Electronic Supplementary Material (ESI) for Journal of Materials Chemistry B

Supporting Information

Biotin-decorated fluorescent silica nanoparticles with aggregation-induced emission characteristics: fabrication, cytotoxicity and biological applications

Min Li,[a,b] Jacky W. Y. Lam,[b] Faisal Mahtab,[b] Sijie Chen,[b] Weijie Zhang,[a] Yuning Hong,[b] Jun Xiong,[a] Qichang Zheng[a] and Ben Zhong Tang*[b]*

[a]*Department of Hepatobiliary Surgery, Union Hospital, Tongji Medical College, Huazhong University of Science and Technology (HUST), Wuhan 430022, China. Fax: +86-27-8535-1676; Tel: +86-27-8535-1623; E-mail: qc_zheng@mail.hust.edu.cn*

[b]*Department of Chemistry, Institute for Advanced Study, State Key Laboratory of Molecular Neuroscience, Institute of Molecular Functional Materials and Division of Biomedical Engineering, The Hong Kong University of Science and Technology (HKUST), Clear Water Bay, Kowloon, Hong Kong, China. Fax: +852-2358-1594; Tel: +852-2358-7375; E-mail: tangbenz@ust.hk*

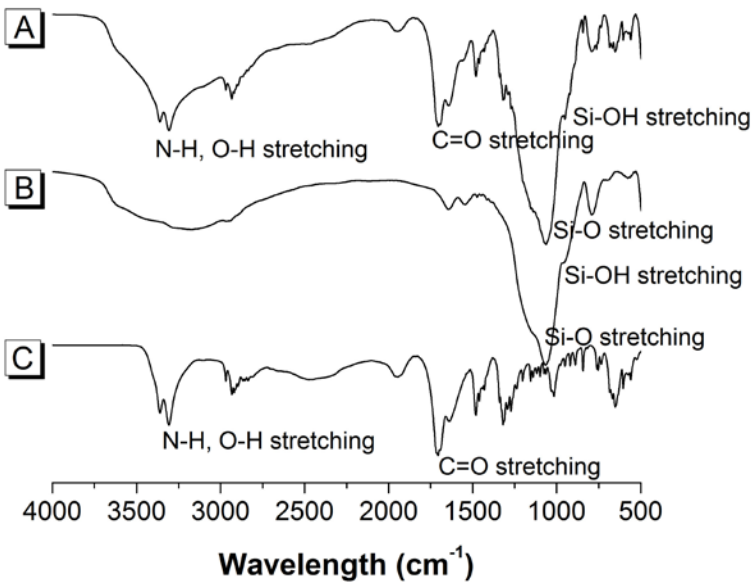

Fig. S1 IR spectra of (A) FSNP-**1**-biotin, (B) FSNP-**1**-NH_2 and (C) biotin.

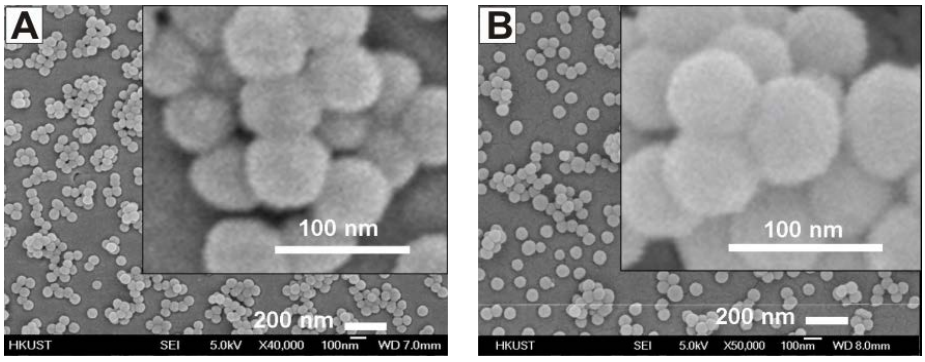

Fig. S2 SEM images of (A) FSNP-**1**-NH_2 and (B) FSNP-**1**-biotin.

Table S1 Chemical compositions of the nanoparticles determined by XPS and EDX analyses

Nanoparticle	Carbon	Nitrogen	Oxygen	Silicon	Sulfur
			XPS		
FSNP-**1**-NH_2	31.84	8.16	39.85	20.15	
FSNP-**1**-biotin	34.06	7.49	39.07	19.08	0.30
			EDX		
FSNP-**1**-biotin	21.73	1.53	31.55	44.79	0.40

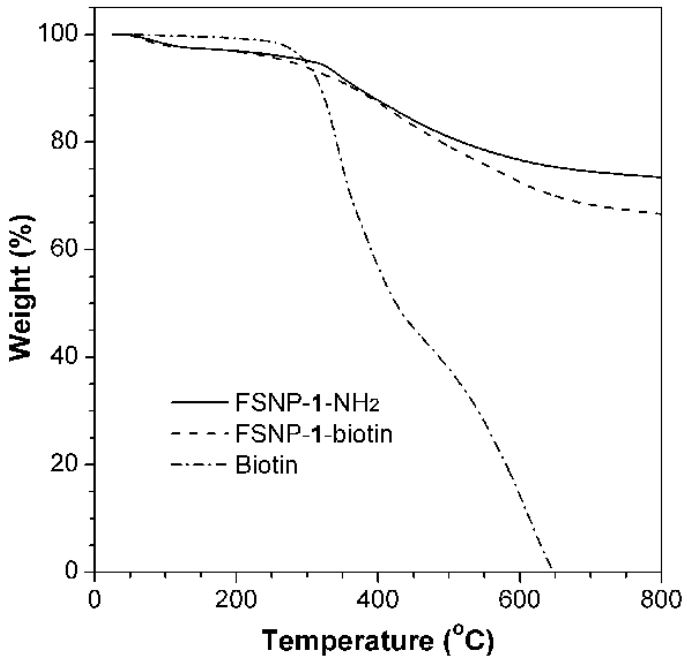

Fig. S3 TGA thermograms of FSNP-**1**-NH_2, FSNP-**1**-biotin and biotin recorded under nitrogen at a heating rate of 20 °C/min.

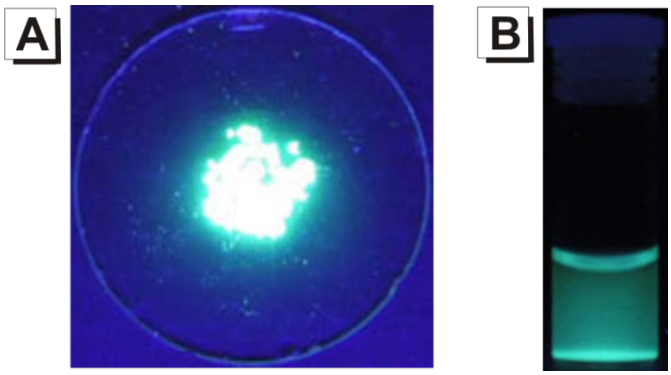

Fig. S4 Photostability of FSNP-**1**-biotin. Photographs of (A) powder and (B) aqueous suspension of FSNP-**1**-biotin taken under 365 nm UV irradiation from a hand-held UV lamp after the nanoparticles had been placed on shelf without protecting from light and air for 6 months.

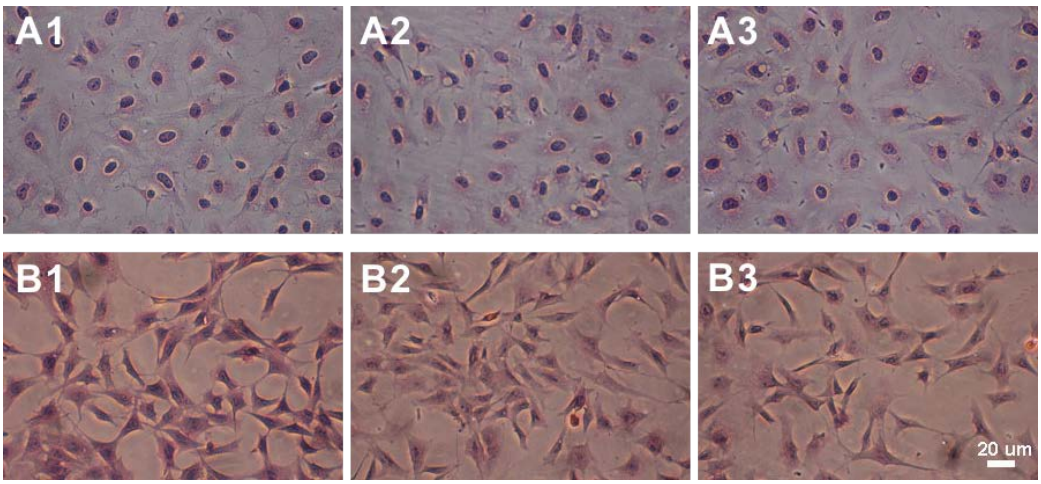

Fig. S5 Morphological change of (A) HeLa cells and (B) 3T3 cells treated with (A1 and B1) 0, (A2 and B2) 40 and (A3 and B3) 80 μg/mL of FSNP-**1**-biotin for 48 h. The cells were stained with hematoxylin and eosin and observed under a phase contrast microscope.

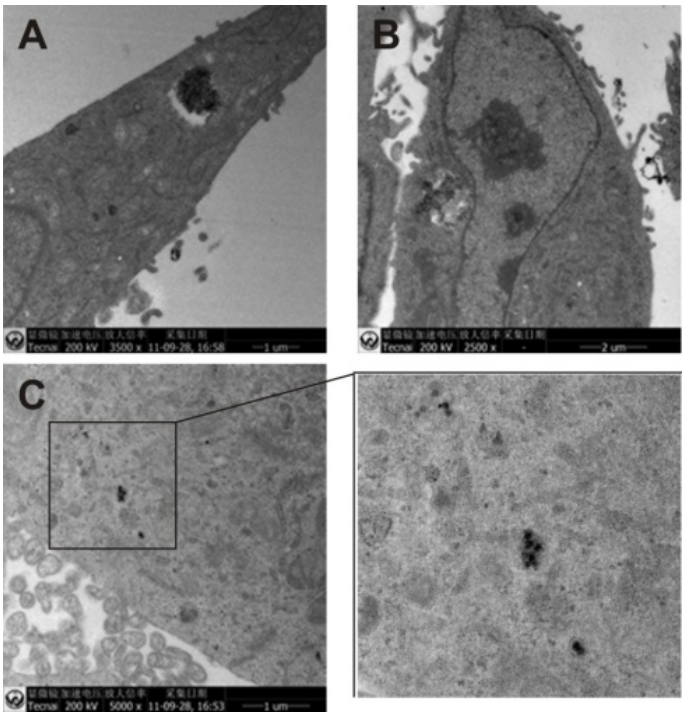

Fig. S6 TEM images showing the uptake and distribution of FSNP-**1**-biotin in HeLa cells. The nanoparticles were (A) entrapped in endocytic vesicles, (B) released from the vesicles and (C) dispersed or clustered in cytoplasm.

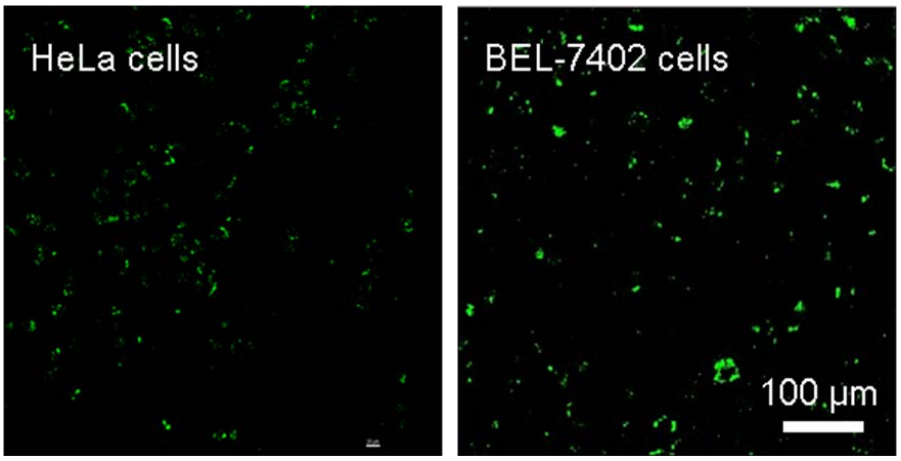

Fig. S7 Fluorescent images of HeLa cells and BEL-7402 cells stained with FSNP-**1**-biotin after 7 days.