SUPPLEMENTARY INFORMATION

Desmin- and vimentin-mediated hepatic stellate cell-targeting radiotracer ^{99m}Tc-GlcNAc-PEI for liver fibrosis imaging with SPECT

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Supplementary methods

Dynamic SPECT/CT Imaging

SPECT/CT imaging was performed using nanoScan SC (Mediso Medical Imaging System). The CT acquiring parameters were as follows: energy peak of 50 kV, 670 μA, 480 projections, medium zoom. SPECT acquiring parameters were as follows: energy peak of 140 keV for ^{99m}Tc, window width of 20 %, matrix of 256×256, medium zoom, and frame: 30 s. Dynamic SPECT acquiring parameters were as follows: 25 scans, and 20 sec/frame from 0 to 50 min.

Supplementary Figures
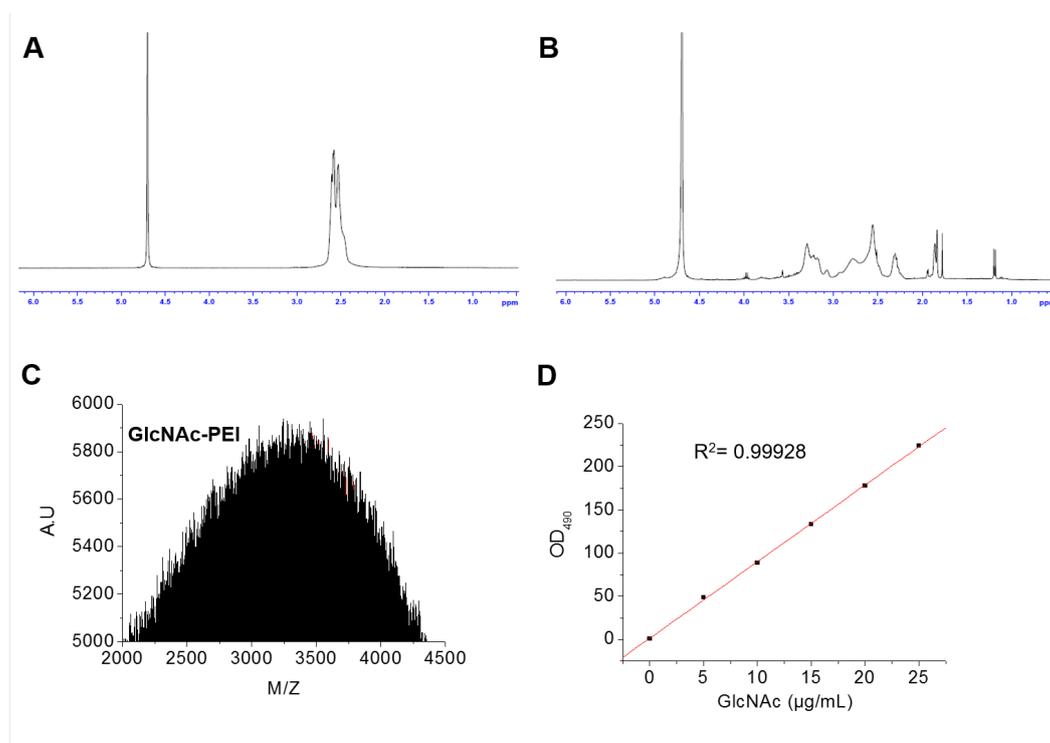
Fig. S1. (A) ^{1}H-NMR spectra of PEI-1800. (B) ^{1}H-NMR spectra of GlcNAc-PEI (showed a characteristic absorbance peak of COCH$_3$ in 1.81-1.88 ppm). (C) MODI-TOF-MS of GlcNAc-PEI. (D) Standard curve showing the absorbance of different concentrations of GlcNAc by phenol-vitriol method.
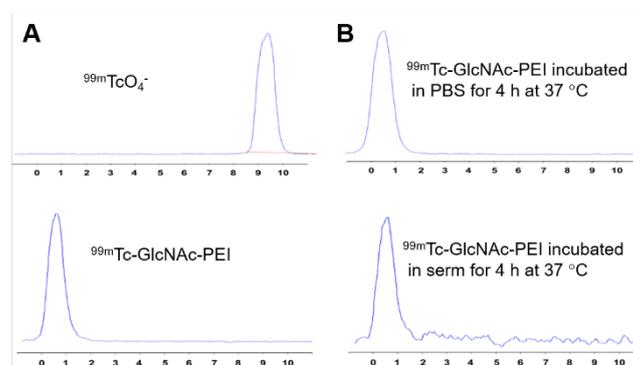

Fig. S2. (A) The TLC results of ^{99m}TcO$_4^-$ and ^{99m}Tc-GlcNAc-PEI. (B) The in vitro stability results of ^{99m}Tc-GlcNAc-PEI after incubated in PBS or serum for 4 h at 37 °C.
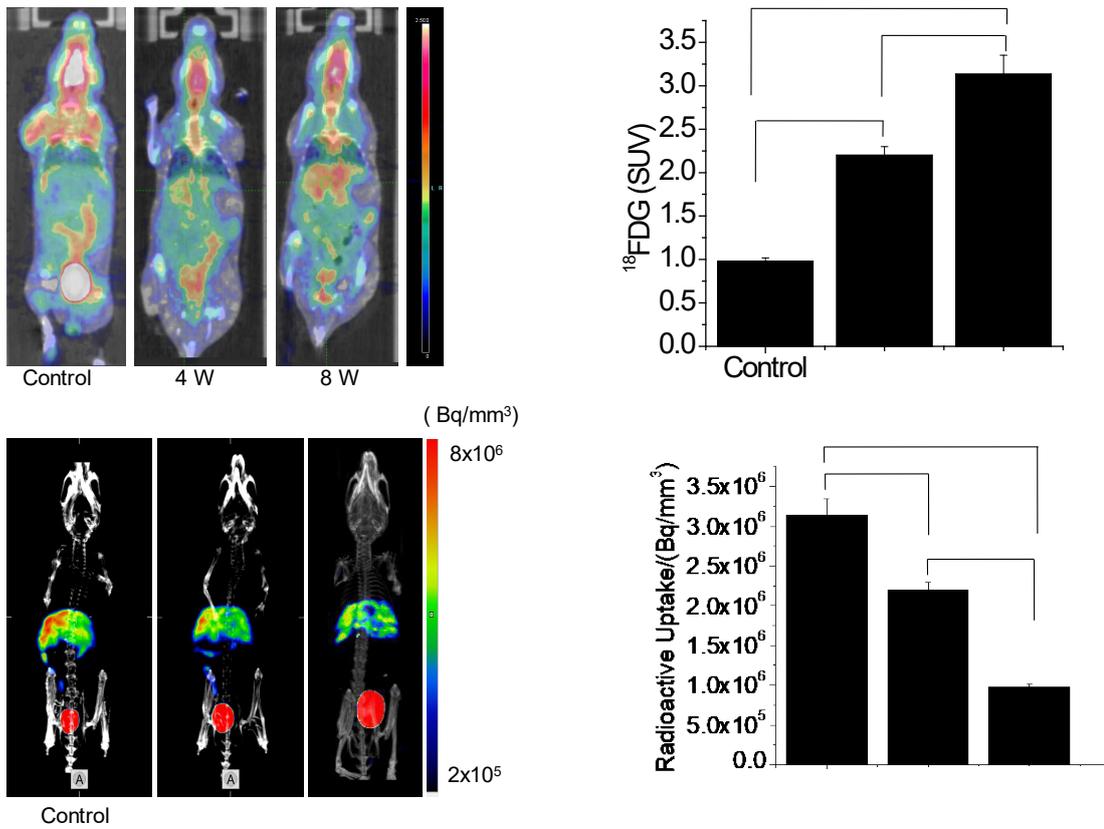
Fig. S3. (A) ^{18}F-FDG PET/CT imaging of control and fibrotic mice. (B) Liver uptake of ^{18}F-FDG by drawing ROI of the whole liver. (C) ^{99m}Tc-GSA SPECT/CT imaging of control and fibrotic mice. (D) Liver uptake of ^{99m}Tc-GSA by drawing ROI of the whole liver.
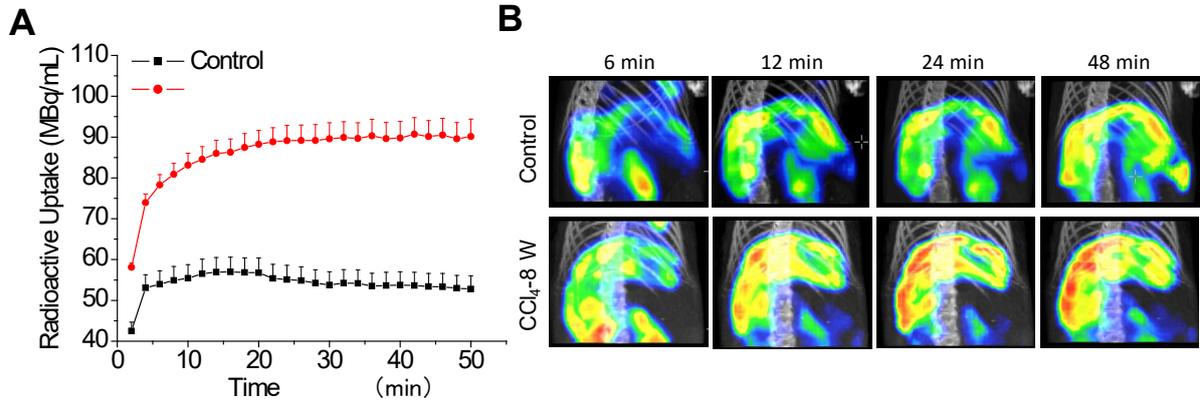
Fig. S4. (A) The time-activity curves derived from the dynamic SPECT imaging of control and fibrotic mice. (B) Representative images of ^{99m}Tc-GlcNAc-PEI dynamic SPECT imaging of control and fibrotic mice.
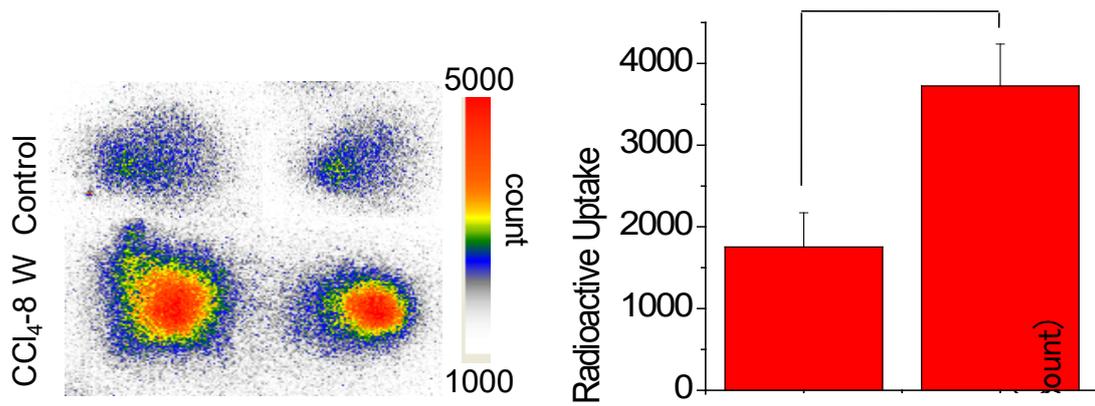

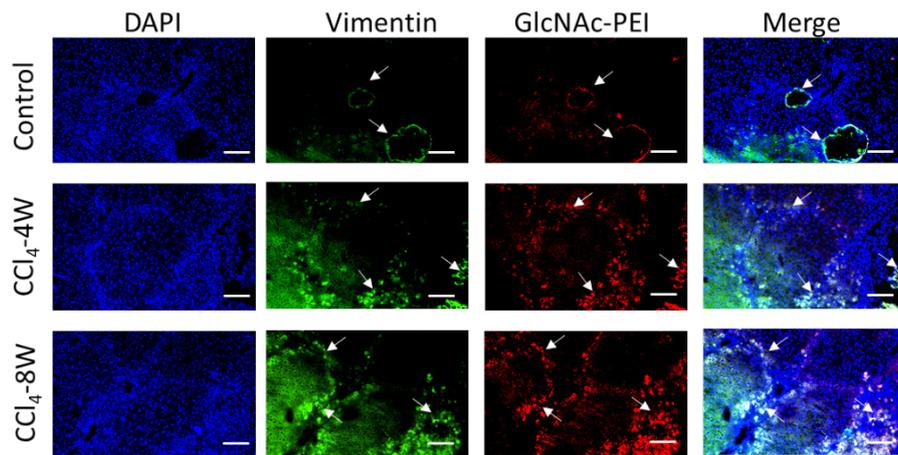**Fig. S5.** Autoradiography of control and fibrotic liver tissues with ^{99m}Tc-GlcNAc-PEI.

Fig. S6. Immunofluorescence co-localization analysis of vimentin and GlcNAc-PEI-Cy5.5 in the liver tissue of CCl4-induced fibrotic mice. Blue: DAPI; green: anti-vimentin staining FITC; Red: GlcNAc-PEI-Cy5.5. Scale bar: 200 μm.
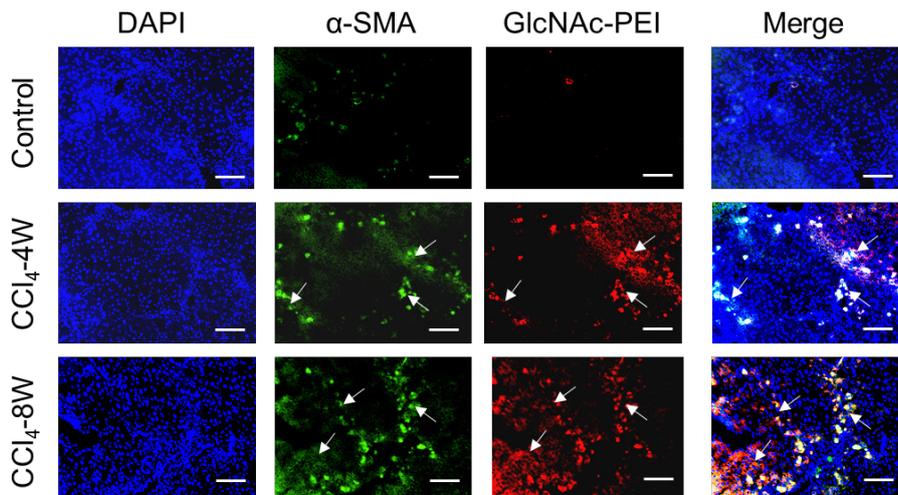

Fig. S7. Immunofluorescence co-localization analysis of α-SMA and GlcNAc-PEI-Cy5.5 in the liver tissue of CCl4-induced fibrotic mice. Blue: DAPI; green: anti-α-SMA staining FITC; Red: GlcNAc-PEI-Cy5.5. Scale bar: 200 μm.
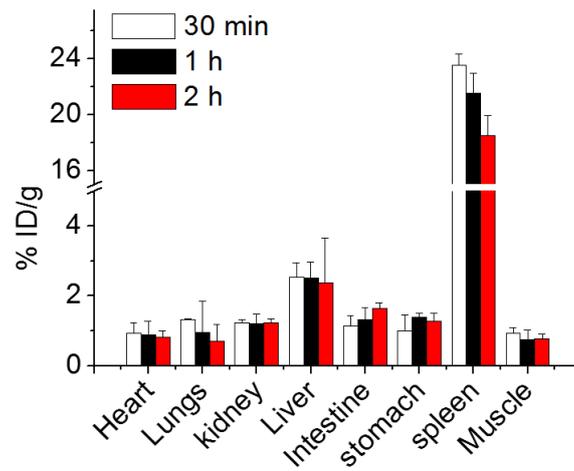
Fig. S8. Biodistribution of ^{99m}Tc-GlcNAc-PEI in the normal mice.
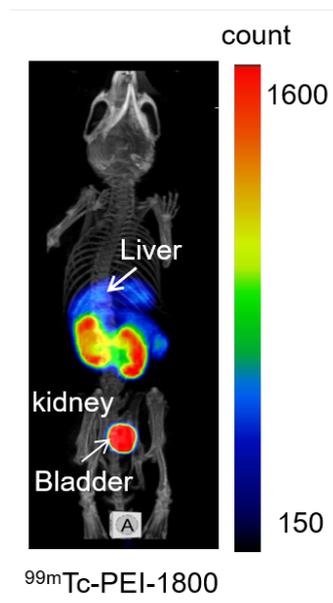

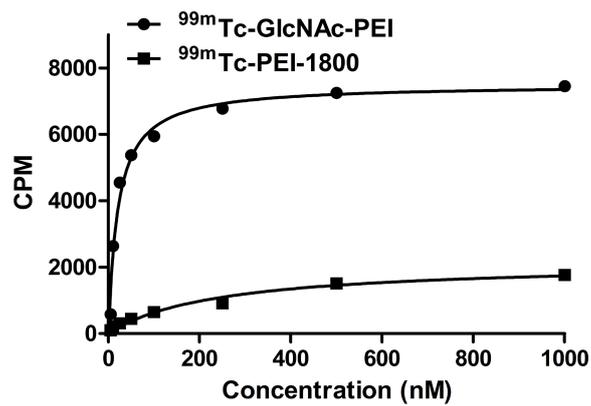**Fig. S9.** SPECT/CT imaging of fibrotic mice with nontargeting ^{99m}Tc-PEI-1800.

Fig. S10. Saturation binding assay of ^{99m}Tc-GlcNAc-PEI with vimentin protein.
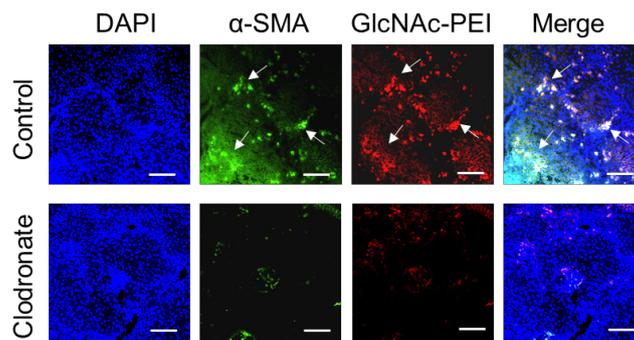

Fig. S11. Immunofluorescence co-localization analysis of α-SMA and GlcNAc-PEI-Cy5.5 in the liver tissue of fibrotic mice after clodronate liposome treatment. Blue: DAPI; green: anti-α-SMA staining FITC; Red: GlcNAc-PEI-Cy5.5. Scale bar: 200 μm.