Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B.

Supplementary Information

Constructing a self-healing injectable SABA/Borax/PDA@AgNPs hydrogel for synergistic low-temperature photothermal antibacterial therapy

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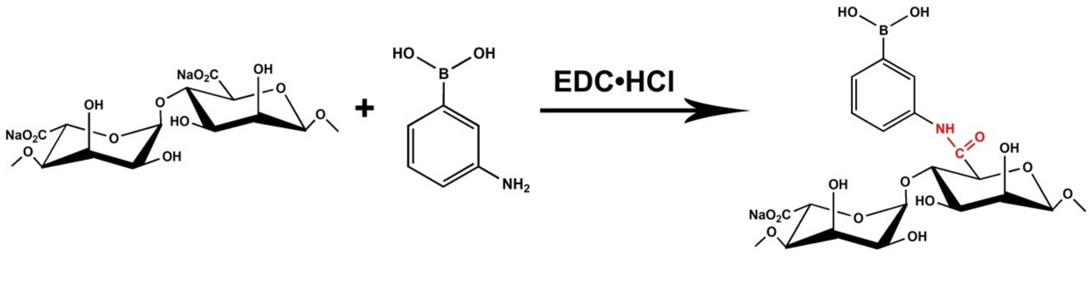

SA **ABA** **SABA**

Fig. S1. Schematic diagram of the synthesis of SABA.

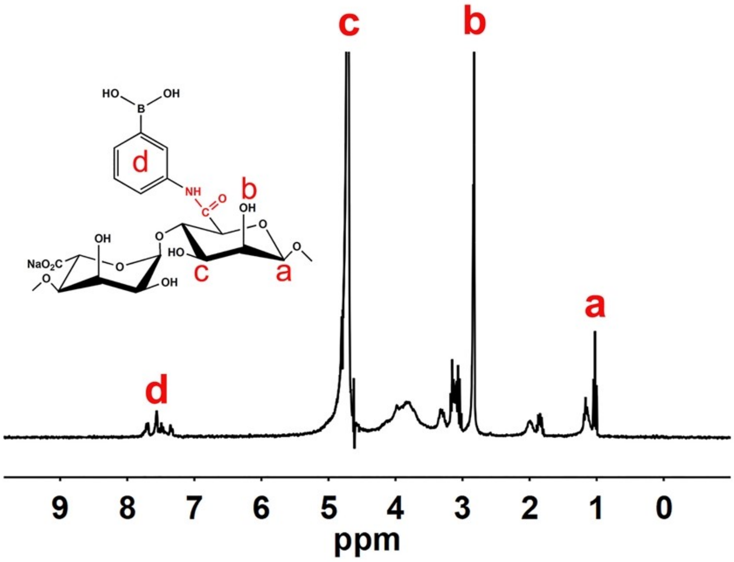

Fig. S2. ^{1}H NMR spectra of SABA.

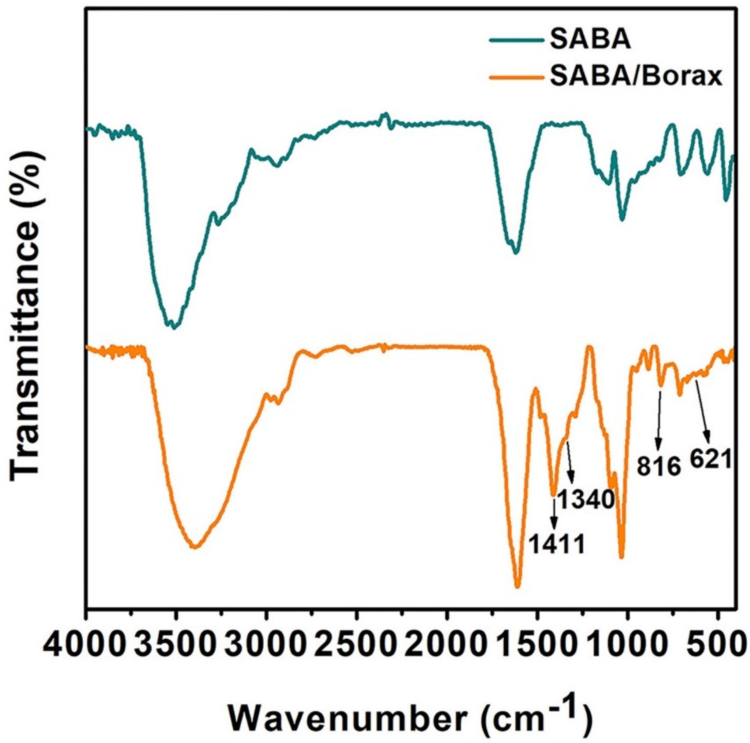

Fig. S3. FTIR spectra of SABA and SABA/Borax hydrogel.

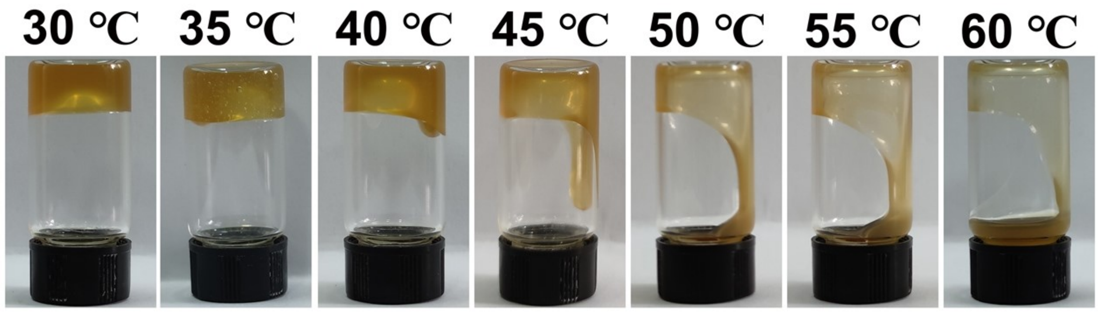

Fig. S4. Photos of Gel-sol transition process for SABA/Borax hydrogel. The gel-state hydrogel progressively melted into sol-state and flowed down with the temperature increased, the melting temperature was 40 ℃.

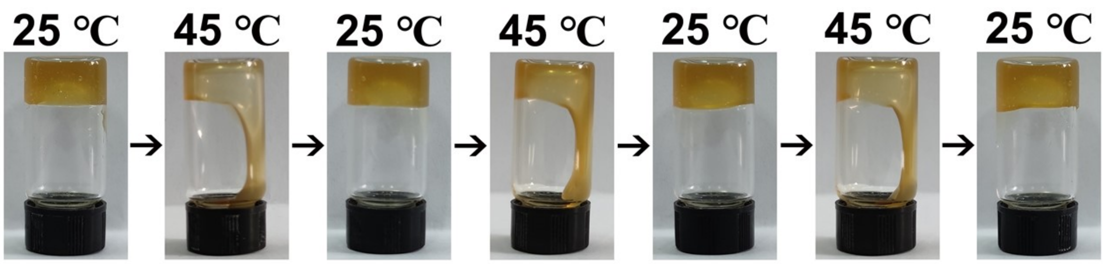

Fig. S5. The thermal-responsive and reversible gel-sol transition of SABA/Borax hydrogel. The hydrogel experienced a gel-sol transition at 45 ℃, the converted sol progressively restored to gel-state at the cooling procedure after three cycles.

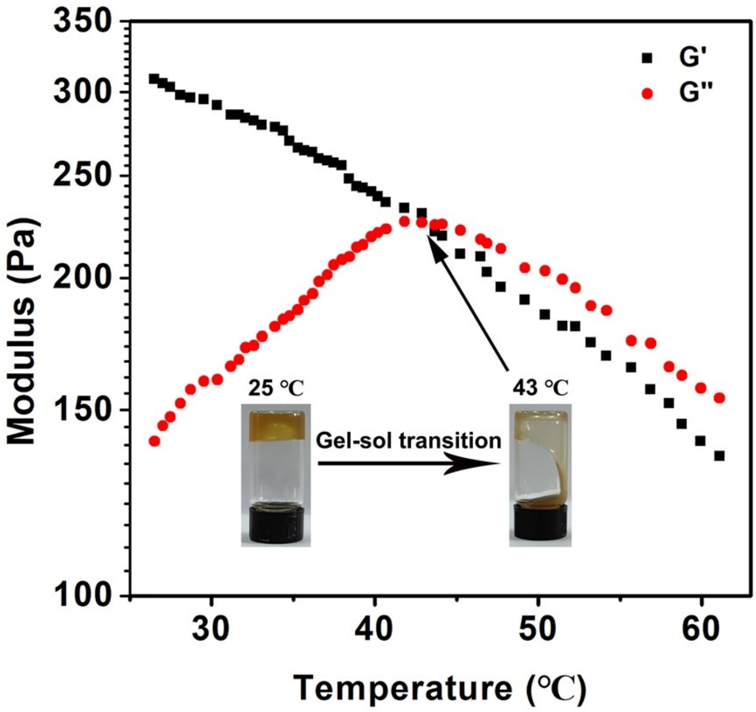

Fig. S6. The temperature-dependent development of G' and G'' for SABA/Borax hydrogel.

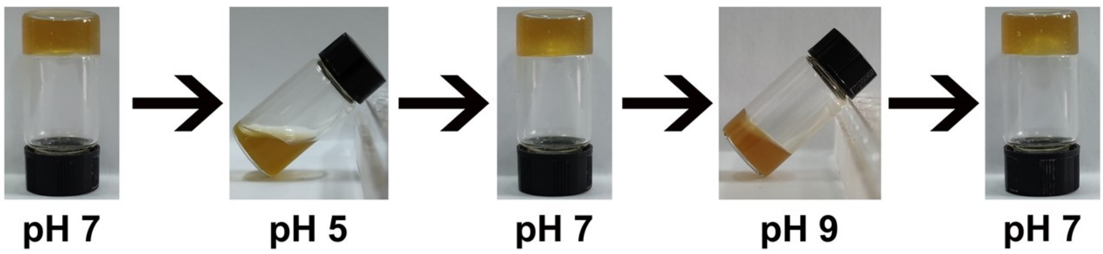

Fig. S7. The invertible pH-responsive gel-sol transition of SABA/Borax hydrogel. The hydrogel experienced a gel-sol transition at pH 5, and progressively restored to gel-state at pH 7 or 9.

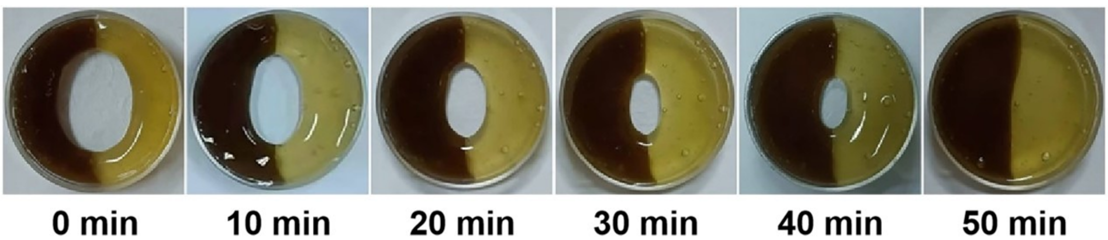

Fig. S8. Self-healing performance of SABA/Borax/PDA@AgNPs hydrogel.

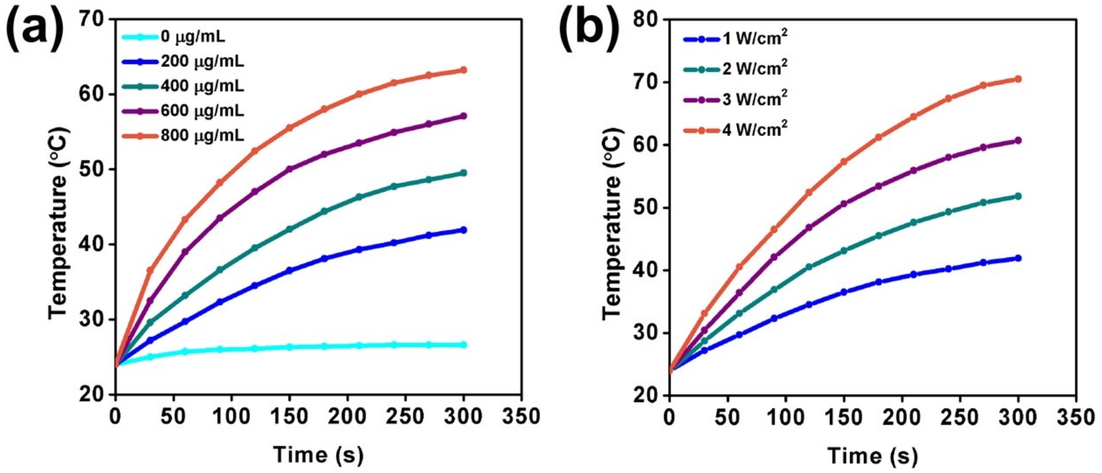

Fig. S9. (a) Temperature changes of SABA/Borax/PDANPs hydrogel with different concentrations of PDANPs under 808 nm irradiation (1 W/cm^2); (b) Temperature changes of SABA/Borax/PDANPs hydrogel under different power density.

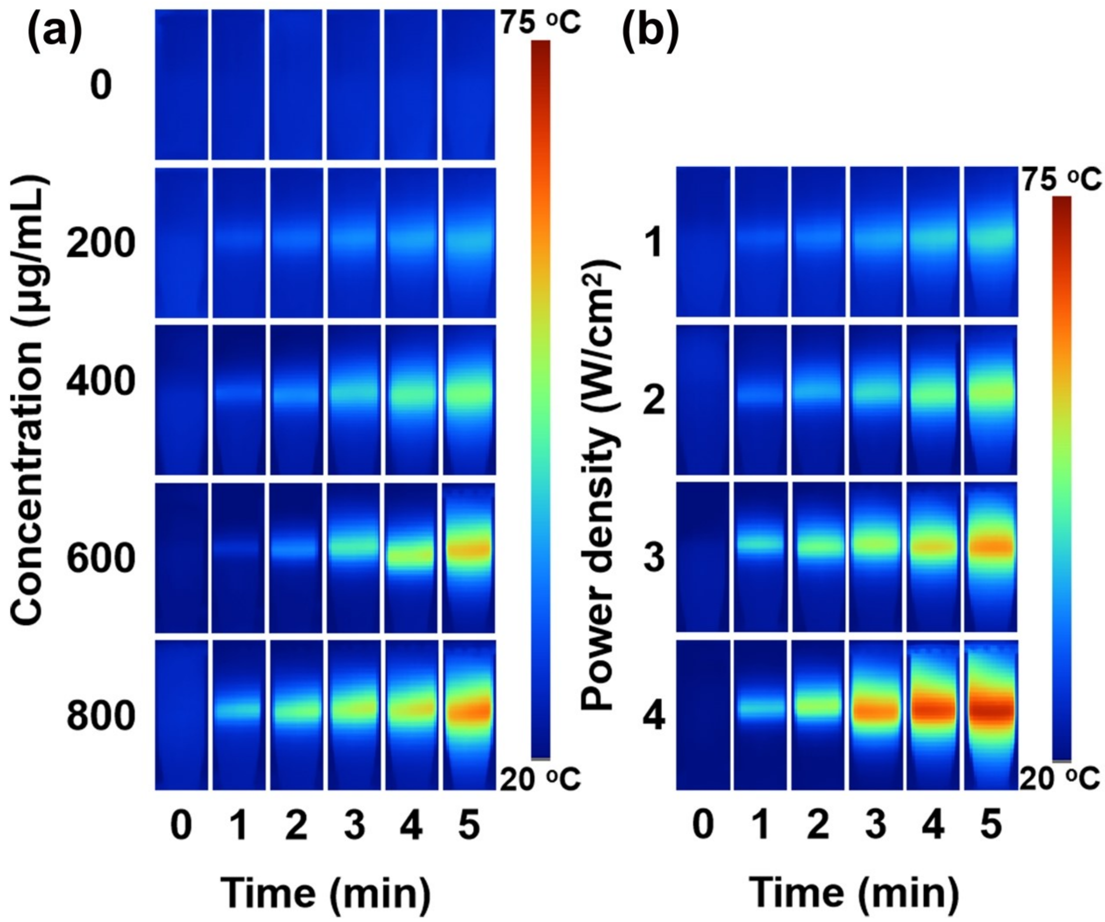

Fig. S10. Thermal images of different SABA/Borax/PDANPs hydrogel with different (a) concentrations and (b) power intensities.

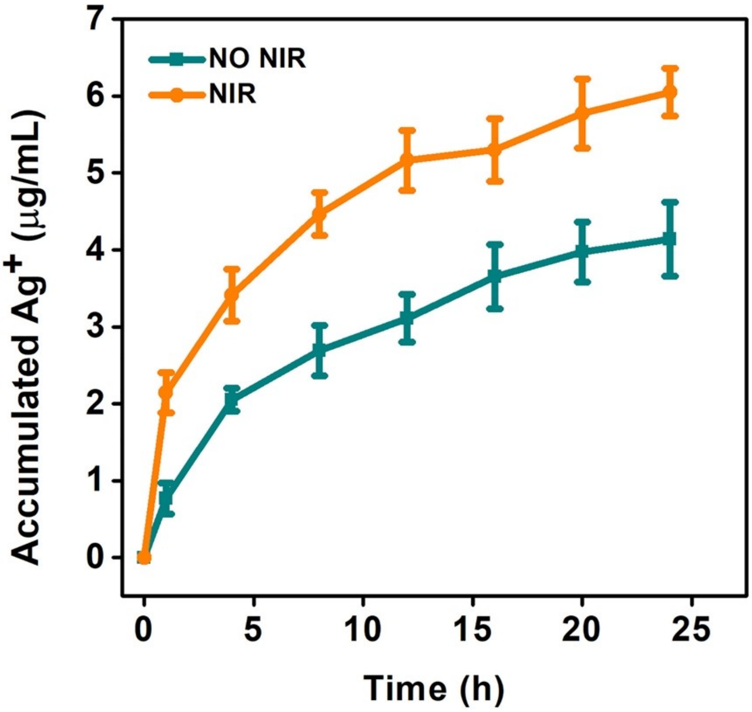

Fig. S11. The Ag^+ ion release capability of PDA@AgNPs at PBS (pH 7.4) with or without NIR irradiation.

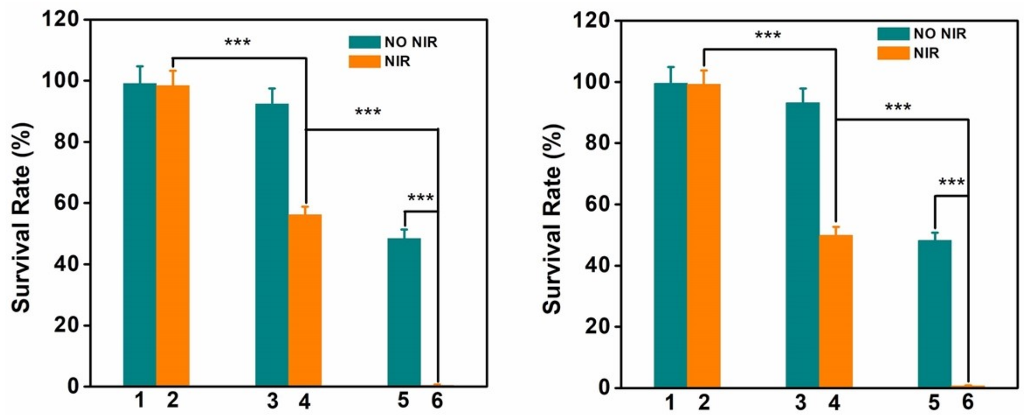

Fig. S12. Bacterial surviving ratio of (a) *S. aureus* and (b) *E. coli*. (1. Saline; 2. Saline plus laser; 3. SABA/Borax/PDANPs hydrogel; 4. SABA/Borax/PDANPs hydrogel plus laser; 5. SABA/Borax/PDA@AgNPs hydrogel; 6. SABA/Borax/PDA@AgNPs hydrogel plus laser. *$P < 0.05$; **$P < 0.01$; ***$P < 0.001$)

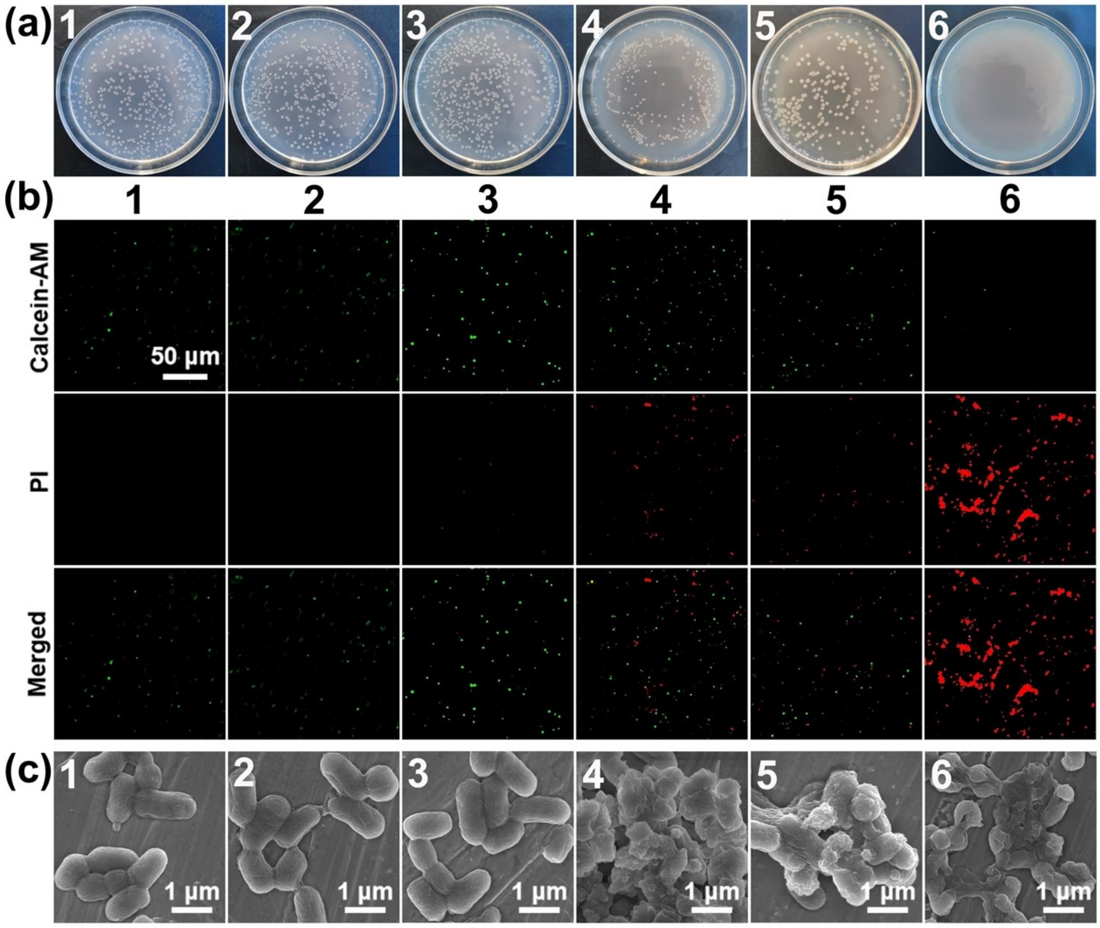

Fig. S13. (a) The agar plates photographs of *E. coli* after various treatments; (b) The fluorescence images of *E. coli* with various treatments; (c) SEM images of *E. coli* after various treatments. (1. Saline; 2. Saline plus laser; 3. SABA/Borax/PDANPs hydrogel; 4. SABA/Borax/PDANPs hydrogel plus laser; 5. SABA/Borax/PDA@AgNPs hydrogel; 6. SABA/Borax/PDA@AgNPs hydrogel plus laser. The color of Green (Calcein-AM) and red (PI) indicated live and dead bacteria, respectively)

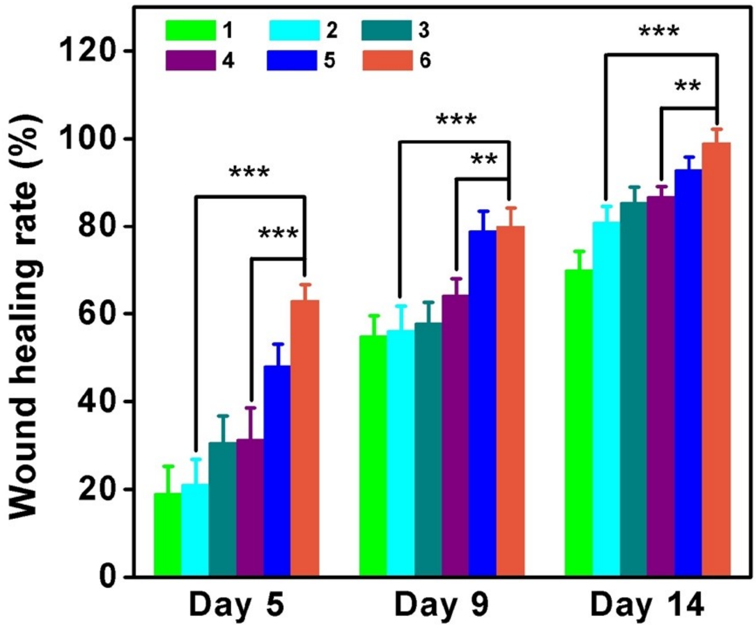

Fig. S14. The statistical histogram of the wound area healing rates of various groups. (1. Saline; 2. Saline plus laser; 3. SABA/Borax/PDANPs hydrogel; 4. SABA/Borax/PDANPs hydrogel plus laser; 5. SABA/Borax/PDA@AgNPs hydrogel; 6. SABA/Borax/PDA@AgNPs hydrogel plus laser. **P* < 0.05; ***P* < 0.01; ****P* < 0.001)

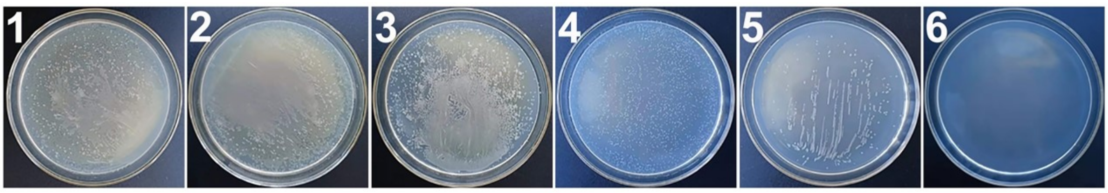

Fig. S15. Photographs of survival bacteria on agar plates of wounds at day 7. (1. Saline; 2. Saline plus laser; 3. SABA/Borax/PDANPs hydrogel; 4. SABA/Borax/PDANPs hydrogel plus laser; 5. SABA/Borax/PDA@AgNPs hydrogel; 6. SABA/Borax/PDA@AgNPs hydrogel plus laser)

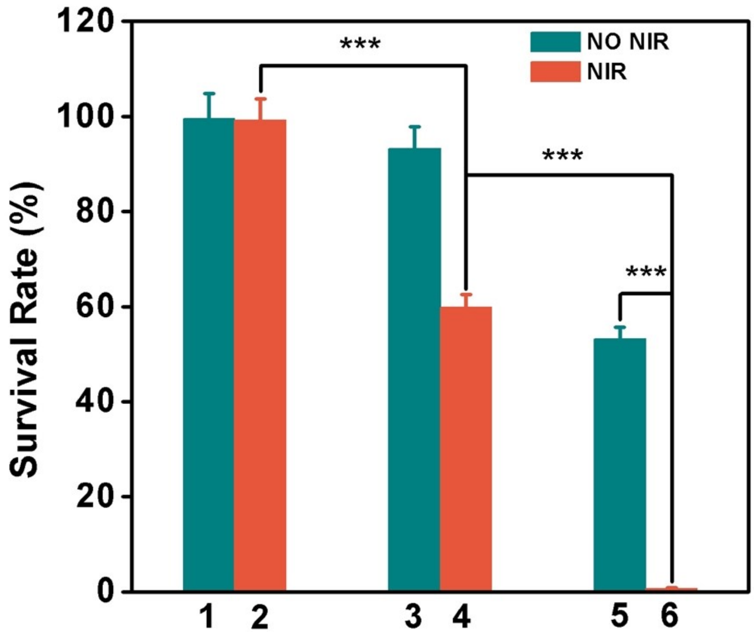

Fig. S16. Bacterial survival rate in wound tissue of each group. (1. Saline; 2. Saline plus laser; 3. SABA/Borax/PDANPs hydrogel; 4. SABA/Borax/PDANPs hydrogel plus laser; 5. SABA/Borax/PDA@AgNPs hydrogel; 6. SABA/Borax/PDA@AgNPs hydrogel plus laser. **P* < 0.05; ***P* < 0.01; ****P* < 0.001)

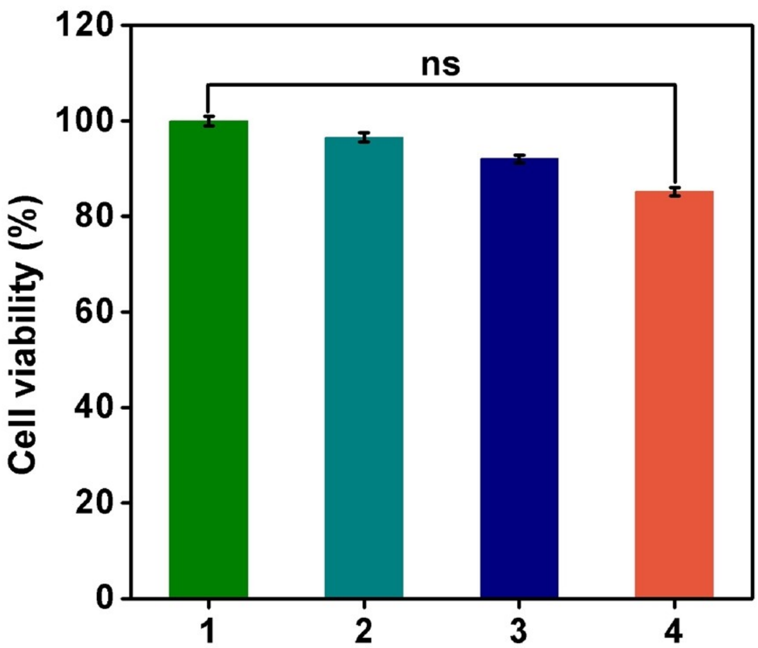

Fig. S17. Cytotoxicity of the hydrogel against HL-7702 cells tested by MTT assay (1. Saline; 2. SABA; 3. SABA/Borax/PDANPs hydrogel; 4. SABA/Borax/PDA@AgNPs hydrogel. ns, no significance)