Supporting Information

Bright Polymer Dots Tracking Stem Cell Engraftment and Migration to Injured Mouse Liver

Dandan Chen[1], Qiong Li[1], Zihui Meng[2], Lei Guo[2], Ying Tang[1], Zhihe Liu[1], Shengyan Yin[1], Weiping Qin[1], Zhen Yuan[3], Xuanjun Zhang[3], and Changfeng Wu[1,✉]

1. State Key Laboratory on Integrated Optoelectronics, College of Electronic Science and Engineering, Jilin University, Changchun, Jilin 130012, China
2. Department of Hepatobiliary-Pancreatic Surgery, China-Japan Union Hospital, Jilin University, Changchun, Jilin 130033, China
3. Faculty of Health Science, University of Macau, Taipa, Macau SAR China

✉ Corresponding author: Changfeng Wu, College of Electronic Science and Engineering, Jilin University, Changchun, Jilin 130012, China. Tel: +86-431-8516-8270; Fax:+86-431-8515-3853; Email: cwu@jlu.edu.cn.

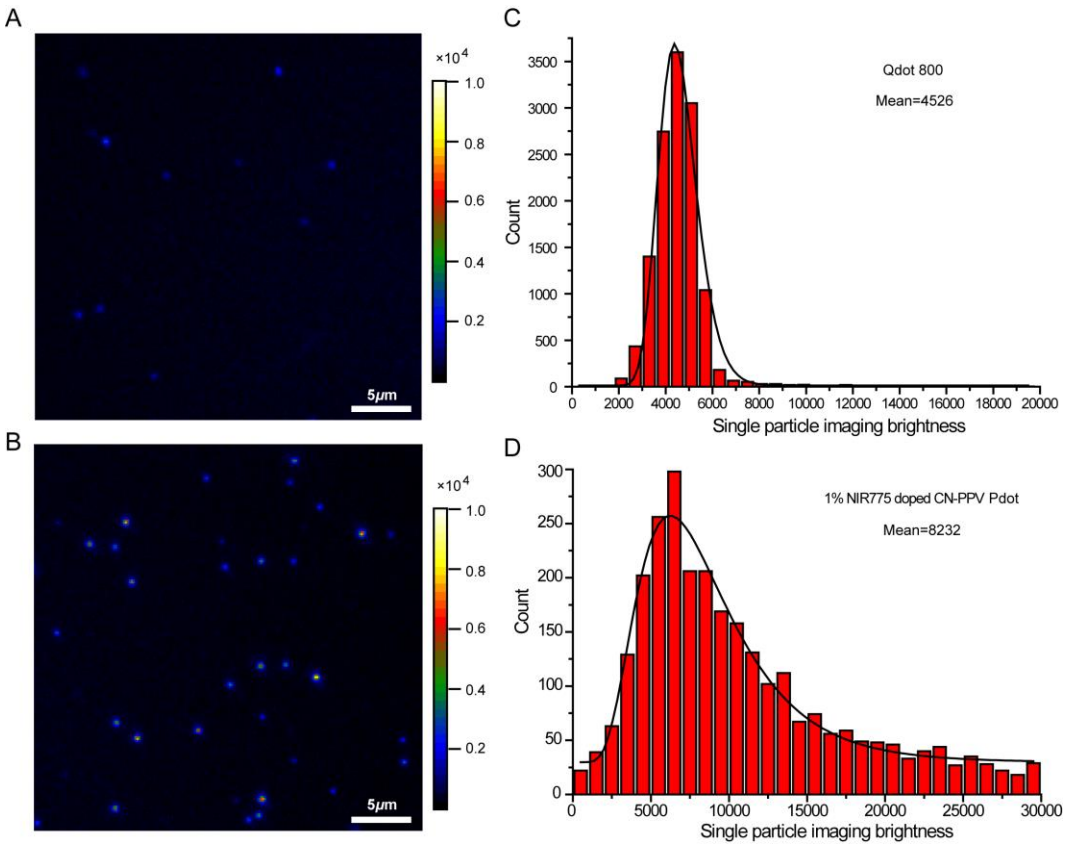

Figure S1. Single particle fluorescence brightness comparison of NIR Pdots with Qdot 800 under identical excitation and detection conditions. (A) Single particle fluorescence images of 3-MPA coated CdSeTe/ZnS quantum dot (Qdot 800) (B) Single particle fluorescence images of NIR775 doped CN-PPV Pdots (NIR Pdots). (C) Fluorescence intensity histograms by analyzing single-particle brightness of hundreds of Qdot 800. (D) Fluorescence intensity histograms by analyzing single-particle brightness of hundreds of NIR Pdots. The black curves were obtained by fitting a lognormal distribution to the histogram.

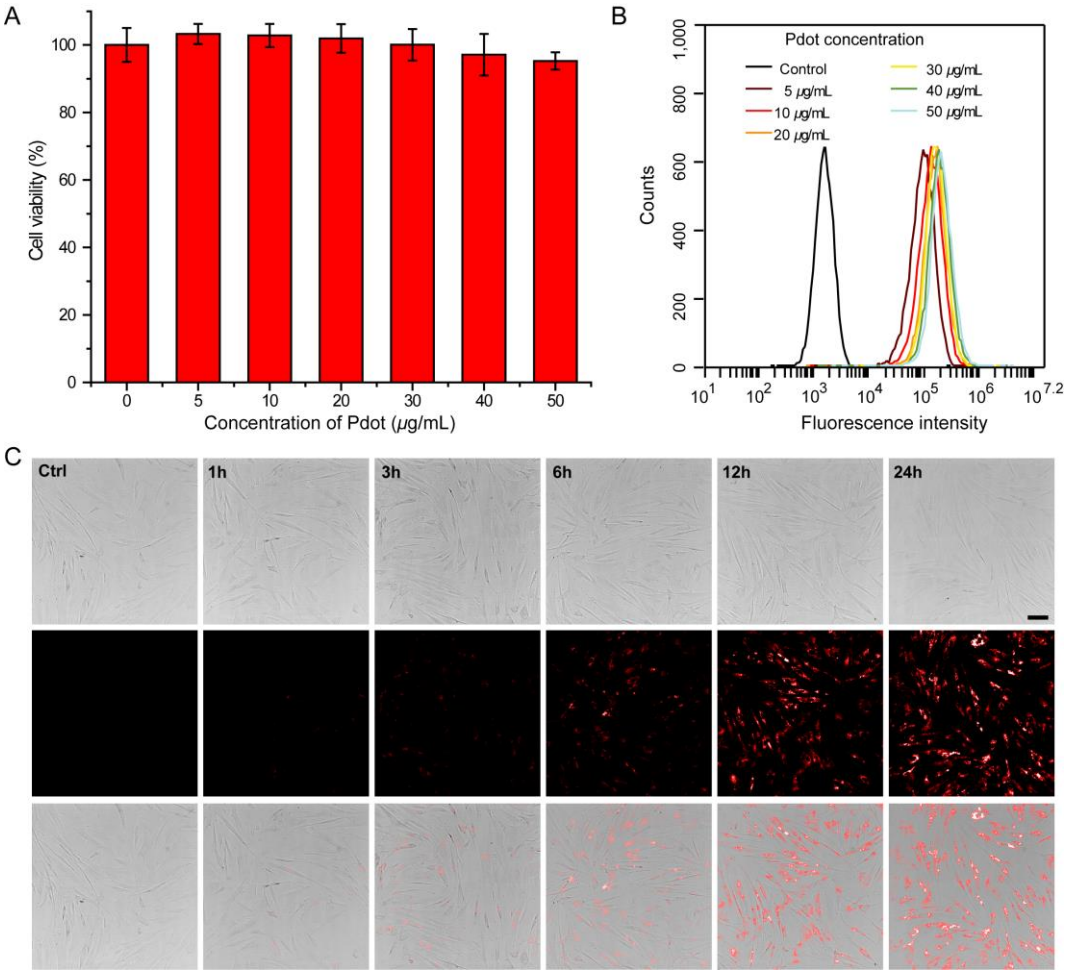

Figure S2. (A) Cell viability of MSCs incubated with different concentration of Pdots for 24 hours. (B) Flow cytometry of MSCs incubated with different concentration of Pdots for 24 hours, with unlabeled MSCs as control. (C) Fluorescence images of MSCs incubated with 30 μg/mL Pdot for 24 hours, with unlabeled MSCs as control. NIR fluorescence signals were collected by using a 593 nm long pass filter. Scale bar represents 100 μm.

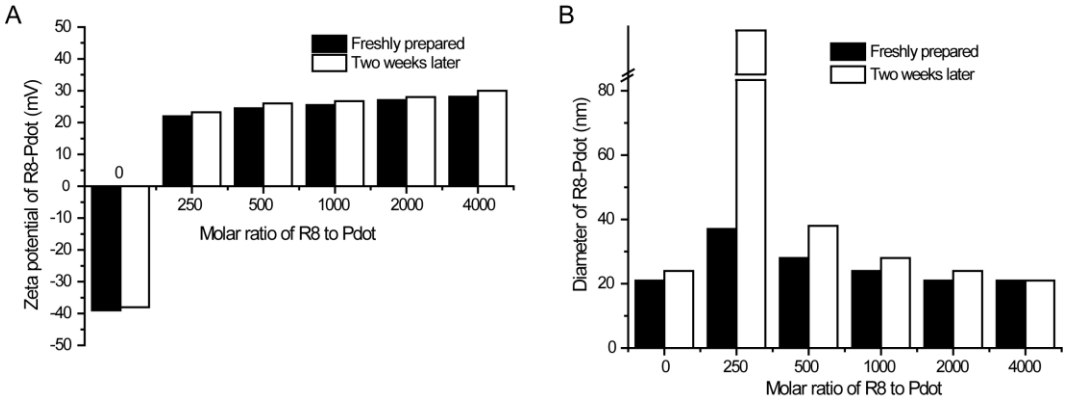

Figure S3. (A) Hydrodynamic diameters and (B) Zeta potentials of Pdots mixed with R8 at different molar ratio (molar ratio from 0 to 4000). The black cubes represent the freshly prepared mixtures of Pdots and R8. The white cubes represent the mixtures of Pdots and R8 stored for two weeks.

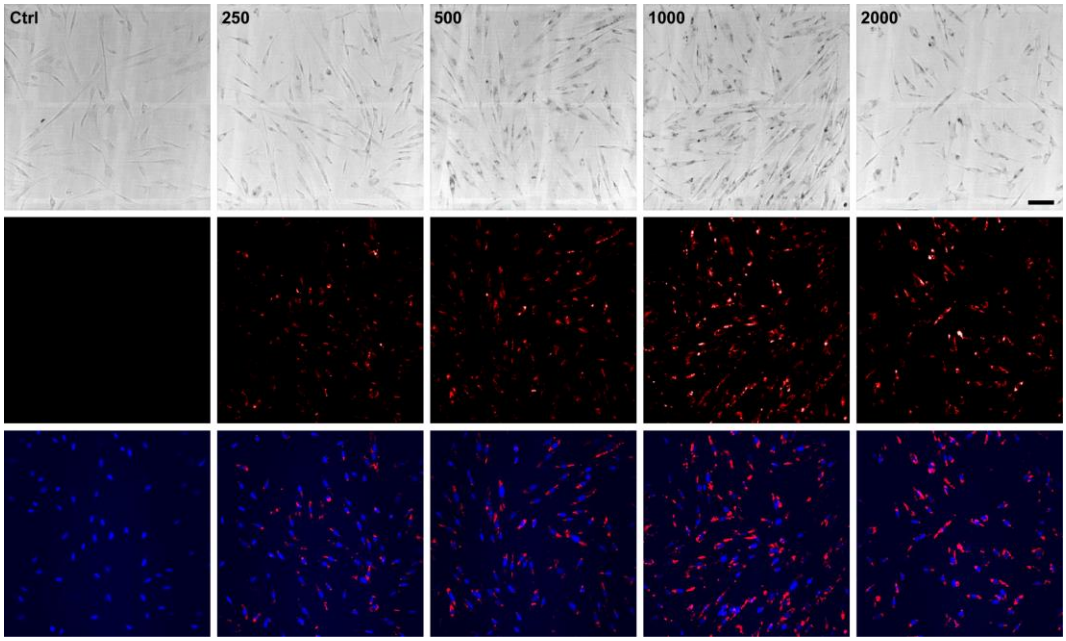

Figure S4. Fluorescent images of MSCs incubated with R8-Pdots at different R8/Pdot molar ratio (from 0 to 2000) for 4 hours. NIR fluorescence signals were collected by using a 593 nm long pass filter. A 25 % ND filter was added before excitation light. Scale bar represents 100 μm.

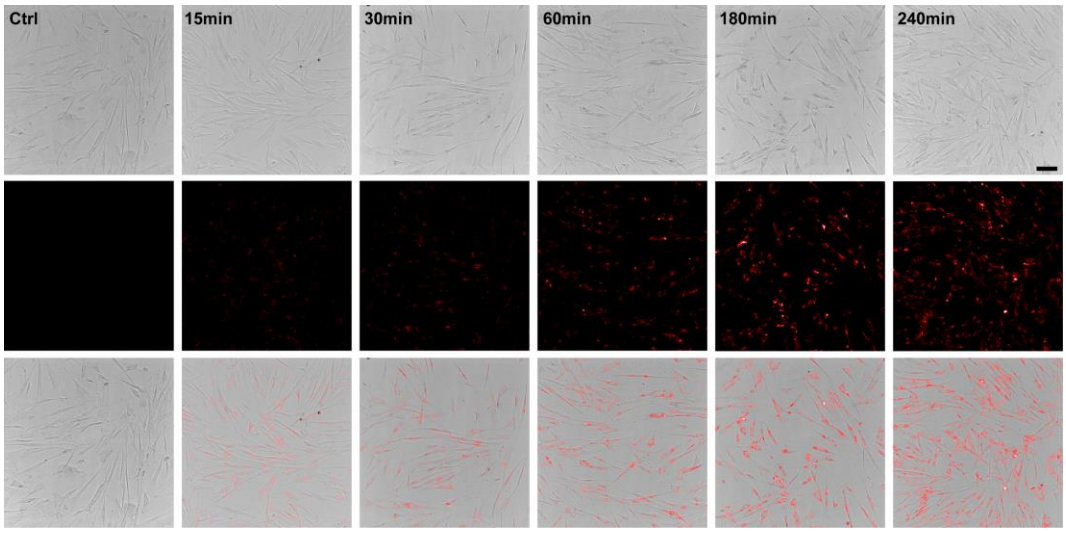

Figure S5. Respective fluorescence images of MSCs incubated with R8-Pdots at R8/Pdot molar ratio of 1000 for different incubation time. NIR fluorescence signals were collected by using a 593 nm long pass filter. A 25% ND filter was added before excitation light. Scale bar represents 100 μm.

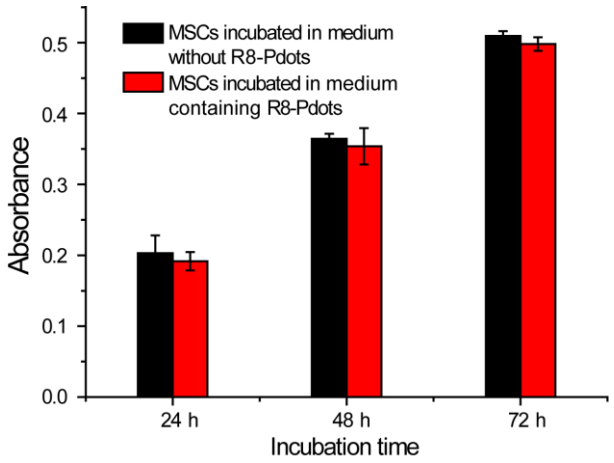

Figure S6. Cell viability of MSCs incubated with R8-Pdots for 24h, 48h and 72h, respectively, with MSCs incubated in medium without R8-Pdots as control.

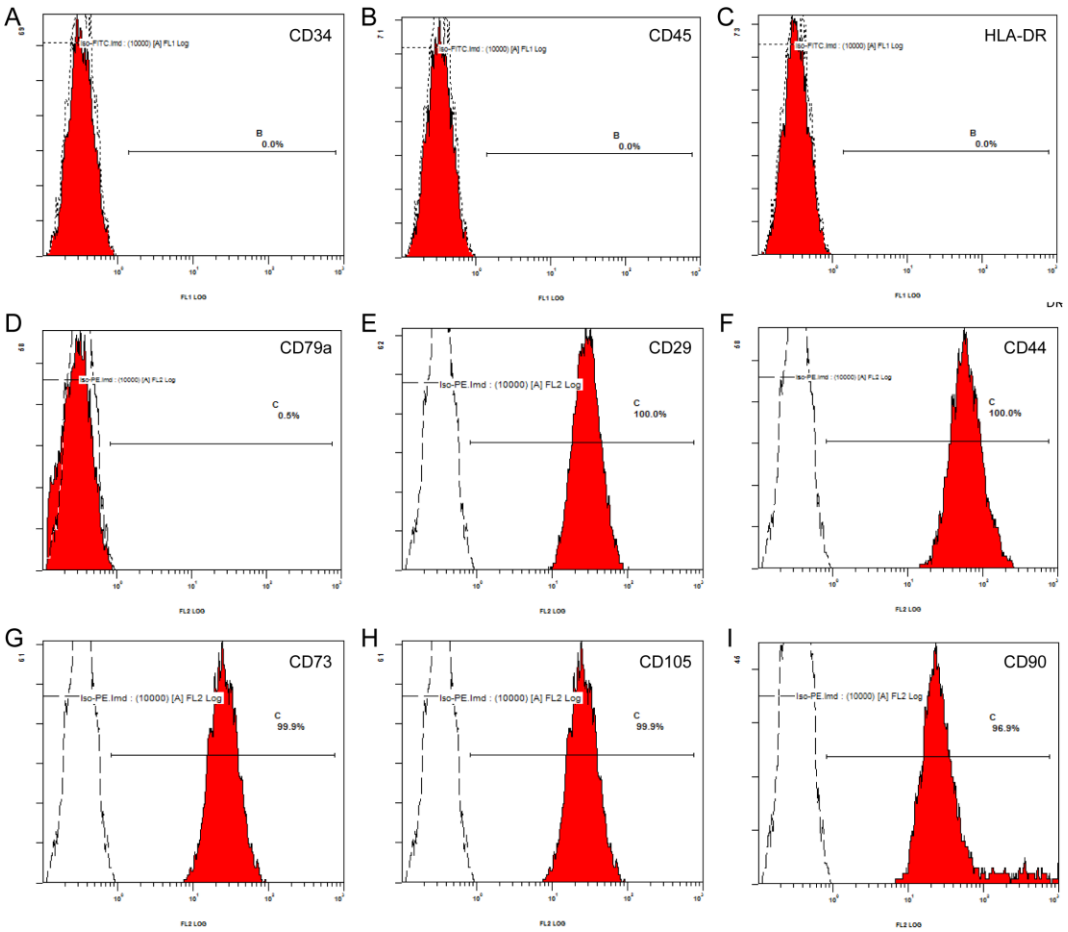

Figure S7. Flow cytometry of immunophenotyping expression of the Pdot-labeled MSCs by immunofluorescence staining. Pdot-labeled MSCs were tested against human antigens including CD34 (A), CD45 (B), HLA-DR (C), CD79a (D), CD29 (E), CD44 (F), CD73 (G), CD105 (H) and CD90 (I), with isotype-specific IgG as negative control.

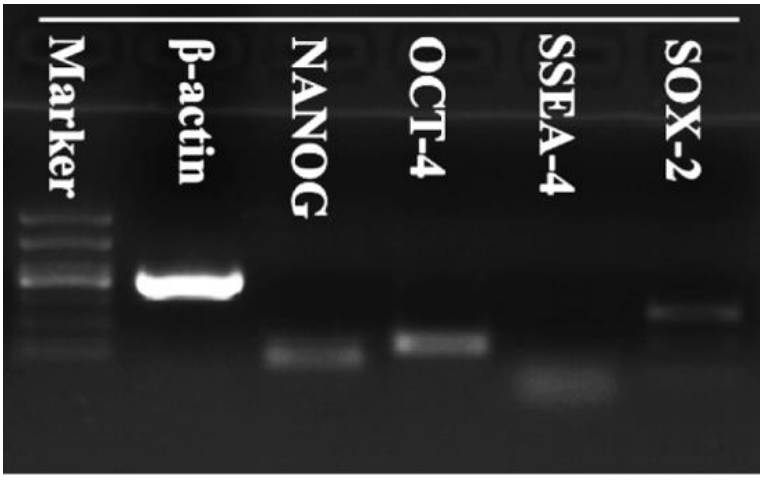

Figure S8. RT-PCR assay of pluripotential genes expression of the Pdot-labeled MSCs, including OCT-4, NANOG, SOX2 and SSEA-4. DNA marker: DL500 (3590A, TAKARA).

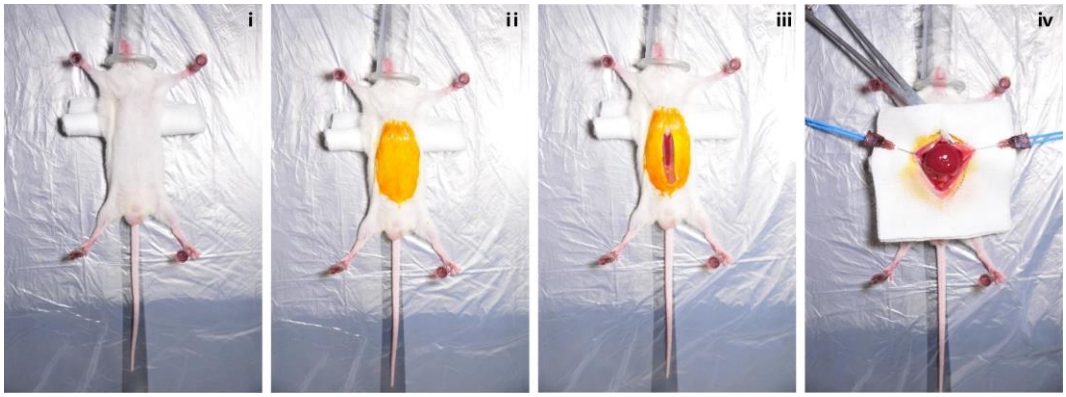

Figure S9. Liver-resection model was established according to Mitchell and Willenbring (*Nature Protocols* 2008, 3, 1167-1170).

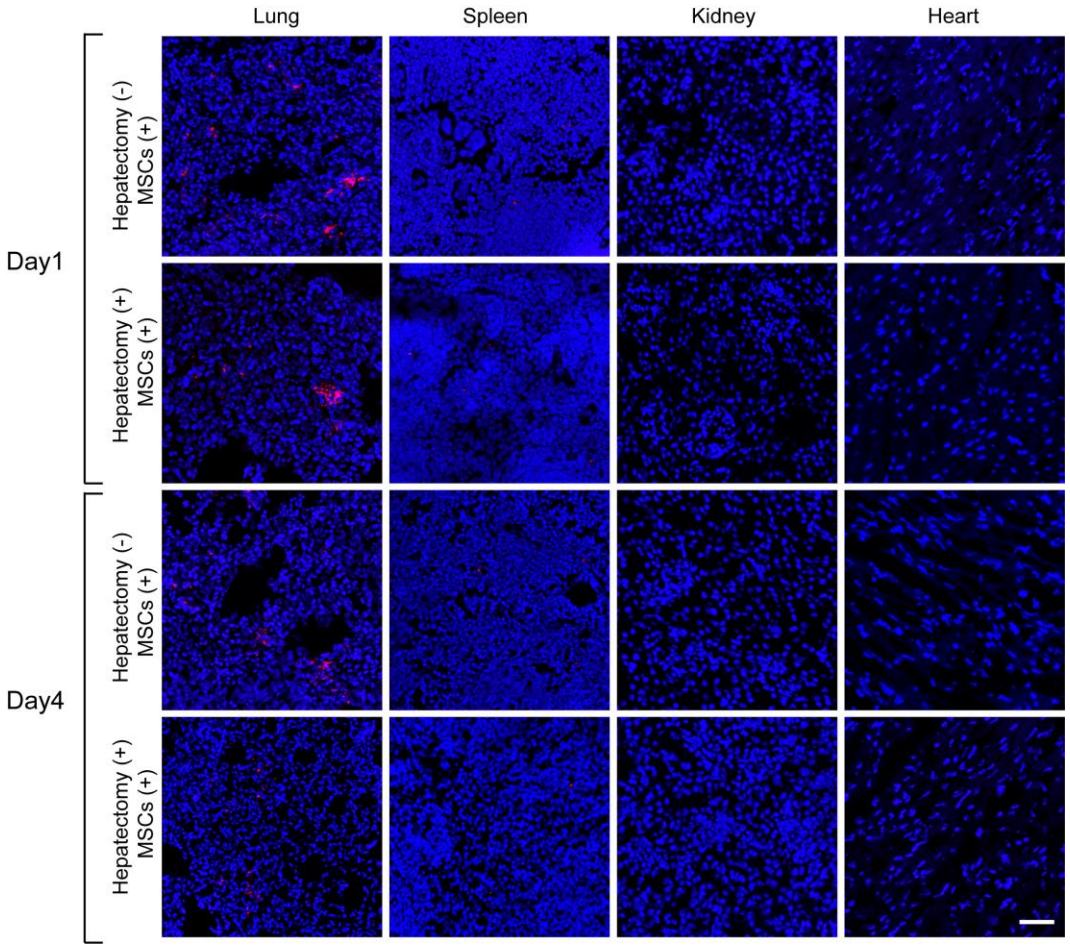

Figure S10. Representative fluorescence images of lung, spleen, kidney and heart sections from the mice in day1 and day4 post cell transplantation. The scale bar represents 50 μm.