Supplementary Information

A Glucose-Functionalized Near-Infrared Ag_2Se Quantum Dots with Renal Excretion Ability for Long-Term in vivo Tumor Imaging

Xiao-Lei Ge†, Biao Huang †, Zhi-Ling Zhang, Xiaolan Liu, Man He, Zili Yu, Bin Hu,

Ran Cui*, Xing-Jie Liang*, Dai-Wen Pang

X. L. Ge, B. Huang, Prof. Z. L. Zhang, X. Liu, Prof. M. He, Prof. B. Hu, Prof. R. Cui, Prof. D. W. Pang
Key Laboratory of Analytical Chemistry for Biology and Medicine (Ministry of Education), College of Chemistry and Molecular Sciences, Wuhan University, Wuhan 430072, China
E-mail: cuiran@whu.edu.cn
Prof. X. Liang
Chinese Academy of Sciences (CAS), Key Laboratory for Biological Effects of Nanomaterials and Nanosafety, National Center for Nanoscience and Technology, No. 11, First North Road, Zhongguancun, Beijing 100190, China
E-mail: liangxj@nanoctr.cn
Z. Yu
Key Laboratory of Oral Biomedicine (Ministry of Education) and Department of Oral and Maxillofacial Surgery, School and Hospital of Stomatology, Wuhan University, 237 Luoyu Road, Wuhan 430079, China
†These authors contributed equally to this work.

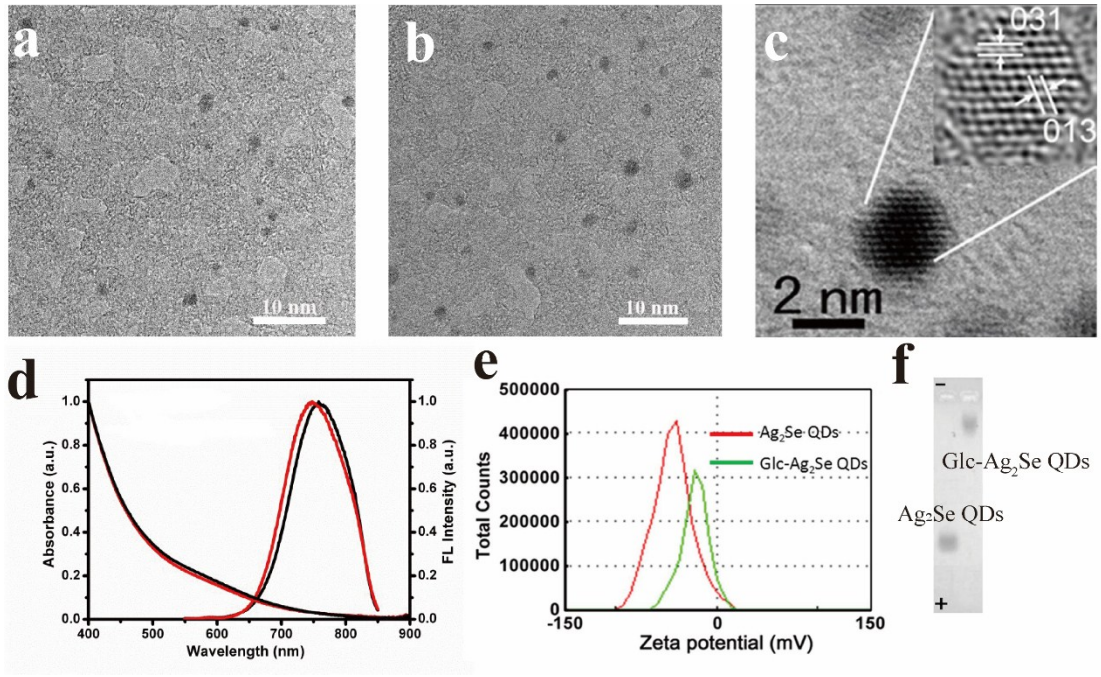

Fig.S1 Characteristics of Ag_2Se QDs and Glc-Ag_2Se QDs. (a) The TEM image of the Ag_2Se QDs. (b) The TEM and (c) HRTEM images of the Glc-Ag_2Se QDs. (d) The absorbance and the corresponding FL spectra of the purified Ag_2Se QDs (Black line) and Glc-Ag_2Se QDs (Red line). (e) The Zeta potential of Glc-Ag_2Se QDs. (f) The agarose gel electrophoresis image of Glc-Ag_2Se QDs and Ag_2Se QDs.

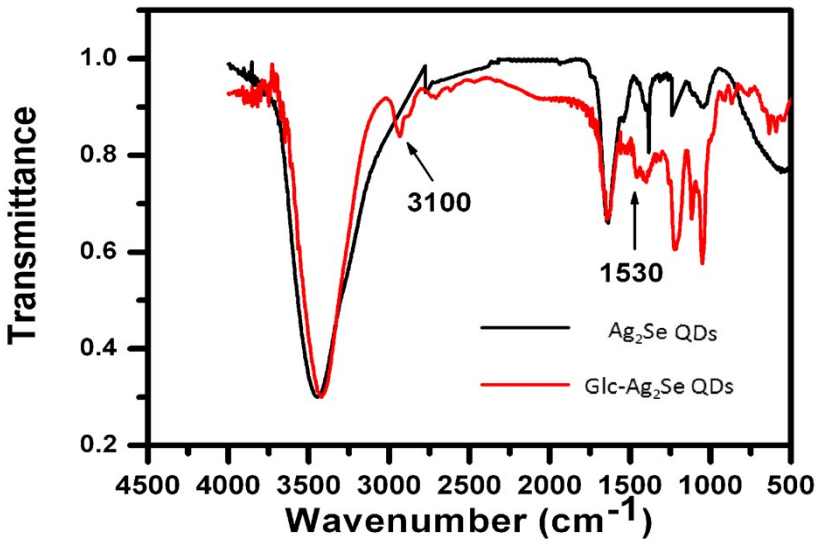

Fig.S2 The FT-IR spectrum of Ag_2Se QDs Glc-Ag_2Se QDs.

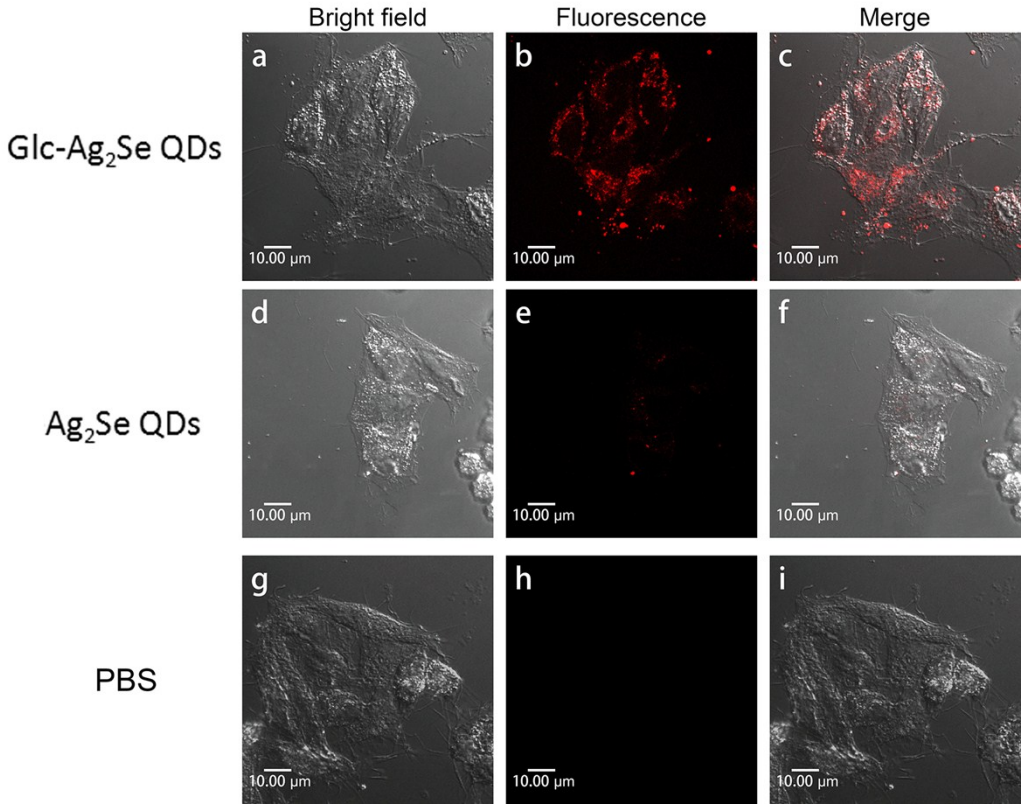

Fig.S3 Laser confocal scanning imaging of SW1990 cells incubated with Glc-Ag_2Se QDs. The confocal images in bright field (a), fluorescent field (b) and the merge image

(c) of the cancer cells incubated with Glc-Ag_2Se QDs for 4 h at a concentration of 500 μg/mL. The confocal images in bright field (d), fluorescent field (e) and the merge image (f) of the cancer cells incubated with Ag_2Se QDs for 4 h at a concentration of 500 μg/mL. The confocal images in bright field (g), fluorescent field(h) and the merge image (i) of the cancer cells incubated with PBS for 4 h. The images were obtained on a laser confocal scanning microscope (Zeiss LSM510, Carl Zeiss Shanghai) with the excitation and emission wavelengths were 561 nm and 705 nm, respectively.

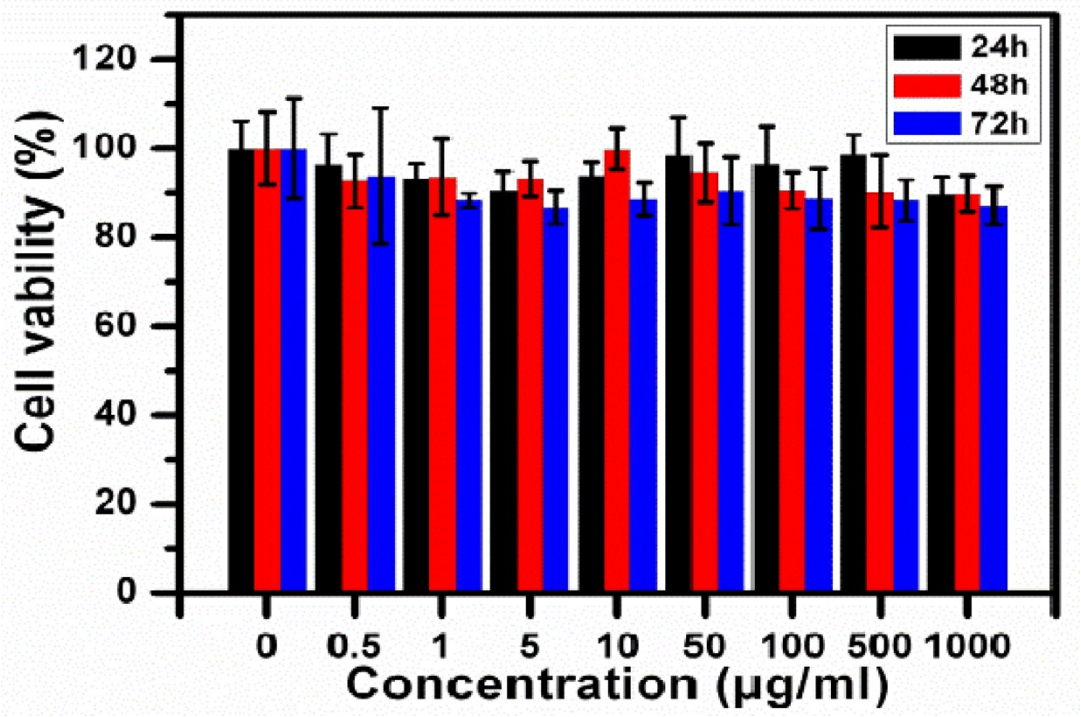

Fig.S4 The MTT assay result of Glc-Ag_2Se QDs.

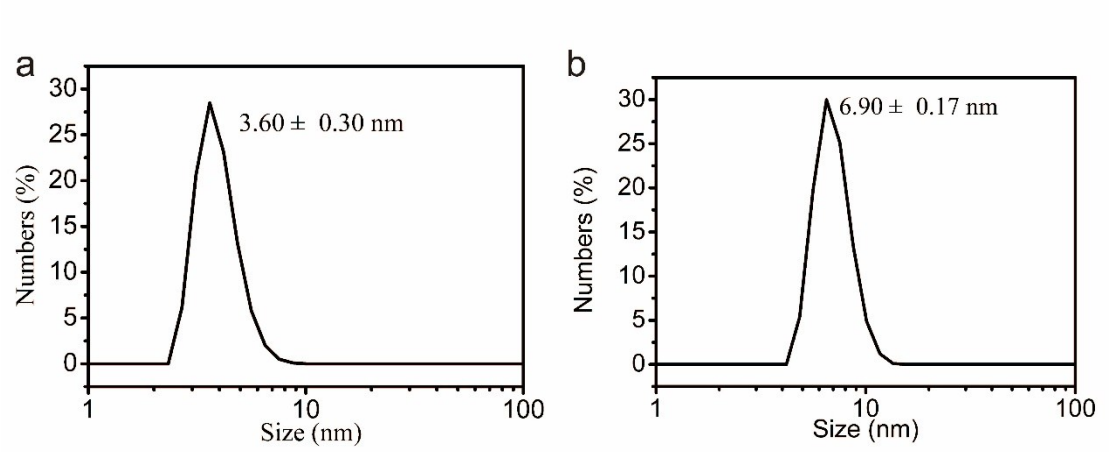

Fig. S5. The size distribution curves by number of the hydrodynamic diameter of Glc-Ag_2Se QDs (a) and PEG-Ag_2Se QDs (b).

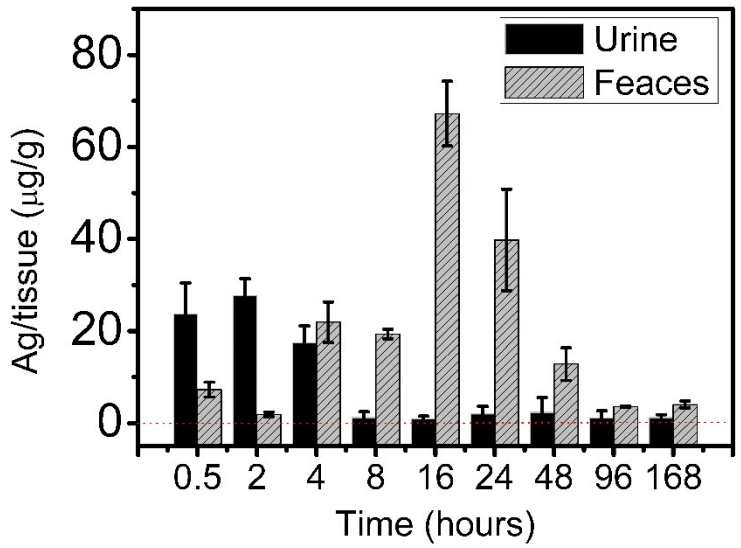

Fig. S6. Concentrations of the element Ag in urine and feces of the PEG-Ag_2Se QDs injected into mice.

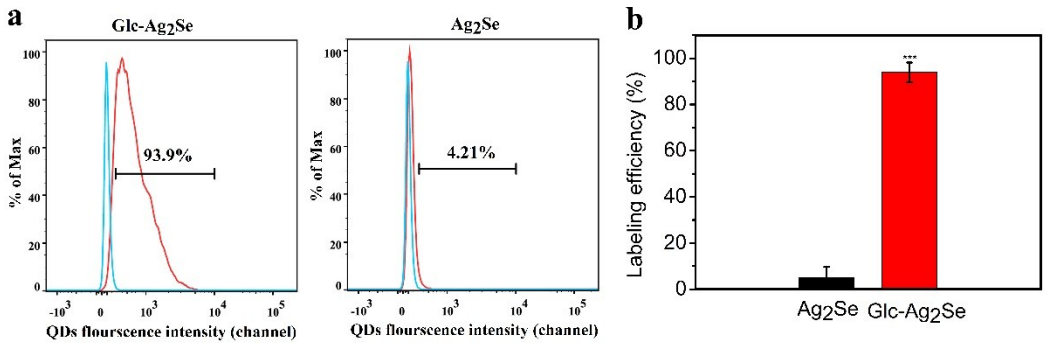

Fig. S7. (a) Representative flow cytometry data for MCF-7 cells incubated with Glc-Ag_2Se QDs (red curve) and Ag_2Se QDs (control, red curve). The blue curves in the flow cytometric histograms are the corresponding blank control, i.e., the MCF-7 cells without any treatment; and (b) the quantified percentage of positively labeled MCF-7 cells. The data are represented as mean ± SD, n=3. (***, $p<0.01$).