Supplement figure legends

Fig. S1. Determination of conjugation efficiency of Peptide and mal-PEG$_{5kDa}$-DSPE by proton NMR spectroscopy.

Peptide and mal-PEG$_{5kDa}$-DSPE were separately dissolved in deuterium oxide (D_2O). Conjugate (Peptide-S-PEG$_{5kDa}$-DSPE) was prepared by incubating a 1:1 peptide and mal-PEG$_{5kDa}$-DSPE (mol/mol) for 24 h at 30^{o}C with continuous shaking on a Bio-shaker. Then, Peptide, mal-PEG$_{5kDa}$-DPSE and conjugate was analyzed by a JEOL ^{1}HNMR spectrometer. NMR Spectrums of peptide (A), mal-PEG$_{5kDa}$-DSPE (B) and Pep-PEG$_{5kDa}$-DSPE conjugate (C) were shown.

Fig. S2. Less distribution of PTNP into off-targeted tissues in normal mice

DIO mice were *i.v*-injected with rhodamine-loaded PTNP (red). At 5h after injection, the tissue pieces of brain, lung and kidney were stained with Alexa647-GSIB4 (green). Scale bars represent 100 μm.

Fig. S3. Less distribution of PTNP into off-targeted tissues in DIO mice

DIO mice were *i.v*-injected with rhodamine-loaded PTNP (red). At 5h after injection, the tissue pieces of brain, heart, lung, kidney, liver and spleen were stained with Alexa647-GSIB4 (green). Scale bars represent 100 μm.

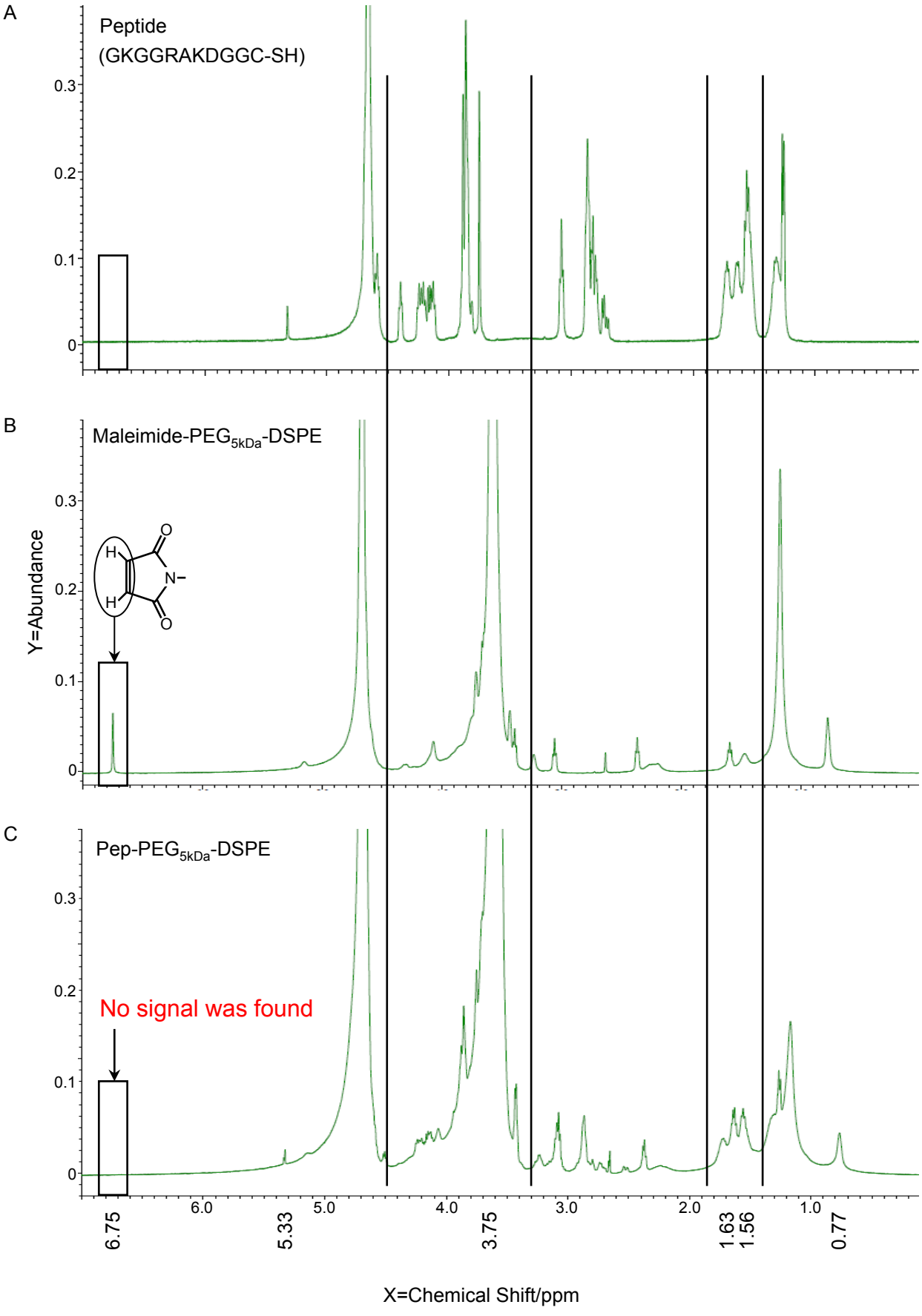
A
Peptide
(GKGGRAKDGGC-SH)
B
Maleimide-PEG5kDa-DSPE
C
Pep-PEG5kDa-DSPE
No signal was found
Y=Abundance
X=Chemical Shift/ppm
6.75
5.33
3.75
1.63
1.56
0.77

Figure S1

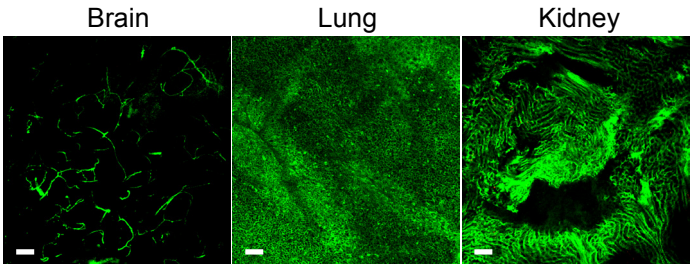

Figure S1

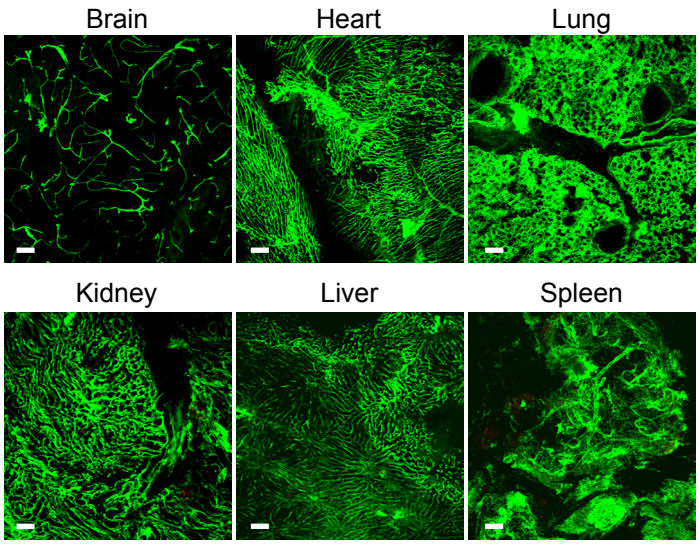
Brain
Heart
Lung
Kidney
Liver
Spleen
PTNP (Rhodamine) + Vessels (GSIB4)

Figure S2