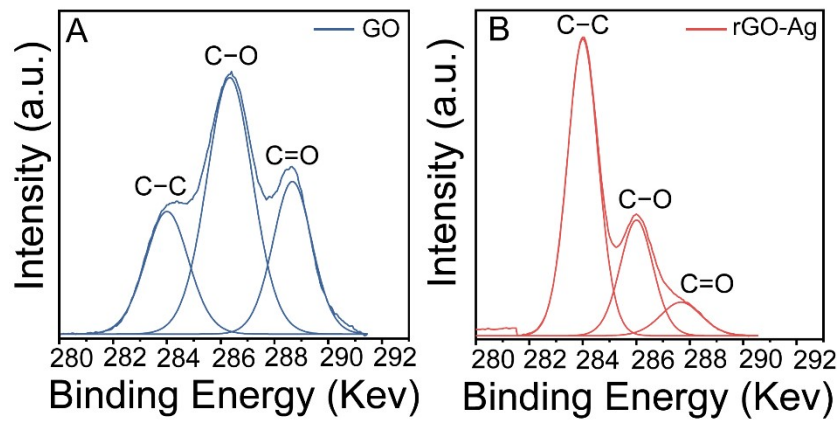


Figure S2. A) C 1s XPS spectra of GO and B) rGO-Ag.

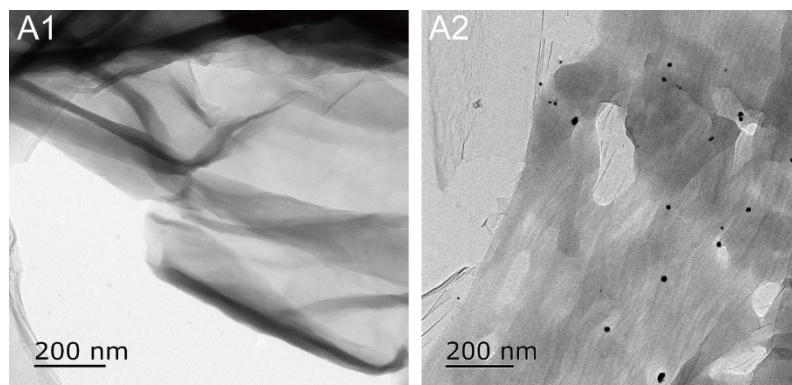


Figure S3. A1) Original TEM images of GO and A2) rGO-Ag as referred to Figure 2D.

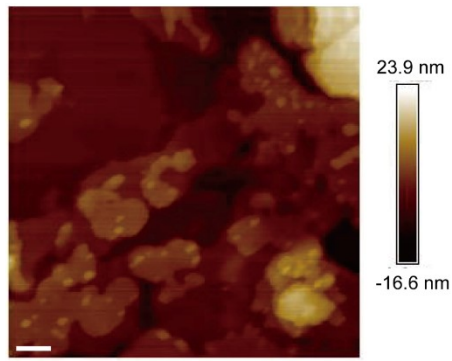


Figure S4. AFM image of rGO-Ag. Scale bar = 60 nm.

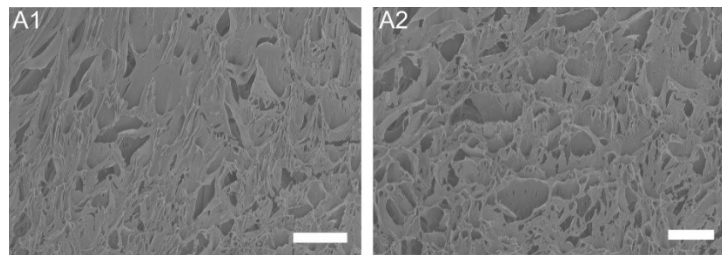


Figure S5. A1) SEM images of PVA and A2) PVA@rGO-Ag/5-Fu. Scale bar = 20 nm.

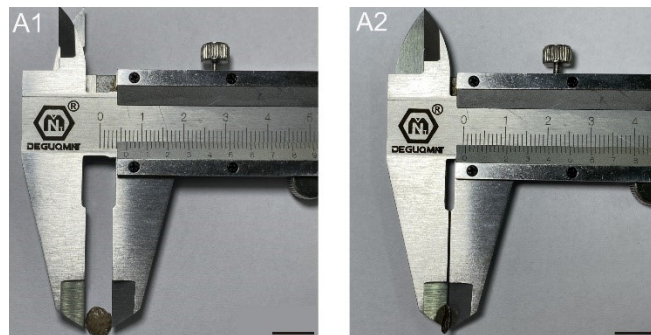


Figure S6. The diameter(A) and thickness(B) of PVA@rGO-Ag/5-Fu hydrogel. Scale bar = 1 cm.

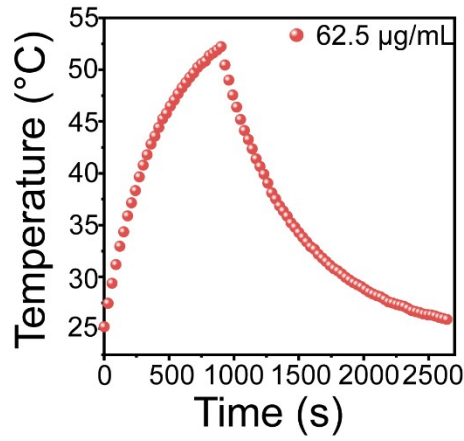


Figure S7. The thermal curve of 62.5 µg/mL rGO-Ag exposed to 808 nm NIR (2 W/cm²).

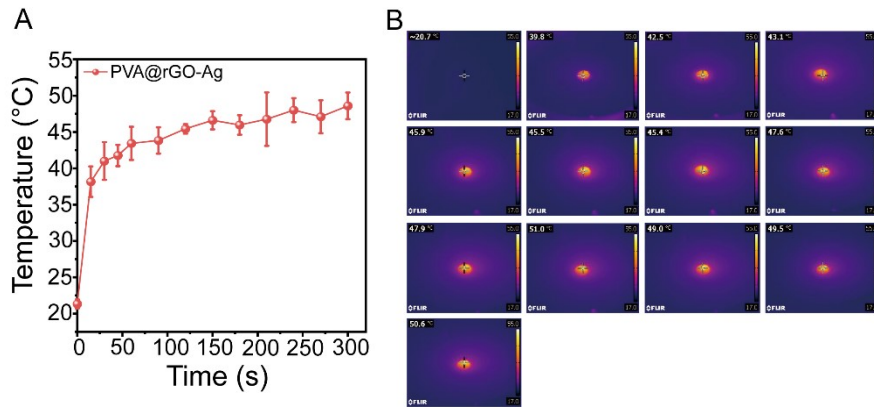


Figure S8. A) The thermal curve of PVA@rGO-Ag exposed to 808 nm NIR (2 W/cm²) and B) the corresponding digital photographs. Data are means \pm SD (n = 3).

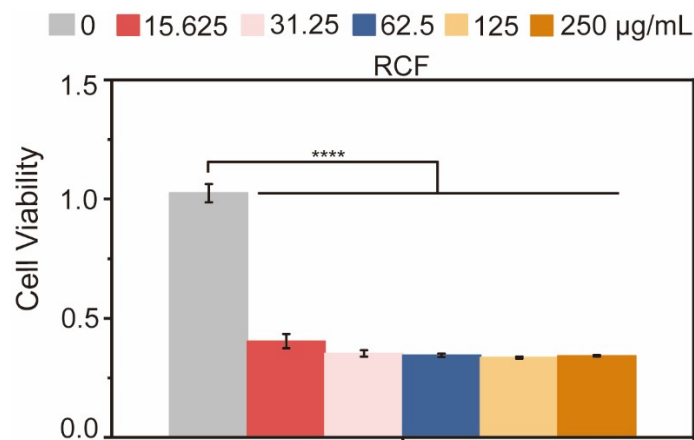


Figure S9. Cell viability of RCF cultured with different concentrations of rGO-Ag. Data are means \pm SD (n = 3). *****P* < 0.0001.

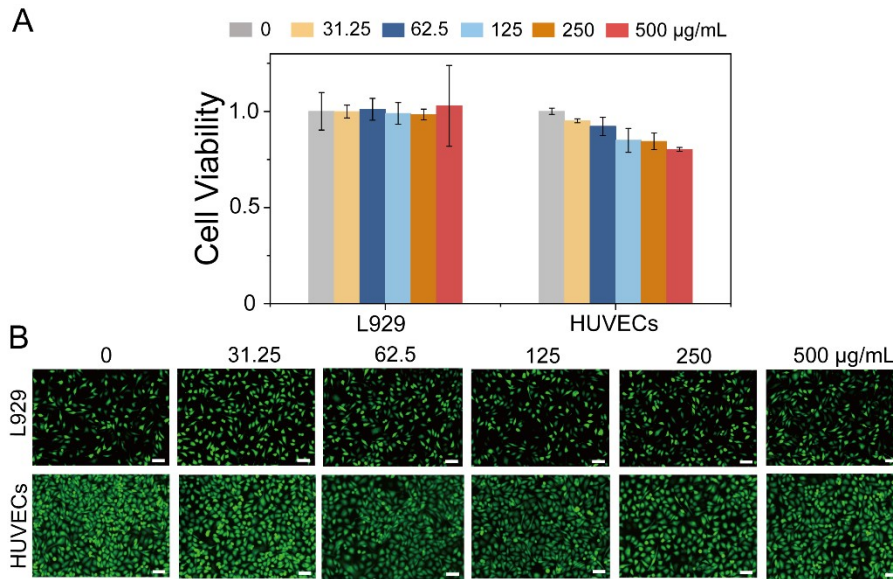


Figure S10. A, B) Cell viability and calcein-AM/PI staining of L929 and HUVECs treated with different concentrations of PVA@rGO-Ag for 24 h. Scale bar = 50 μm . Data are means \pm SD ($n = 3$).

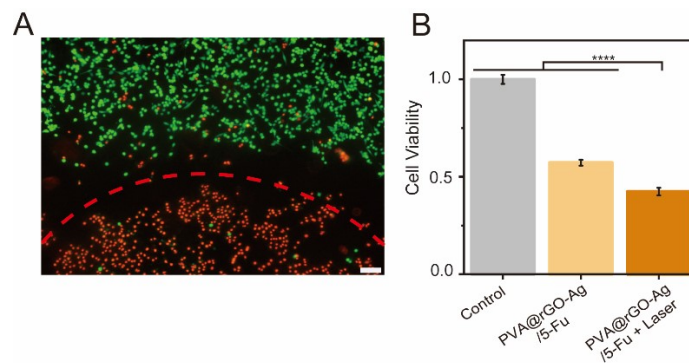


Figure S11. A) The region-selective killing effect of PVA@rGO-Ag/5-Fu under NIR irradiation. B) Cell viability of RCF treated with PBS (Control), PVA@rGO-Ag/5-Fu, and PVA@rGO-Ag/5-Fu + Laser. The NIR light was 808 nm and 2 W/cm^2 for 5 min. Data are means \pm SD ($n = 3$). **** $P < 0.0001$.

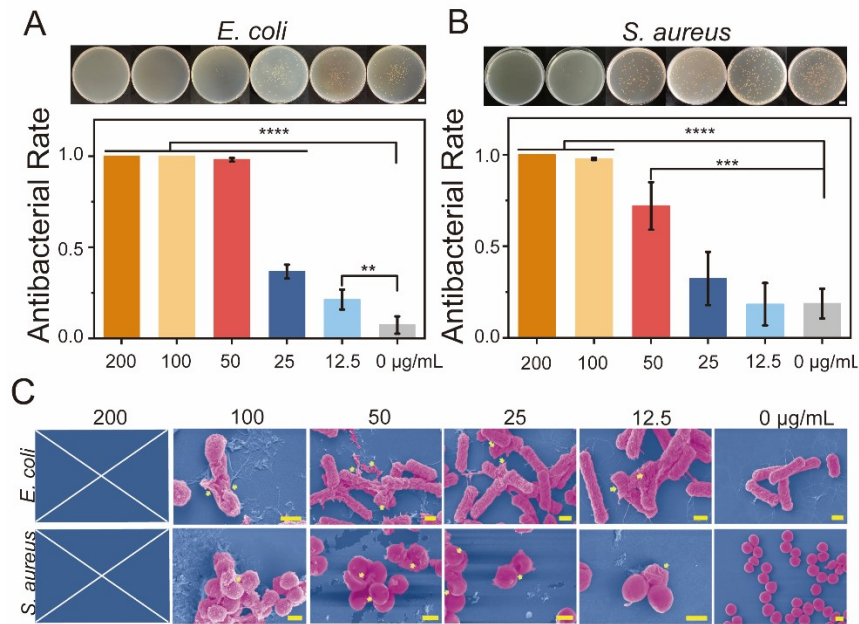


Figure S12. A, B) Antibacterial properties of various concentrations of rGO-Ag against *E. coli* and *S. aureus*, respectively. Scale bar = 1 cm. C) The corresponding SEM images of *E. coli* and *S. aureus* treated with rGO-Ag. The cross represented that no bacteria was found. And yellow arrows represented the damaged bacteria. Scale bar = 500 nm. Data are means \pm SD (n = 3). ** $P < 0.01$, *** $P < 0.001$, **** $P < 0.0001$.

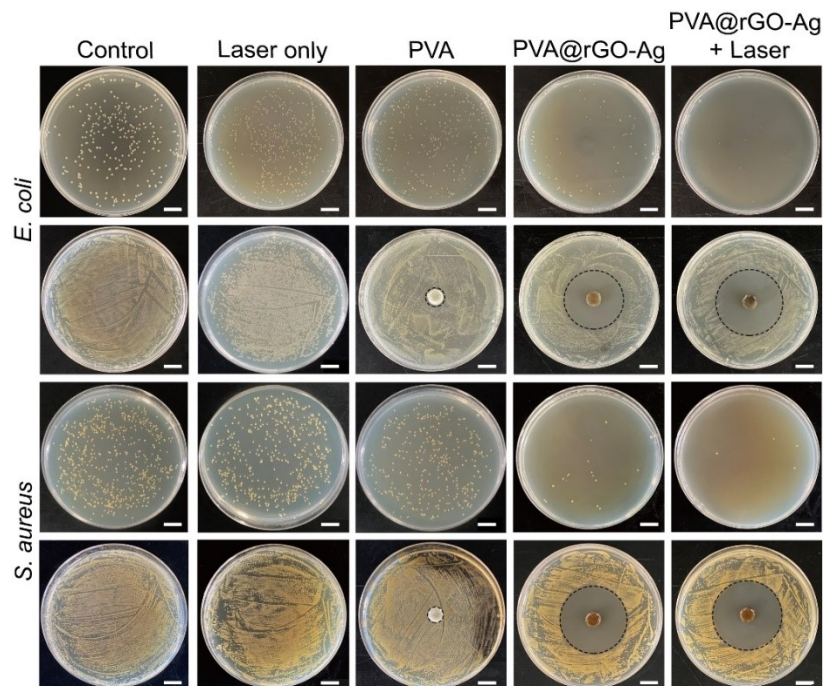


Figure S13. *E. coli* and *S. aureus* bacterial colonies and bacterial inhibition ring test for various treatments corresponding with Figure 3F. Scale bar = 1 cm.

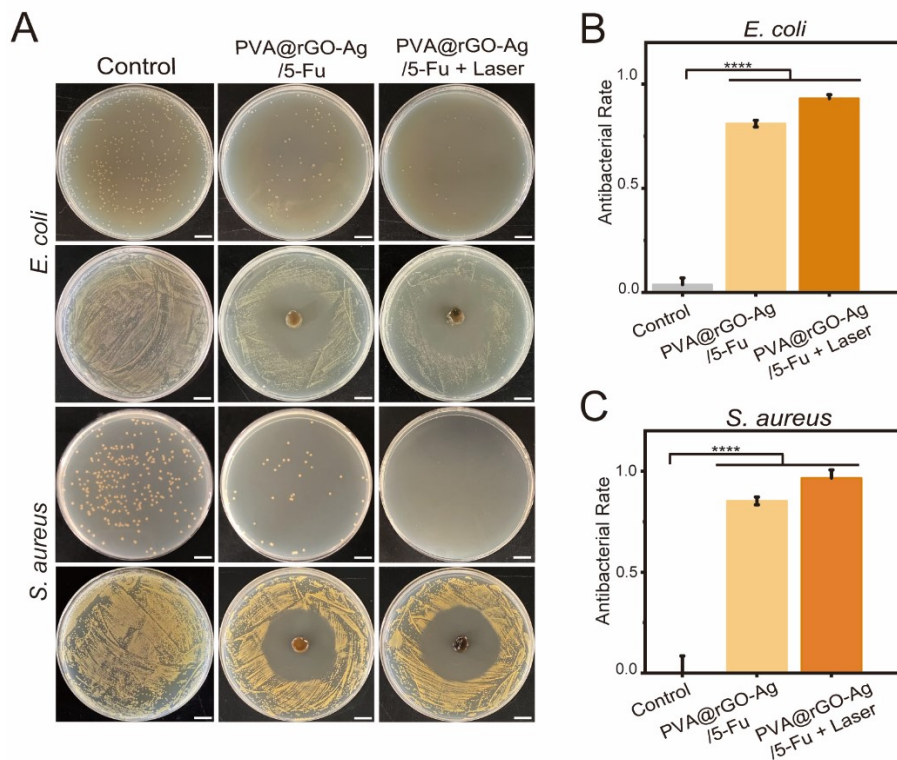


Figure S14. A) *E. coli* and *S. aureus* bacterial colonies and bacterial inhibition ring test for various treatments. B-C) Antibacterial rate of *S. aureus* (B) and *E. coli* (C) after different treatment. The NIR light was 808 nm and 2 W/cm² for 5 min. Data are means \pm SD (n = 3). *****P* < 0.0001.

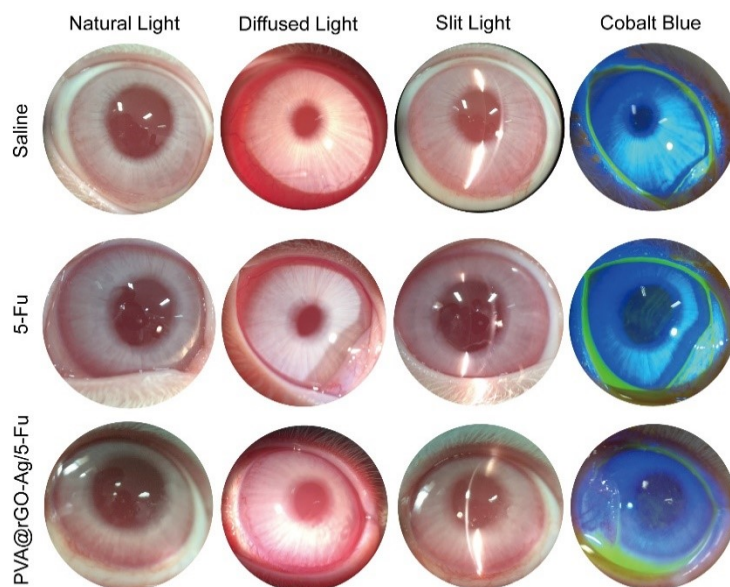


Figure S15. Anterior segment photographs of each group with various illuminations before the operation.

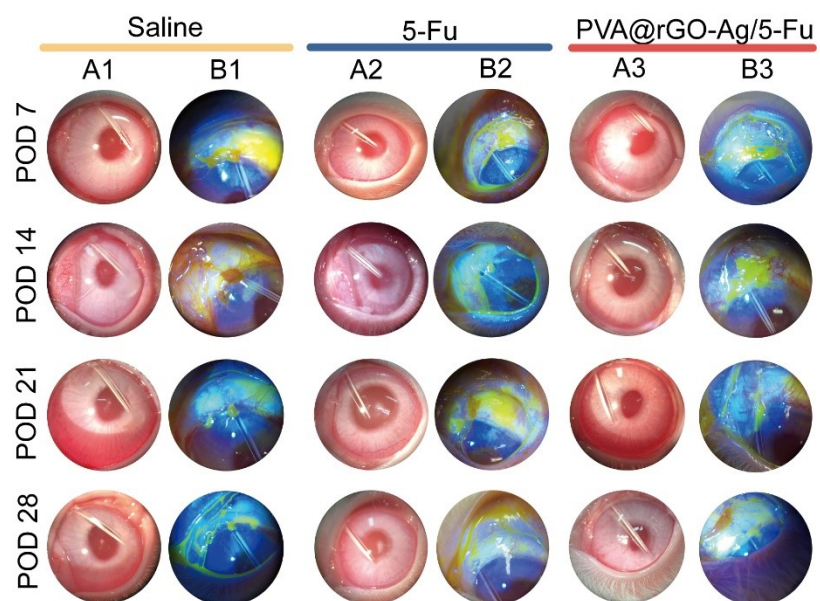


Figure S16. Anterior segment photographs of rabbit eyes during 28 days. (A1-A3) diffused illumination. (B1-B3)

Seidel test.

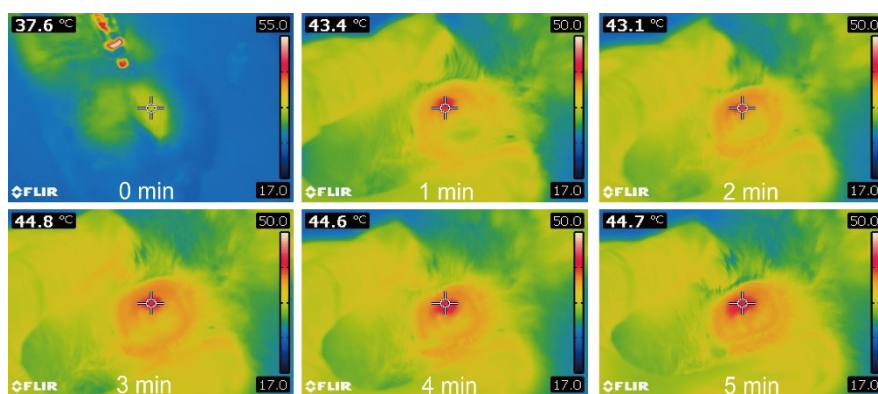


Figure S17. The thermal images of the PVA@rGO-Ag/5-Fu group after 808 nm NIR laser radiation (5 min, 2 W/cm²).

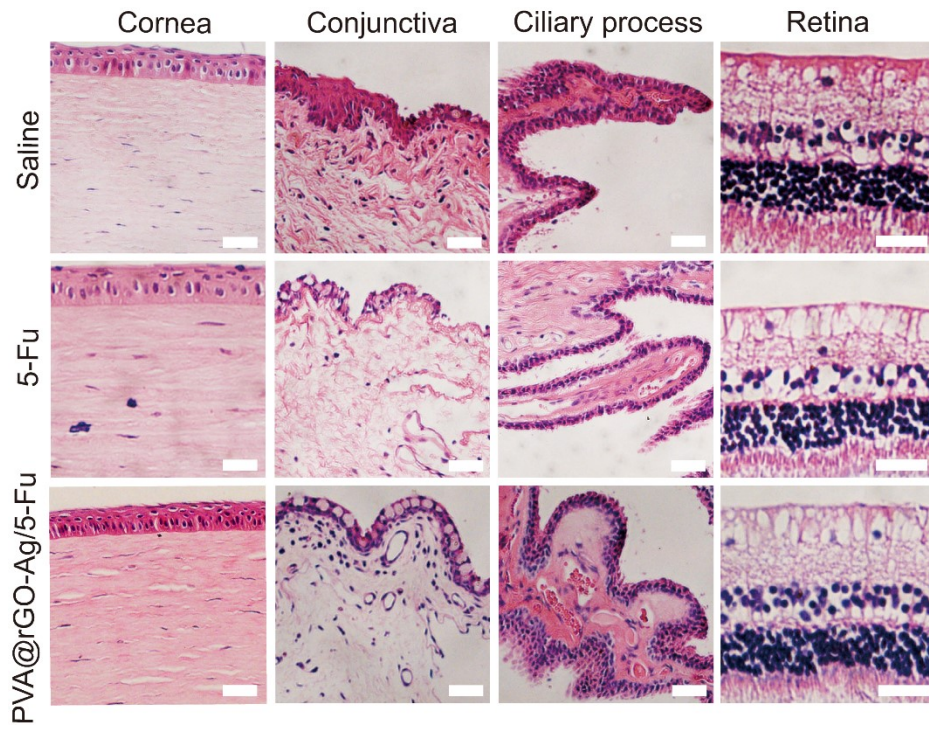


Figure S18. H&E staining of rabbit eyes after 28 days of the operation. Scale bar = 25 μ m.

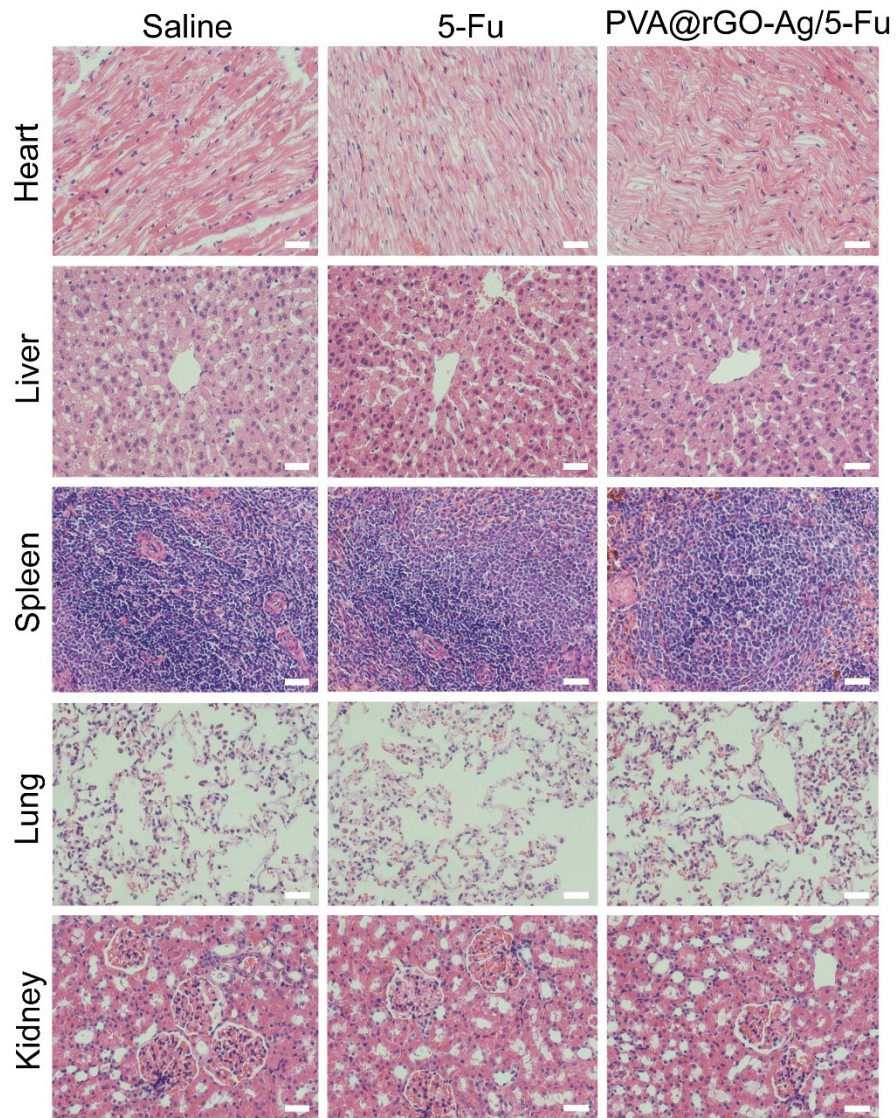


Figure S19. H&E staining of main organs excised from laboratory animals at the 28th day post-operation. Scale bar = 25 μ m.