

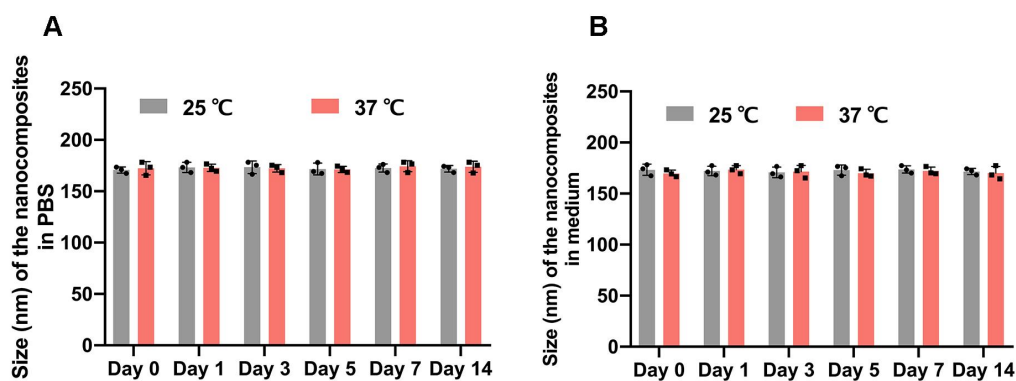
## Supporting Information

### Near-Infrared Light-Controlled Kartogenin Delivery of Multifunctional Prussian Blue Nanocomposites for Cartilage Defect Repair

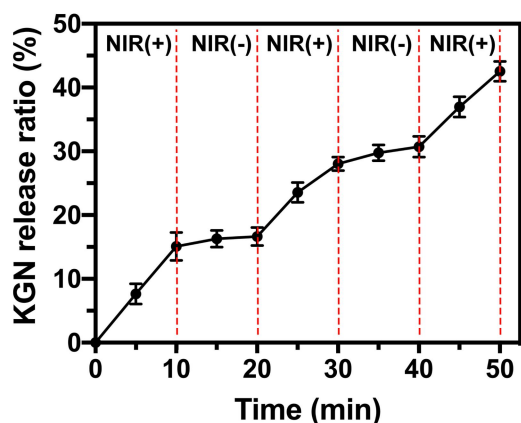
Zunhan Liu, Zhenyu Luo, Haoda Yu, Enze Zhao, Junfeng Guo, Ping Mou, Anjing Chen, Jiali Chen, Zongke Zhou\*, and Weinan Zeng\*



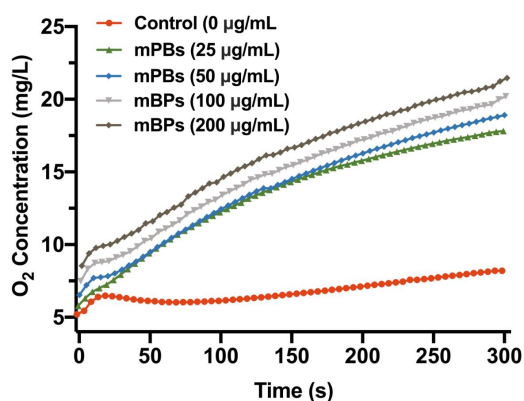
**Fig. S1** (A) Solid phase (35 °C) and (B) liquid phase (45 °C) of PCM.



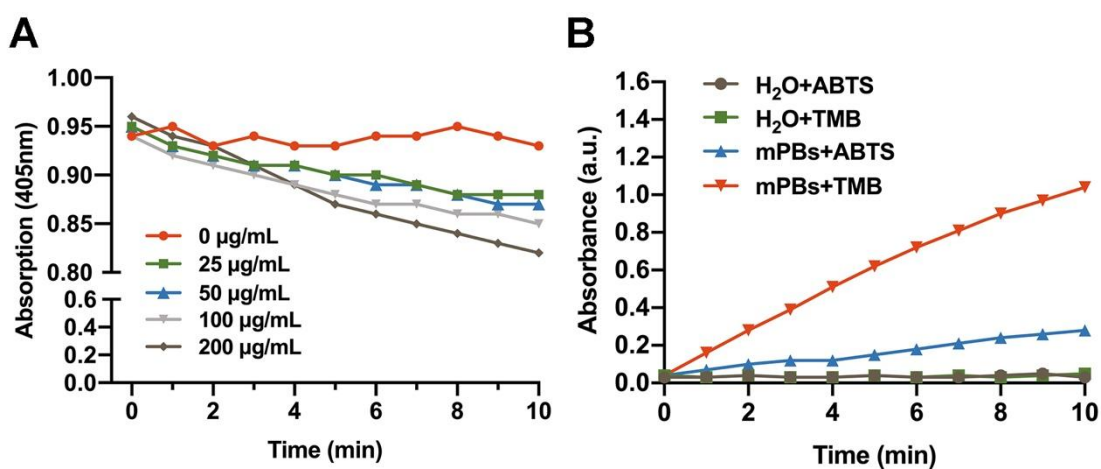
**Fig. S2** Hydrodynamic diameter changes of KGN-PCM@mPBs in (A) PBS and (B) chondrogenic differentiation medium at different temperatures (25 °C and 37 °C).



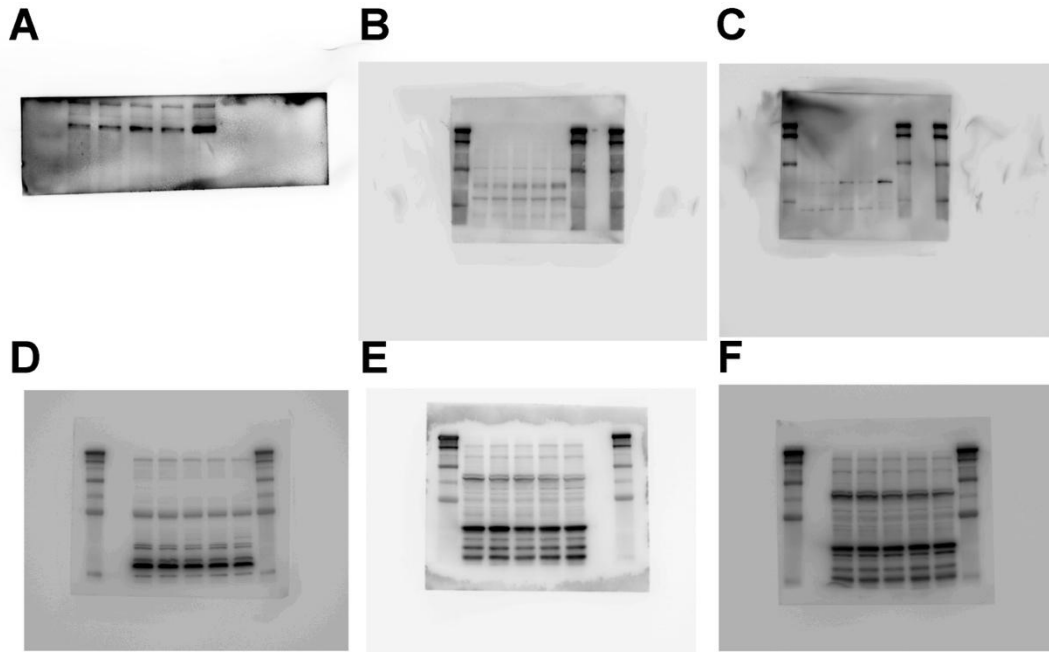
**Fig. S3** KGN release of KGN-PCM@mPBs with three cycles under an 808 nm irradiation ( $0.6 \text{ W/cm}^2$ , 10 min for each cycle).



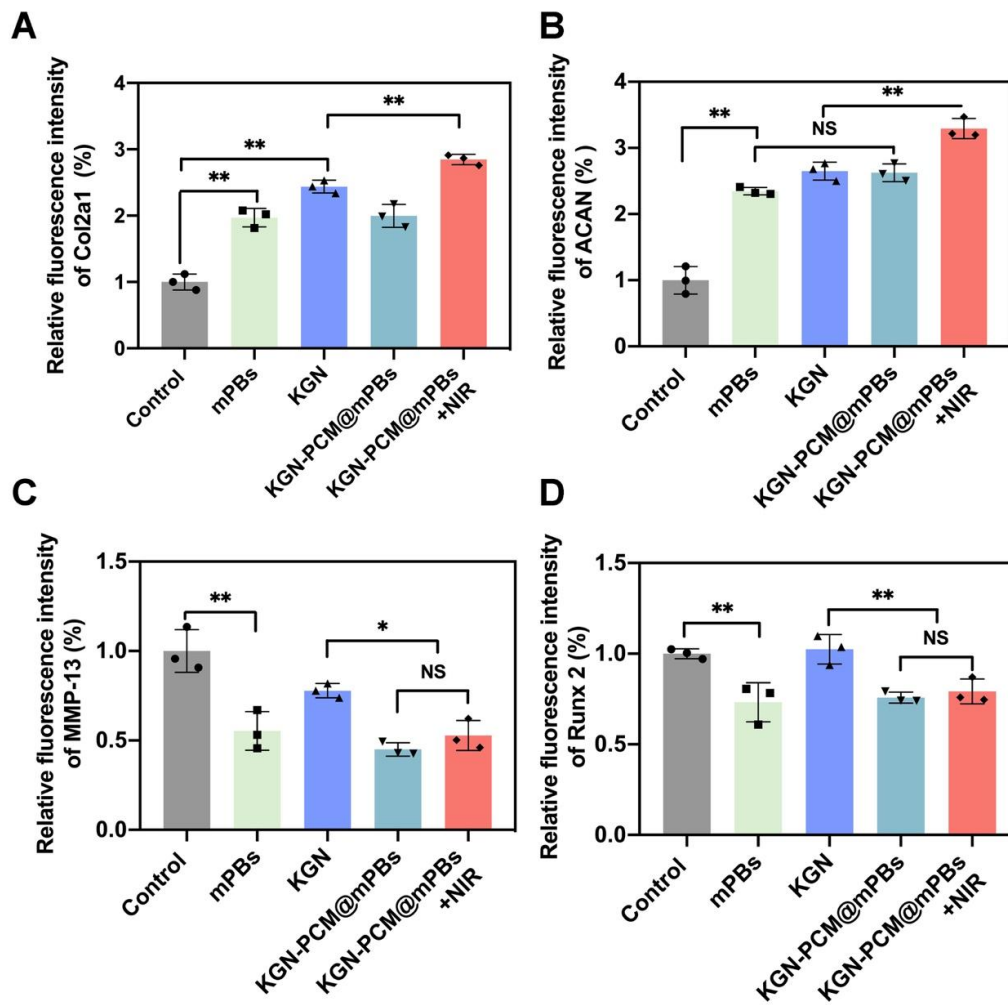
**Fig. S4** Quantitative measurement of  $\text{O}_2$  generation after dispersing different KGN-PCM@mPB concentrations into a  $100 \mu\text{M}$   $\text{H}_2\text{O}_2$  solution at  $25 \text{ }^\circ\text{C}$ .



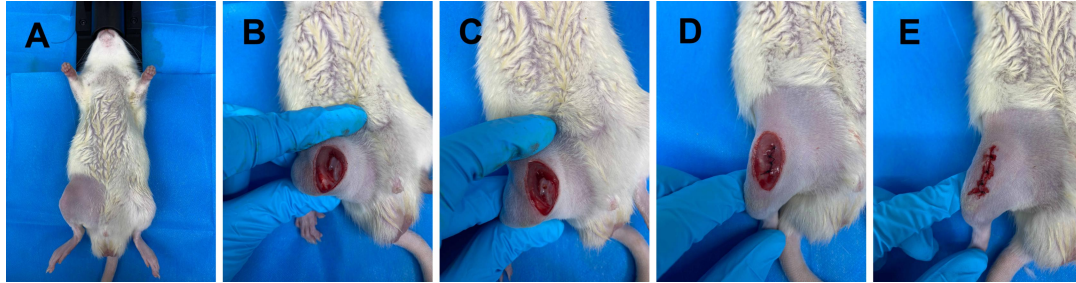
**Fig. S5** Scavenging effects of KGN-PCM@mPBs on  $\text{H}_2\text{O}_2$  (A) and  $\cdot\text{OH}$  (B) under NIR irradiation ( $0.6 \text{ W cm}^{-2}$ , 10 min).



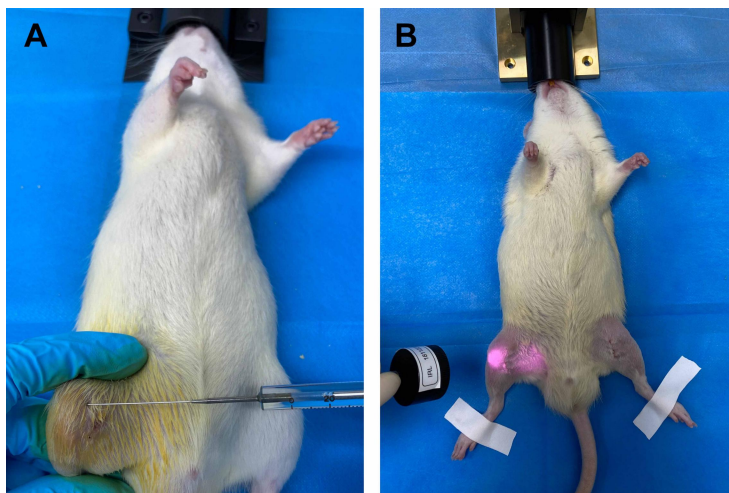
**Fig. S6** The original unedited images of the Western blotting protein bands for Col2a1 (A), Sox9 (B), ACAN (C), Mmp 13 (D), Col X (E), and Runx 2 (F).



**Fig. S7** Quantitative analysis of relative fluorescence intensity of Col2a1 (A), ACAN (B), MMP-13 (C), and Runx 2 (D).

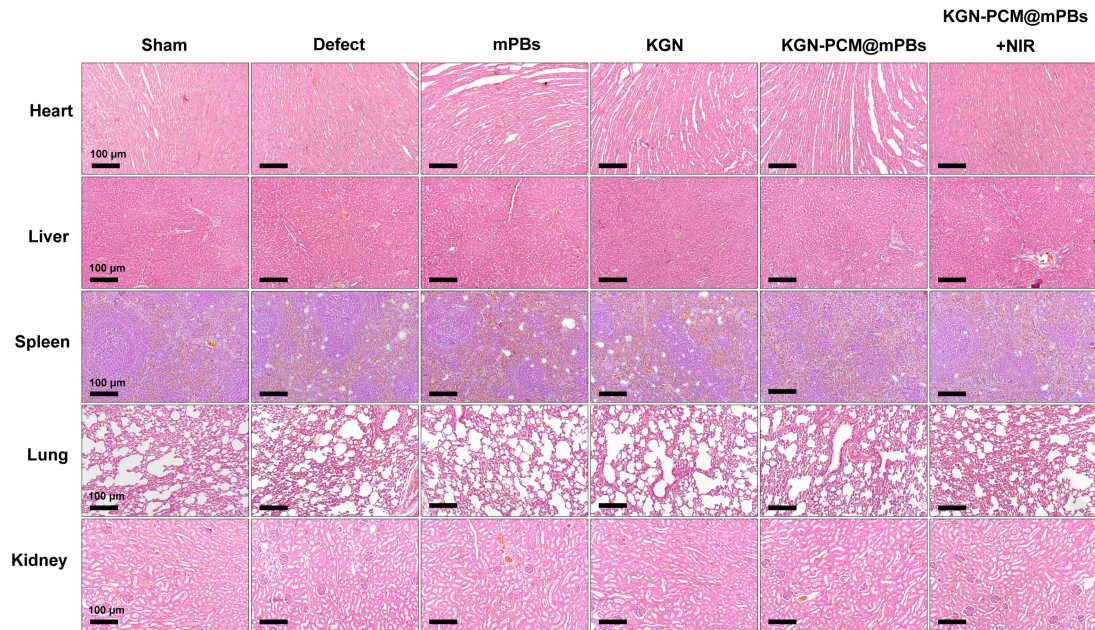


**Fig. S8** The process of creating a full-thickness chondral defect in the patellar groove, including (A) cut the hair on right knee, (B) incision of skin and soft tissue, (C) create a full-thickness chondral defect (2 mm in diameter and 2 mm in depth) in right knee, (D) suture joint capsule, and (E) suture skin.

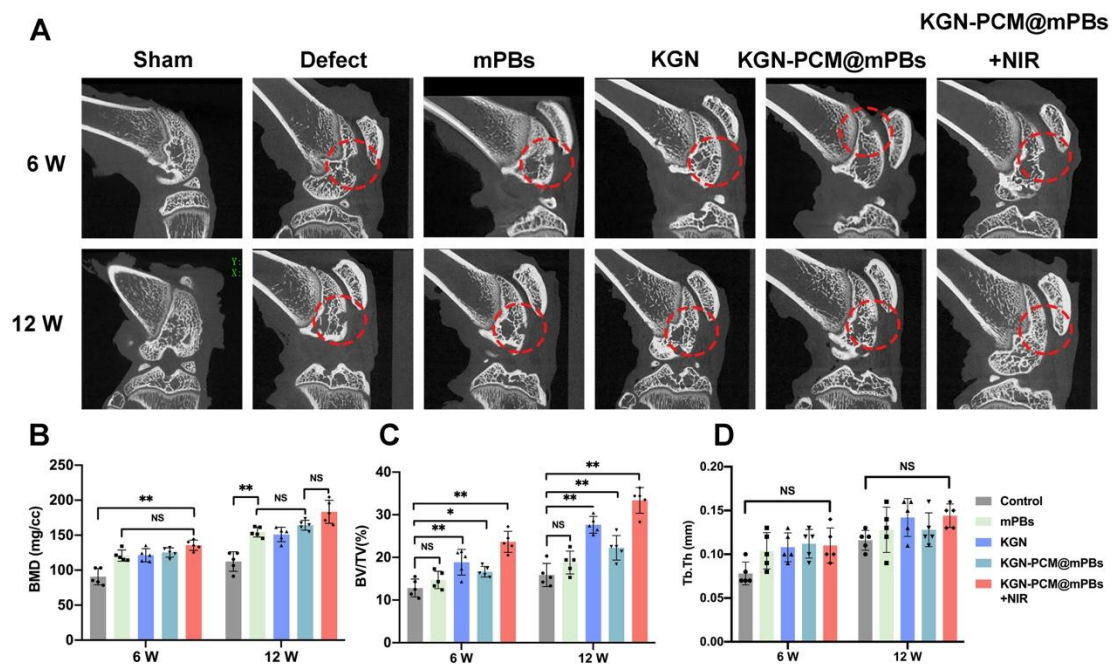


**Fig. S9** (A) Intra-articular injection of the nanocomposites. (B) NIR irradiation ( $0.6 \text{ W/cm}^2$ , 10 min) at right knee of SD rat.





**Fig. S10** H&E staining of the main organs from SD rats at 6 weeks after intra-articular injections of different solutions.



**Fig. S11** Micro-CT images of the repaired cartilage at 6 and 12 weeks. Red circles indicating the defect area (A). Quantitative analysis of BMD (B), BV/TV (C), and Tb.Th in the defect area. All quantitative results are presented as mean  $\pm$  standard deviation of replicate experiments ( $n = 5$ ). \* $p < 0.05$ , \*\* $p < 0.01$ .