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†Electronic Supporting Information

Near-Infrared-Persistent Luminescence/Bioluminescence Imaging Tracking of Transplanted Mesenchymal Stem Cells in Pulmonary Fibrosis

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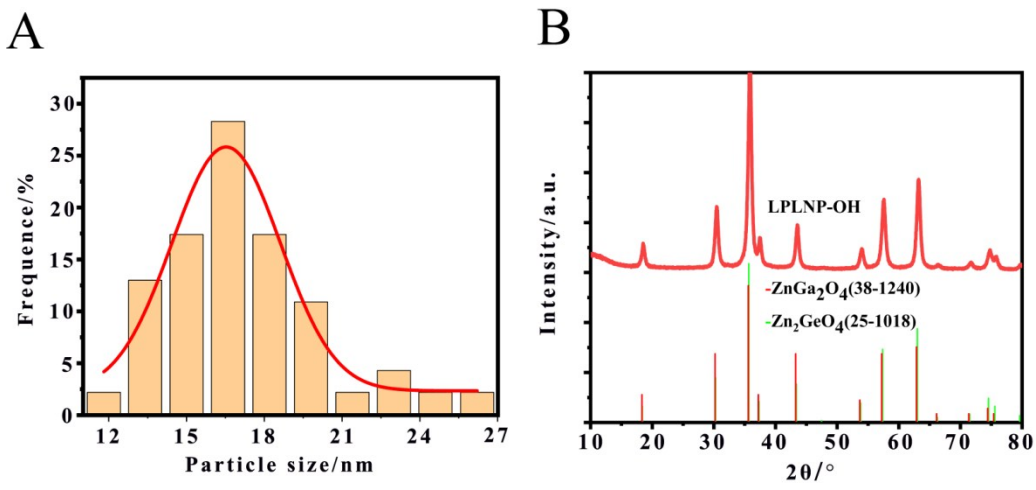

Figure S1. Characterization of LPLNP-OH. (A) The diameter of LPLNP-OH by calculating 50 nanoparticles randomly selected from the transmission electron microscope (TEM) image. (B) X-ray diffraction of LPLNP-OH.

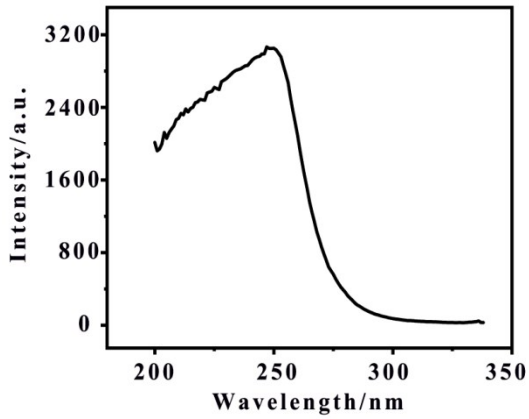

Figure S2. Excitation spectrum of LPLNP-OH in aqueous solution (1 mg mL^{-1}) at the emission wavelength of 697 nm.

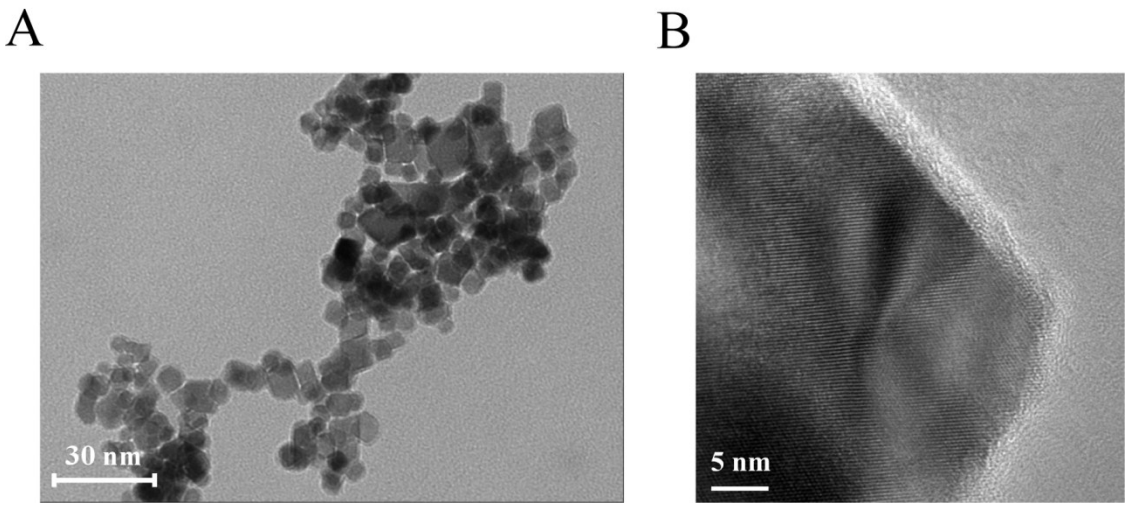

Figure S3. (A) TEM and (B) HRTEM images of LPLNP@PLL.

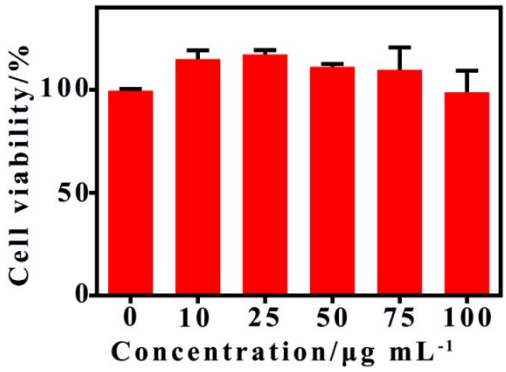

Figure S4. Relative viability of the hMSCs incubated with LPLNP@PLL at various concentrations for 24 h.

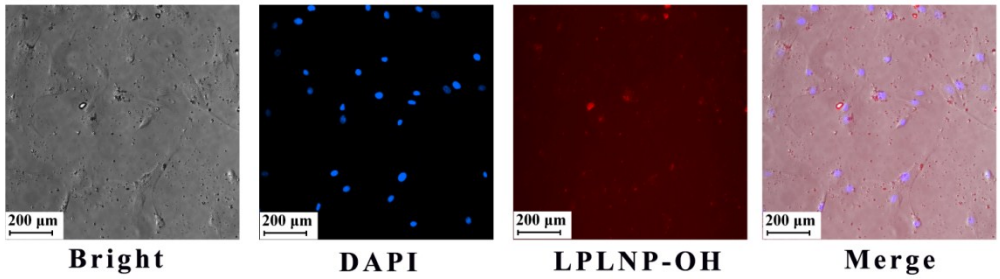

Figure S5. Uptake of LPLNP-OH by hMSCs. Cellular nuclei were stained by 4',6-diamidino-2-phenylindole (DAPI, blue). NIR persistent luminescence signals of the stem cells were captured after excitation with a red LED light for 2 min.

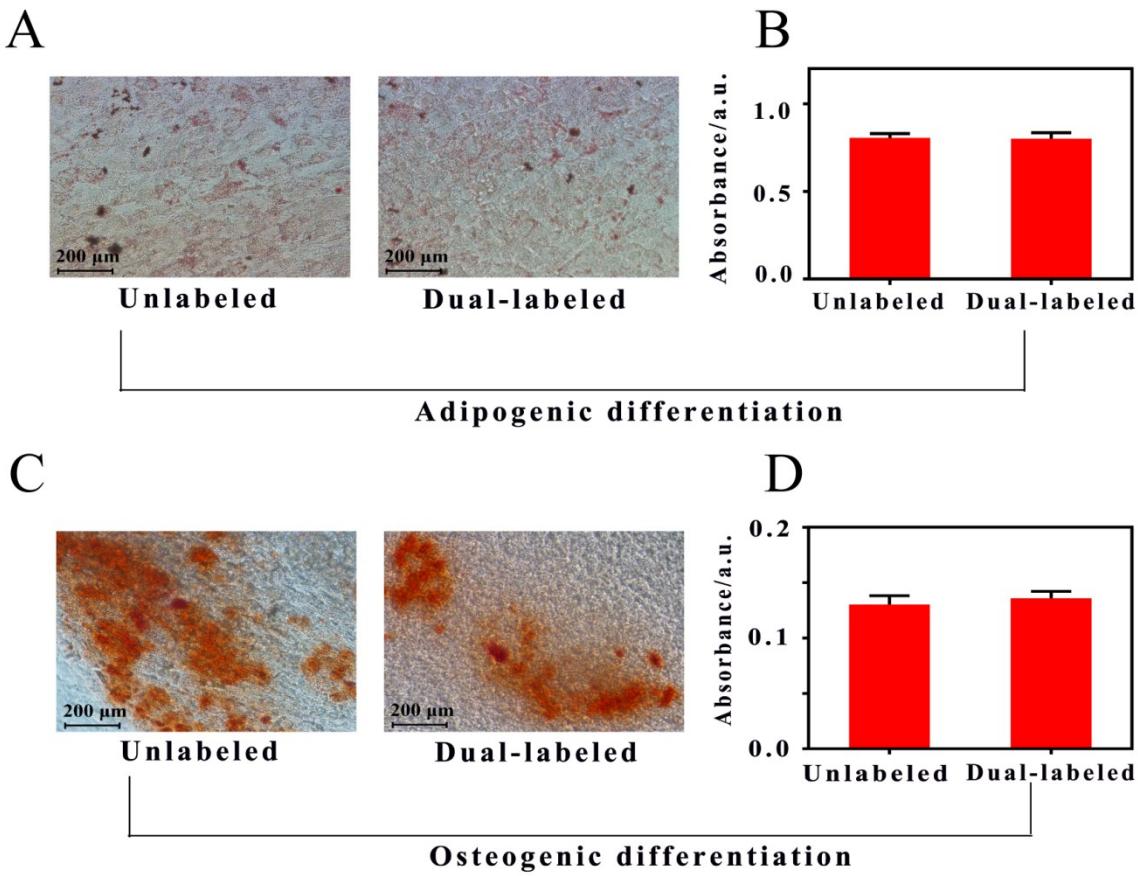

Figure S6. Differentiation of LPLNP@PLL labeled hMSCs. (A) Oil Red O staining and (B) quantification of Oil Red O extracted from the adipogenic cells at 490 nm. (C) Alizarin Red S staining and (D) quantification of Alizarin Red S extracted from the osteogenic cells at 550 nm.

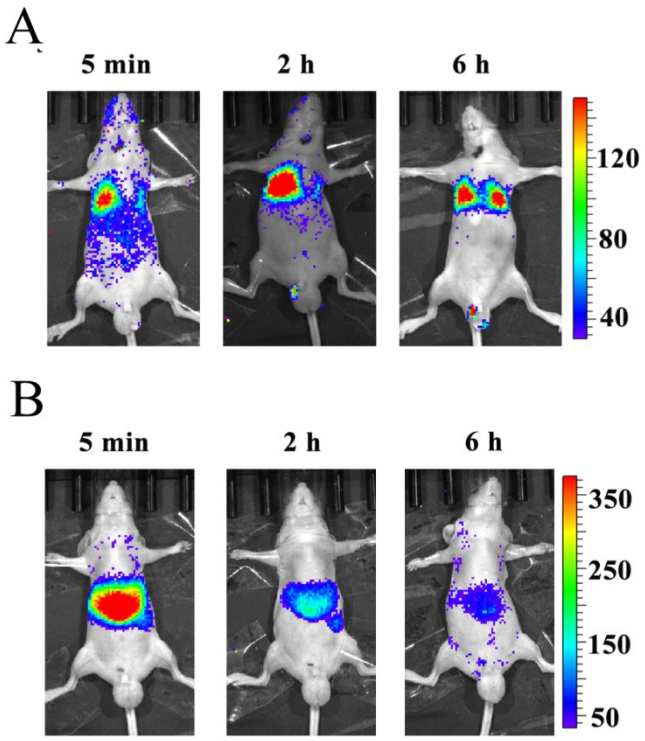

Figure S7. Distribution of the dual-labeled hMSCs and LPLNP, respectively, after intravenous injection in BLM-induced PF mouse. (A) Representative time-dependent biodistribution of the LPLNP@PLL labeled hMSCs after intravenous injection. (B) Representative time-dependent biodistribution of LPLNP@PLL after intravenous injection. The whole-body of the mice was pre-excited with a red LED light before imaging.

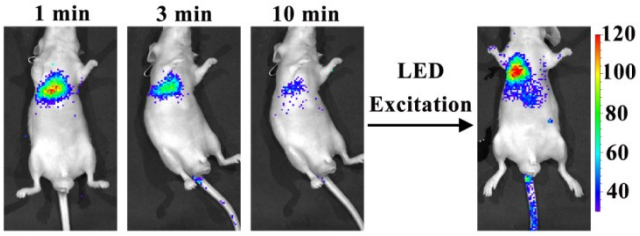

Figure S8. Persistent luminescence images of mice by LED light regeneration after intravenous injection of the dual-labeled hMSCs.

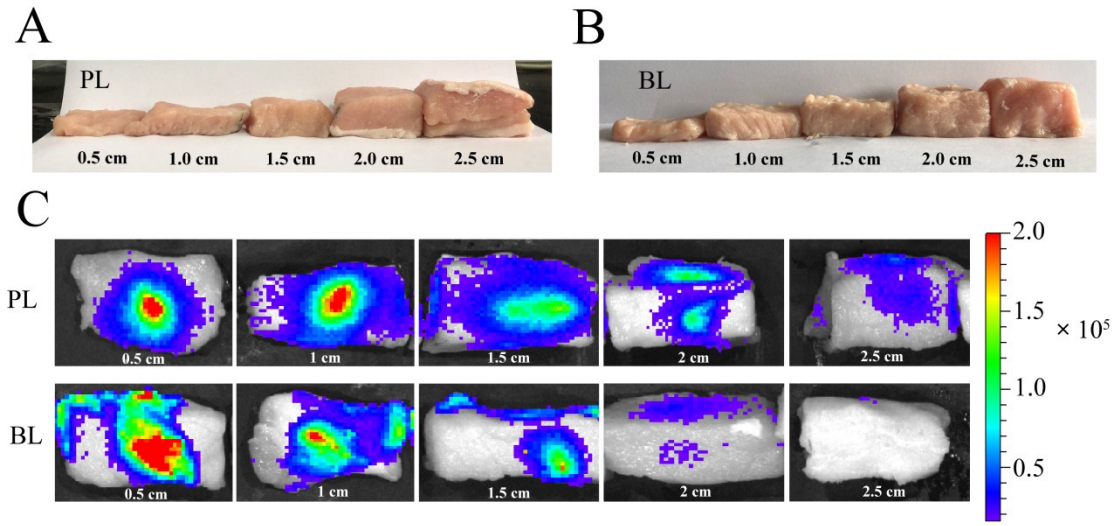

Figure S9. Phantom study of the penetrating depth of NIR-PL and BL using pork with different thicknesses as model tissues. LPLNP-OH nanoparticles were dispersed in water to form a suspension with concentration of 1 mg mL-1. The aqueous solution of LPLNP-OH was irradiated with a LED lamp for 10 min. Then the LPLNP-OH aqueous solution (100 μL) was injected at the bottom of pork with different thicknesses for NIR-PL imaging. For BL imaging, hMSCs^{RfLuc} (4×10^5 cell, 100 μL) were injected at the bottom of pork with different thicknesses. (A) and (B) The photos of the pork with different thicknesses for NIR-PL and BL imaging, respectively. (C) NIR-PL and BL images of the pork at different depth. All the images were taken on an IVIS Lumina imaging system in the bioluminescence mode with an exposure time of 2 min.