Supplemental Information

On-Demand Release of Fucoidan from a Multilayered Nanofiber Patch for the Killing of Oral Squamous Cancer Cells and Promotion of Epithelial Regeneration

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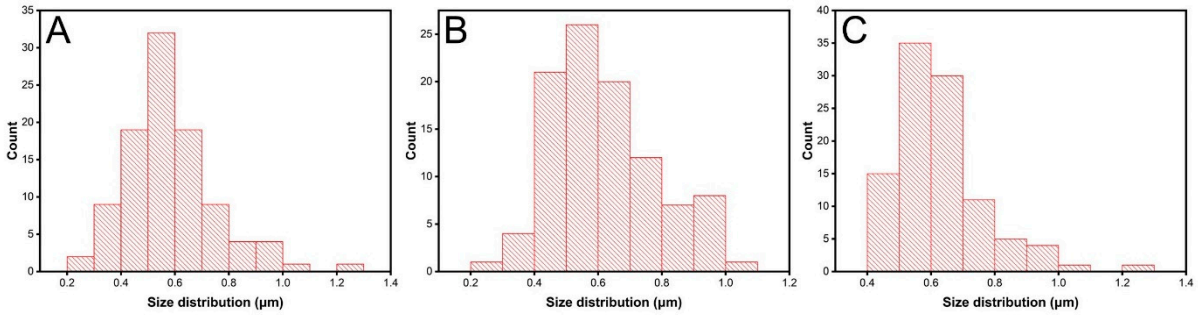


Figure S1 The diameter distribution of (A) PCM nanoparticles, (B) PCL nanofibers, and (C) PCL/ADM nanofibers.

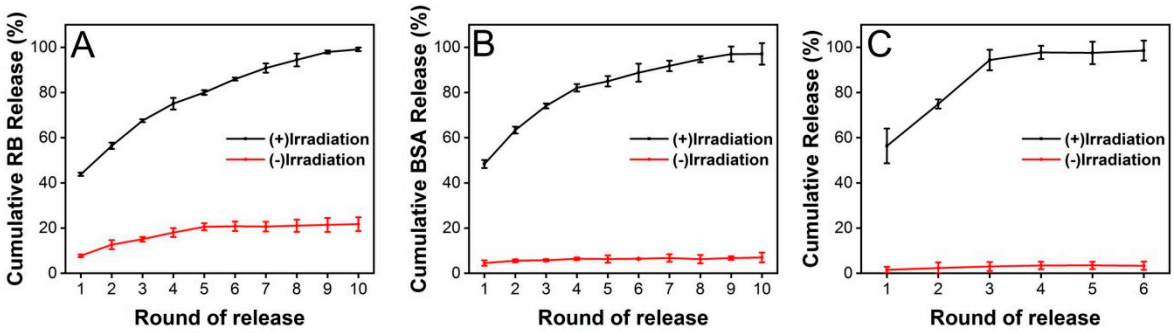


Figure S2 Cumulative release profiles of different payloads released from the PCM microparticles. (A) RB, (B) FITC-BSA, and (C) LMWF released from PCMs loaded with ICG (1.0 mg/mL) under an NIR laser at an irradiation density of 2600 mW (n=3). The time interval of laser irradiation between two adjacent cycles was 0.5 h.

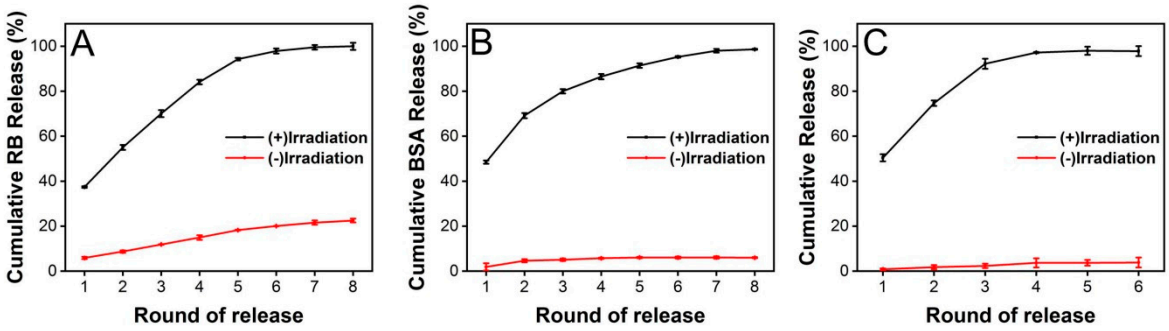


Figure S3 Cumulative release profiles of different payloads released from the PCM microparticles. (A) RB, (B) FITC-BSA, and (C) LMWF released from PCMs loaded with ICG (1.0 mg/mL) under an NIR laser at an irradiation density of 2600 mW (n=3). The time interval of laser irradiation between two adjacent cycles was 2.0 h.

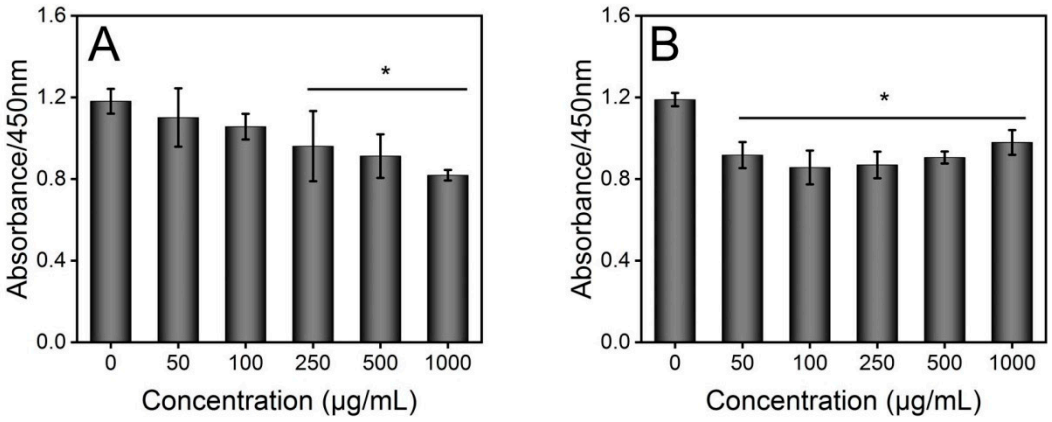


Figure S4 (A) The cytotoxicity of different concentrations of LMWF toward HOK cells. No obvious cytotoxicity was observed until the concentration reached 250 μg/mL. (B) The effective concentrations of LMWF toward SCC-9 cells. The LMWF exhibited significant cytotoxicity toward SCC-9 cells ranging from 50 to 1000 μg/mL. * $P<0.05$ when comparing the groups with groups without LMWF treatment (0 μg/mL).

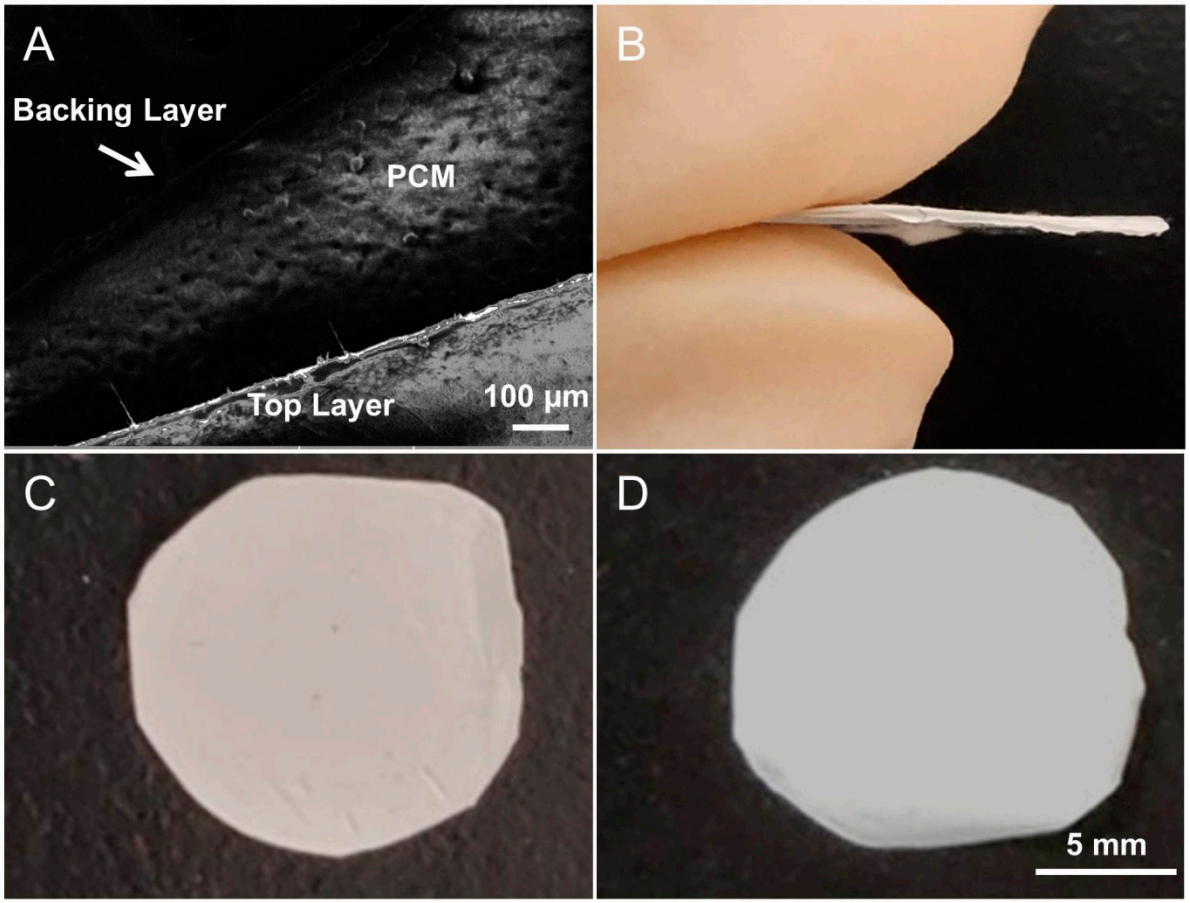


Figure S5 (A) The SEM image of the multi-layered scaffold. (B-D) The photograph of the multi-layered scaffold (B) The sectional view of the multi-layered scaffold. (C) The front view of the multi-layered scaffold. (D) The back view of the multi-layered scaffold.

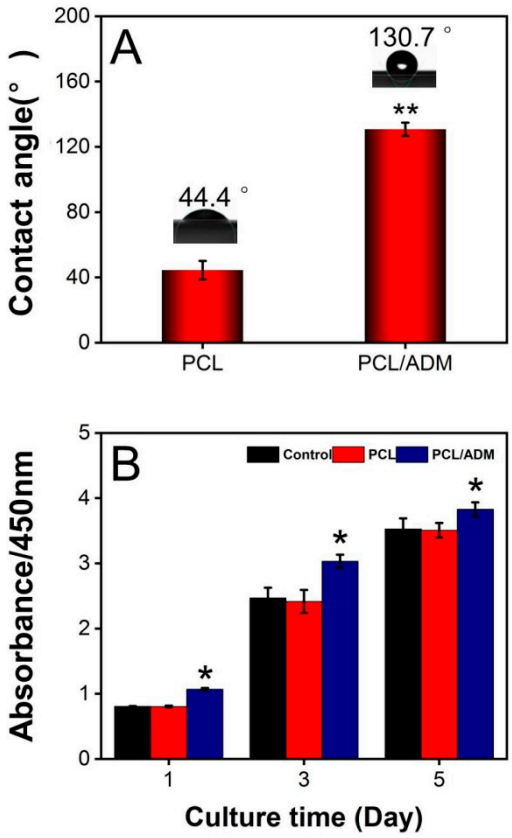


Figure S6 (A) Water contact angle assay for the various fibers bythe sessile drop technique. (n=3). ** $P<0.01$ when comparing the group of PCL/ADM fibers with the other group. (B) The comparison of cell proliferation of HOK cells cultured on PCL and PCL/ADM fibers (n=3). * $P<0.05$ when comparing the group of PCL/ADM fibers with other groups.

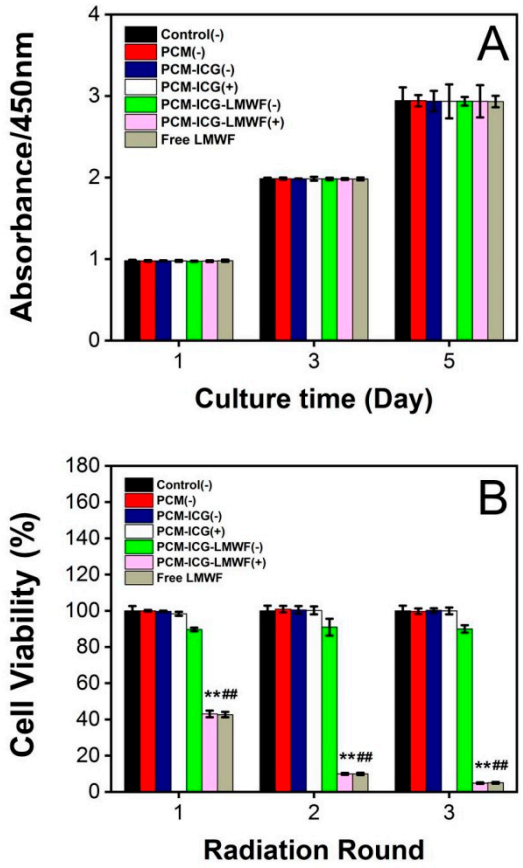


Figure S7 Cell viability of various types of PCMs toward (A) HOK cells and (B) SCC-9 cell lines under 60s irradiation(2600mW) or without irradiation at pre-appointed time points during culturing for five days. "+" indicated the irradiation treatment, and "-" indicated without irradiation treatment. The Free LMWF group means the addition of an equivalent dosage of LMWF at time points (n=3). ** P<0.01 when comparing the group of PCM-ICG-LMWF (+) PCM particles under irradiation with other groups. ## P<0.01 when comparing the group of Free LMWF with other groups.

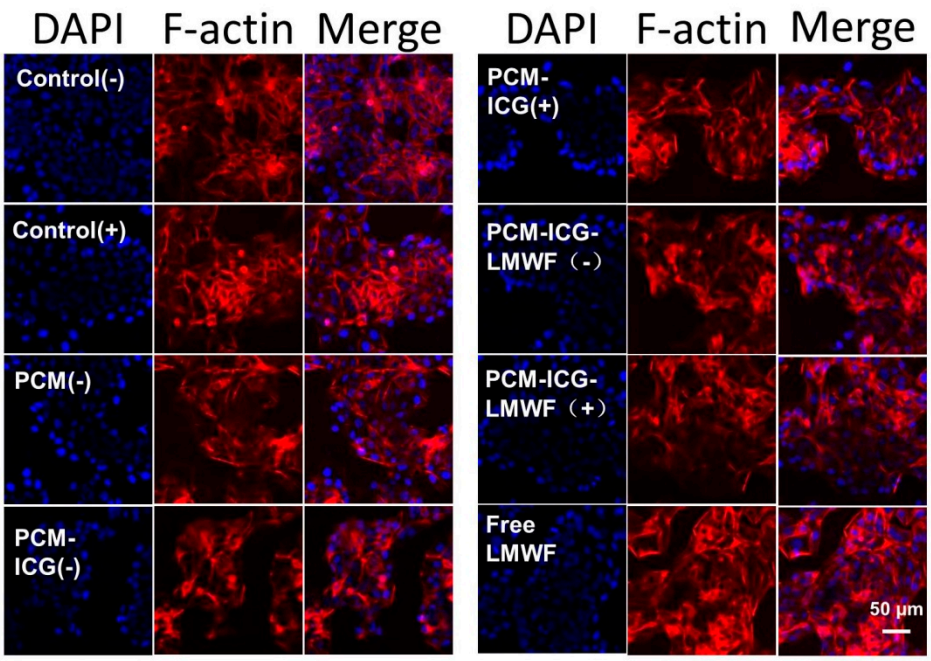


Figure S8 Fluorescence images of HOK cell morphology incubated with various types of multi-layered scaffolds under 60s irradiation (2600mW) or without irradiation at pre-appointed time points during culture for five days. The Free LMWF group means the addition of an equivalent dosage of LMWF at time points. "+" indicated the irradiation treatment, and "-" indicated without irradiation treatment (n=3).

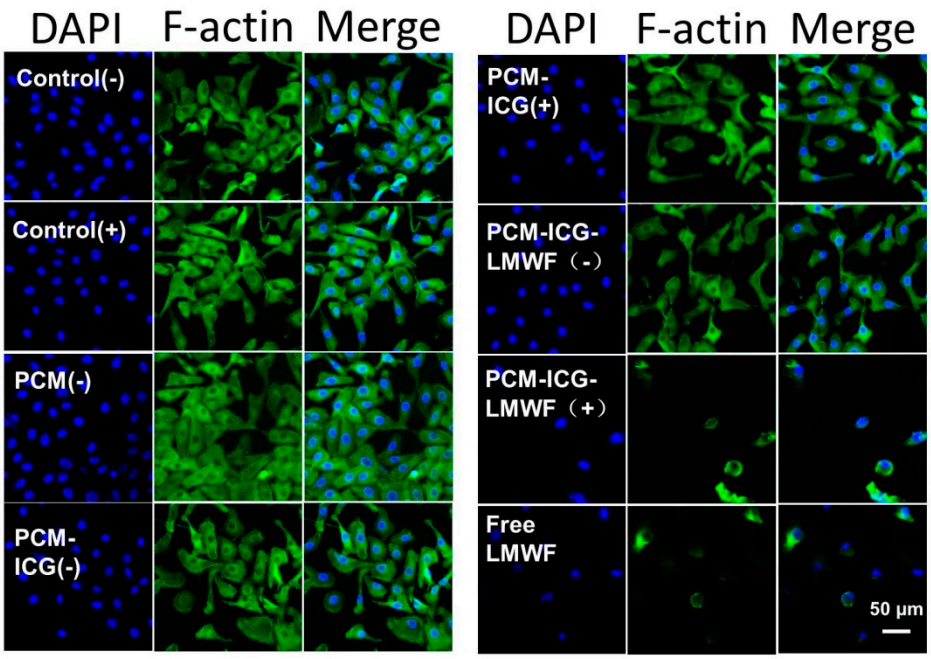


Figure S9 Fluorescence images of SCC-9 cell morphology incubated with various types of multi-layered scaffolds under 60s irradiation (2600mW) or without irradiation at pre-appointed time points during culture for five days. The Free LMWF group means the addition of an equivalent dosage of LMWF at time points. "+" indicated the irradiation treatment, and "-" indicated without irradiation treatment (n=3).