

Supplemental information

Development of Glypican-3-Specific Binding Peptide using *in vivo* and *in vitro* Two-step Phage Display Screening for PET Imaging of Hepatocellular Carcinoma

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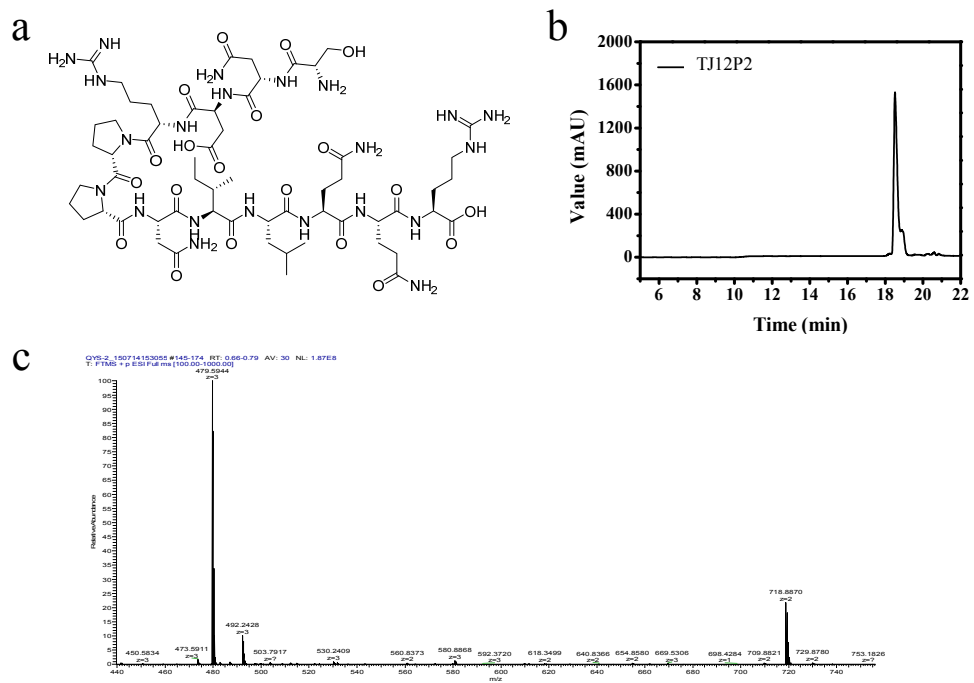


Figure S1. Synthesis of TJ12P2. (a). Chemical structure of TJ12P2 with the sequence of SDRPPNILQKR. **(b).** Purity of TJ12P2 by analytical HPLC. The retention time of TJ12P2 is 18.51 min. **(c).** Mass spectrum analysis of molecular weight of TJ12P2, which is 1425.76 Da.

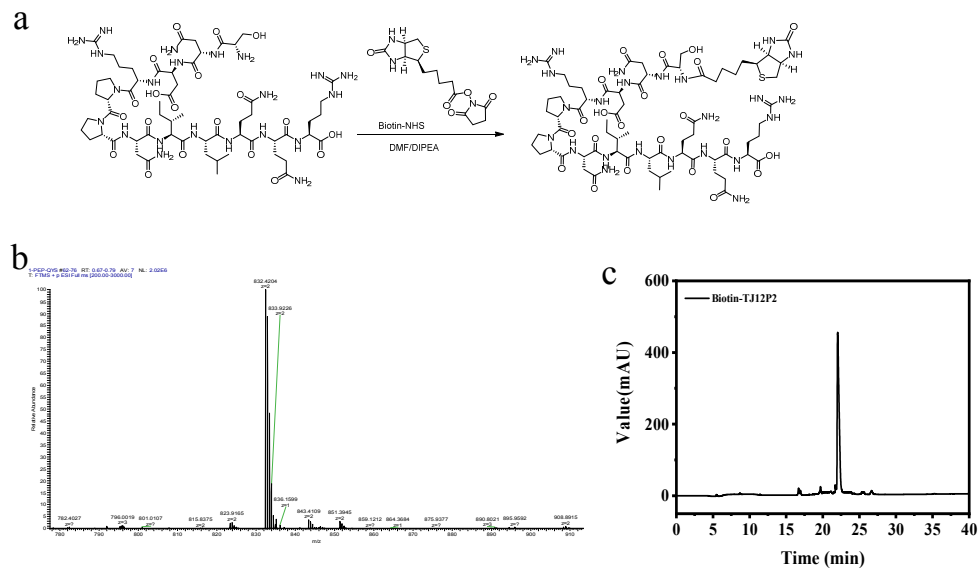


Figure S2. Synthesis of Biotin-TJ12P2. (a). Chemical conjugation of Biotin onto the N-terminal of TJ12P2. (b). Mass spectrum analysis of molecular weight of TJ12P2, which is 1662.8 Da. (c). Purity of Biotin-TJ12P2 by analytical HPLC. The retention time of Biotin-TJ12P2 is 22 min.

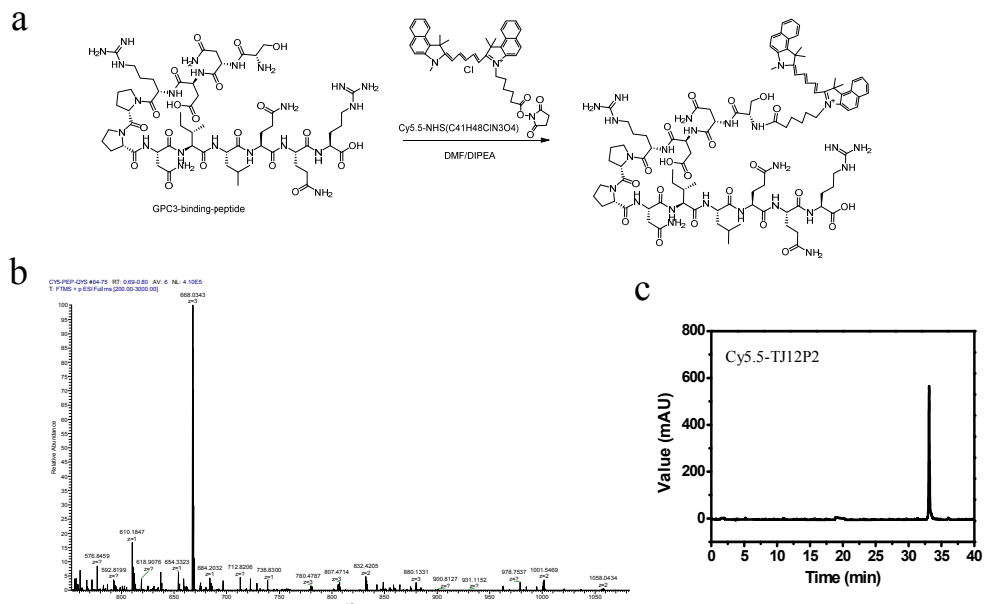


Figure S3. Synthesis of Cy5.5-TJ12P2. (a). Chemical conjugation of Cy5.5-NHS onto the N-terminal of TJ12P2. (b). Mass spectrum analysis of molecular weight of TJ12P2, which is 1662.8 Da. (c). Purity of Cy5.5-TJ12P2 by analytical HPLC. The retention time of Biotin-TJ12P2 is 33.12 min.

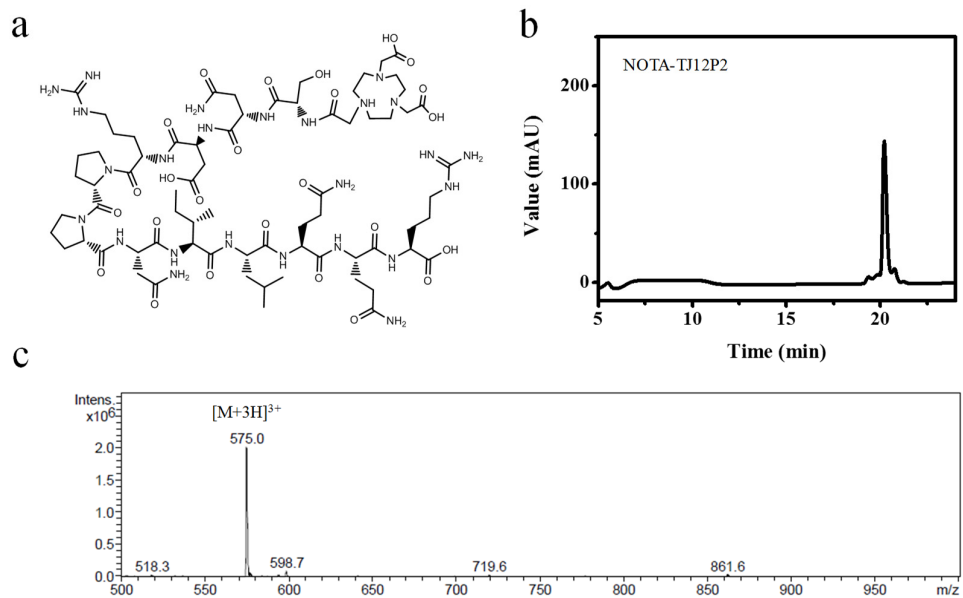


Figure S4. Synthesis of NOTA-TJ12P2. (a). Chemical structure of NOTA-TJ12P2. (b). Purity of NOTA-TJ12P2 by analytical HPLC. The retention time of Biotin-TJ12P2 is 20.20 min. (c). Mass spectrum analysis of molecular weight of TJ12P2, which is 1722 Da.

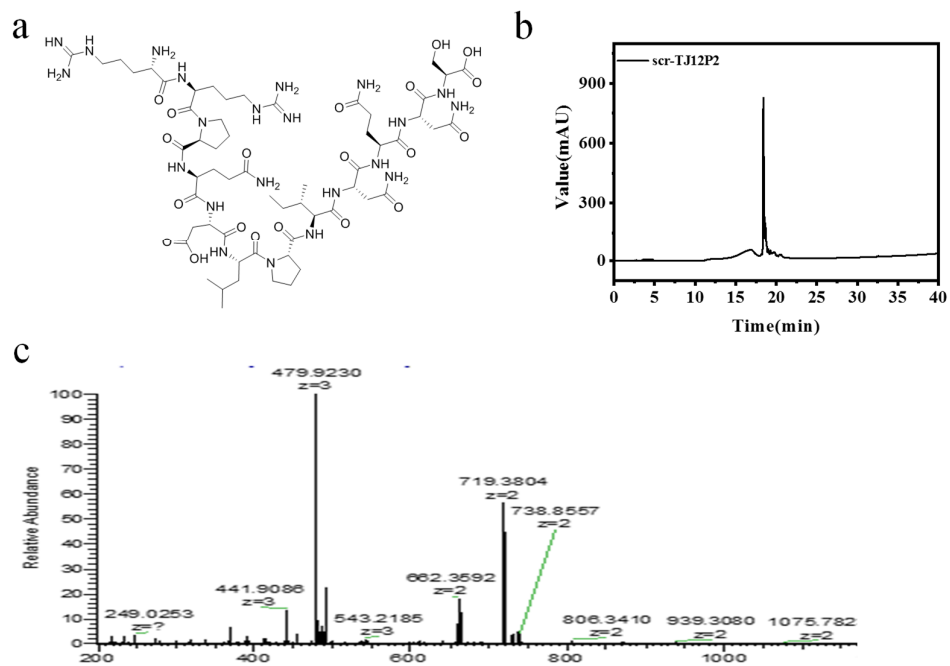


Figure S5. Synthesis of scramble TJ12P2 peptide. (a). Chemical structure of scramble-TJ12P2. (b). Purity of Cy5.5-TJ12P2 by analytical HPLC. The retention time of scramble-TJ12P2 is 18.40 min. (c). Mass spectrum analysis of molecular weight of scramble-TJ12P2, which is 1436.76 Da.

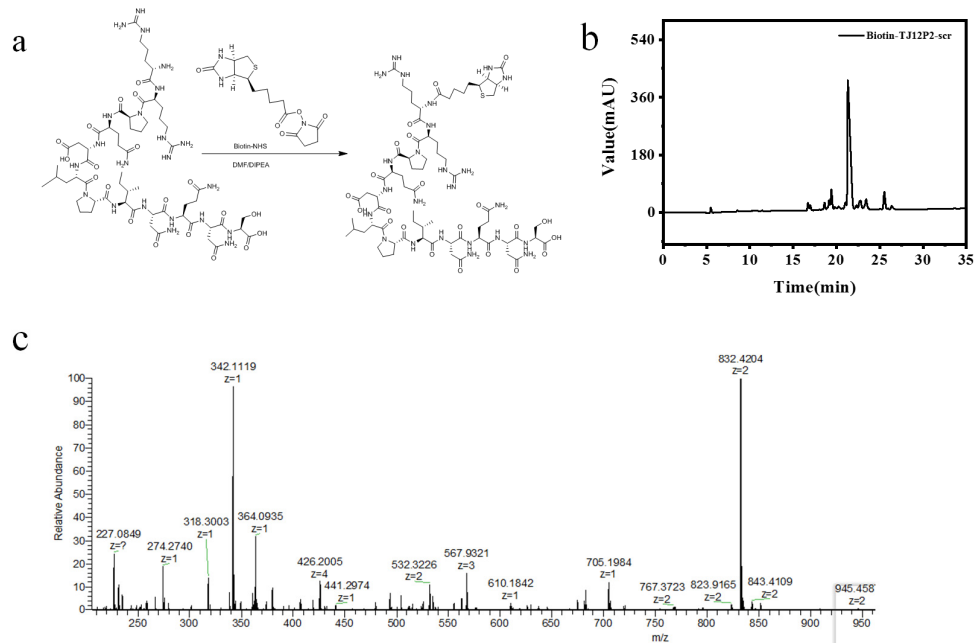


Figure S6. Synthesis of Biotin-scrambled-TJ12P2. (a). Chemical conjugation of Biotin onto the N-terminal of scrambled-TJ12P2. (b). Mass spectrum analysis of molecular weight of scrambled-TJ12P2, which is 1662.8 Da. (c). Purity of Biotin-scrambled-TJ12P2 by analytical HPLC. The retention time of Biotin-scrambled-TJ12P2 is 21.3 min.

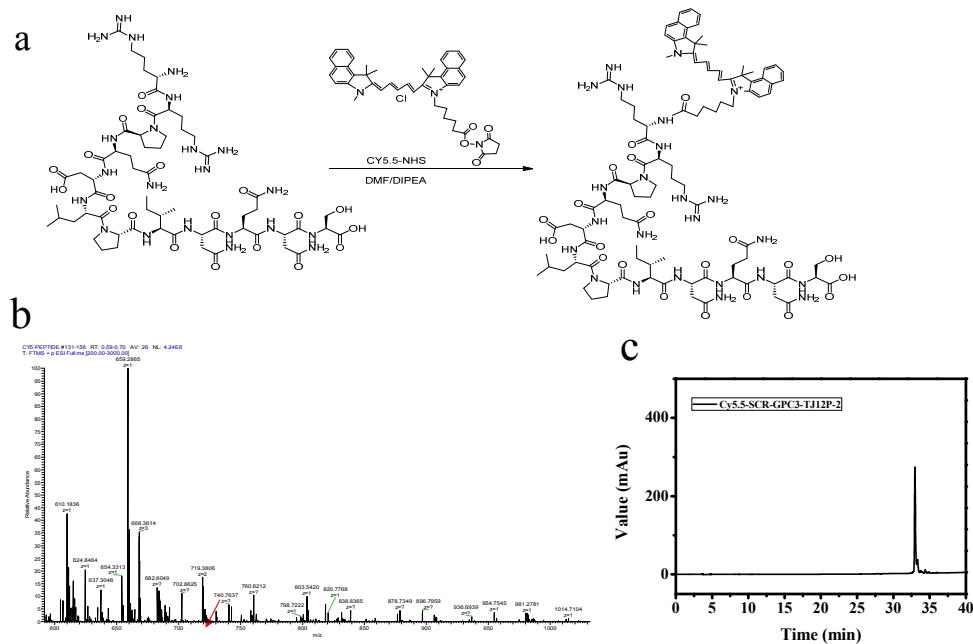


Figure S7. Synthesis of Cy5.5-scrambled-TJ12P2. (a). Chemical conjugation of Cy5.5-NHS onto the N-terminal of scrambled-TJ12P2. (b). Mass spectrum analysis of molecular weight of Cy5.5-scrambled-TJ12P2, which is 2002.09 Da. (c). Purity of Cy5.5-scrambled-TJ12P2 by analytical HPLC. The retention time of Biotin-TJ12P2 is 32.97 min.

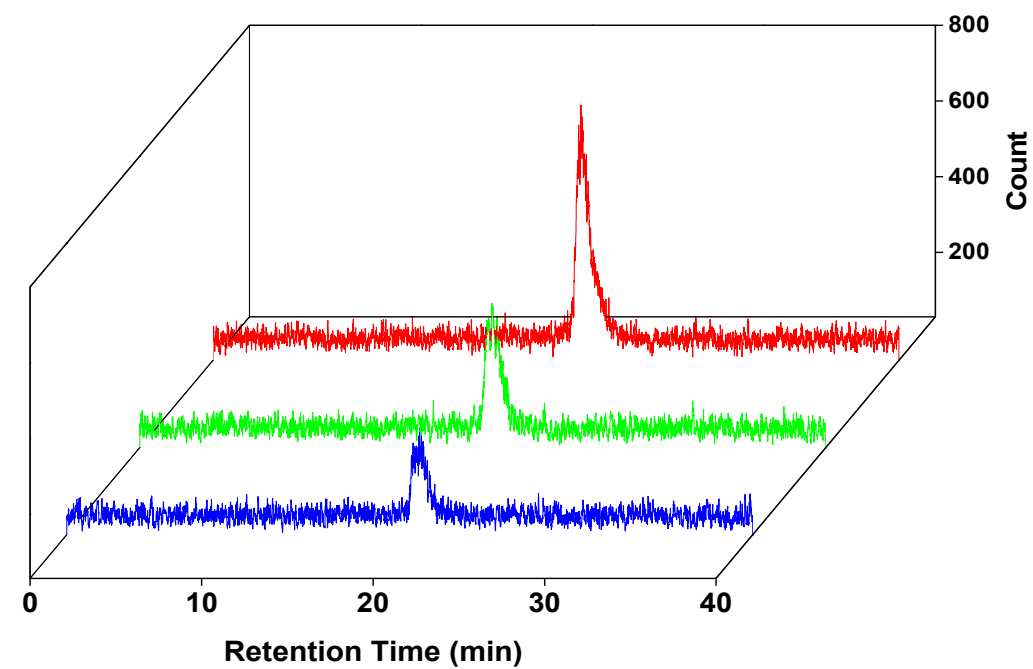


Figure S8. HPLC analysis of the stability of ^{18}F -AIF-NOTA-TJ12P2 in physiological buffer at 37°C for 4 hours.

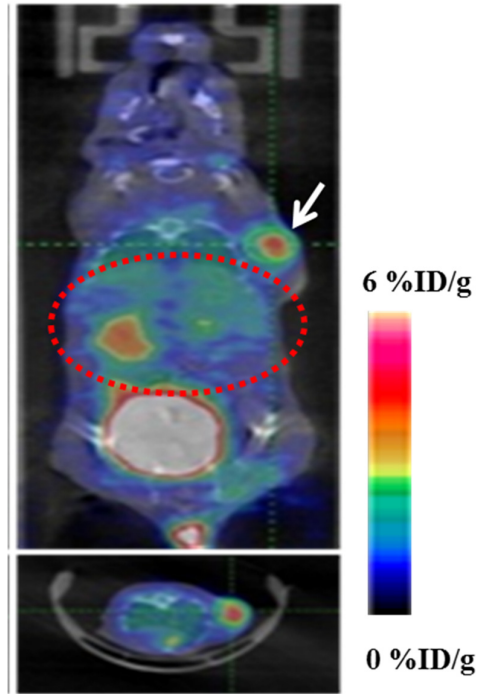


Figure S9. Micro-PET/CT imaging of ^{18}F -AIF-NOTA-TJ12P1 targetability in HepG2 tumor bearing mouse model. White arrow points to the HepG2 tumor and red circle indicates the normal liver.