Supporting information

Modularly Assembled Magnetite Nanoparticles Enhance in vivo Targeting for Magnetic Resonance Cancer Imaging

Ping-Ching Wu[†], Chia-Hao Su[‡], Fong-Yu Cheng[§], Jun-Cheng Weng[‡], Jyh-Horng Chen[‡], Tsung-Lin Tsai[†], Chen-Sheng Yeh[§], Wu-Chou Su[∥], Jih-Ru Hwu[⊥], Yonhua Tzeng[±], Dar-Bin Shieh[#,*]

[#]Institute of Oral Medicine and Department of Stomatology and Center for Micro/Nano Science and Technology, National Cheng Kung University, Tainan 701, Taiwan. email, dshieh@mail.ncku.edu.tw; Tel, 886-6-235-3535 ext. 5377; Fax, 886-6-276-6626

S1……Figure S1

S2……Figure S2

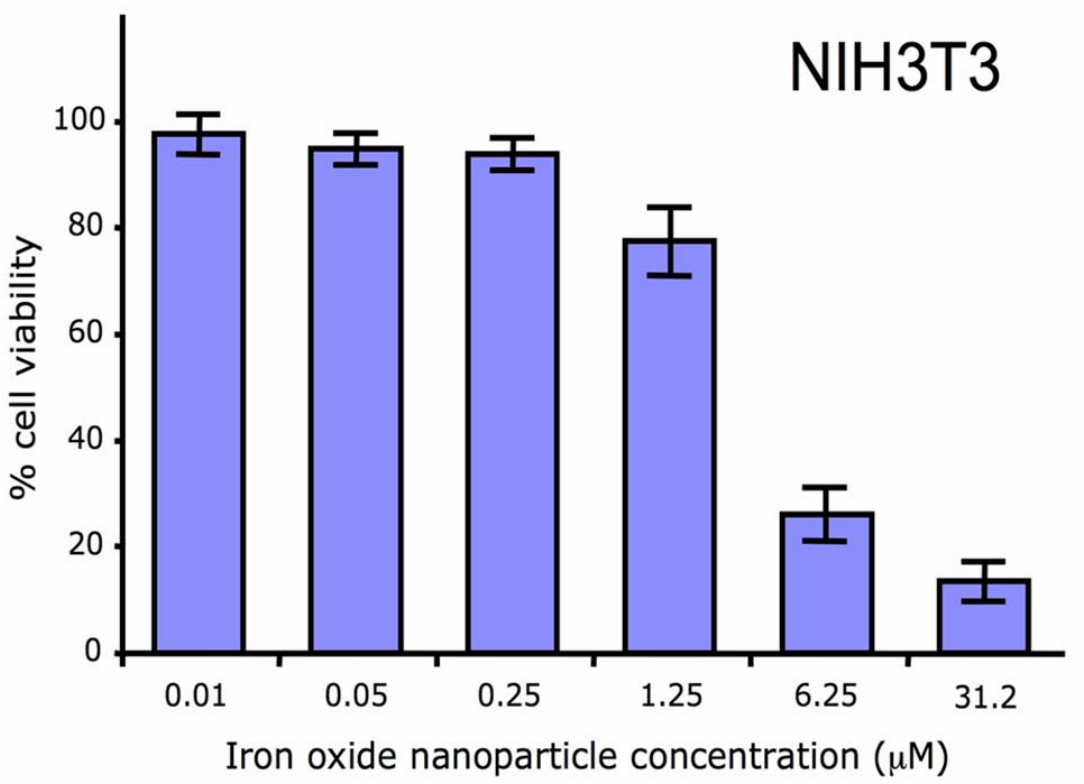

Figure S1. To evaluate the biocompatibility of the nanoparticles, NIH3T3 cells were cultured in 96-well plates. Fe_3O_4-NTA-Ni-RGD4C nanoparticles at different concentrations (range: 0.01-31 μM) were added to each culture well and incubated for an additional 24 h before the spectrophotometric quantification of cell viability using an MTT assay. Cell viability was satisfactory (> 80%) at a particle concentration below 1.25 μM.

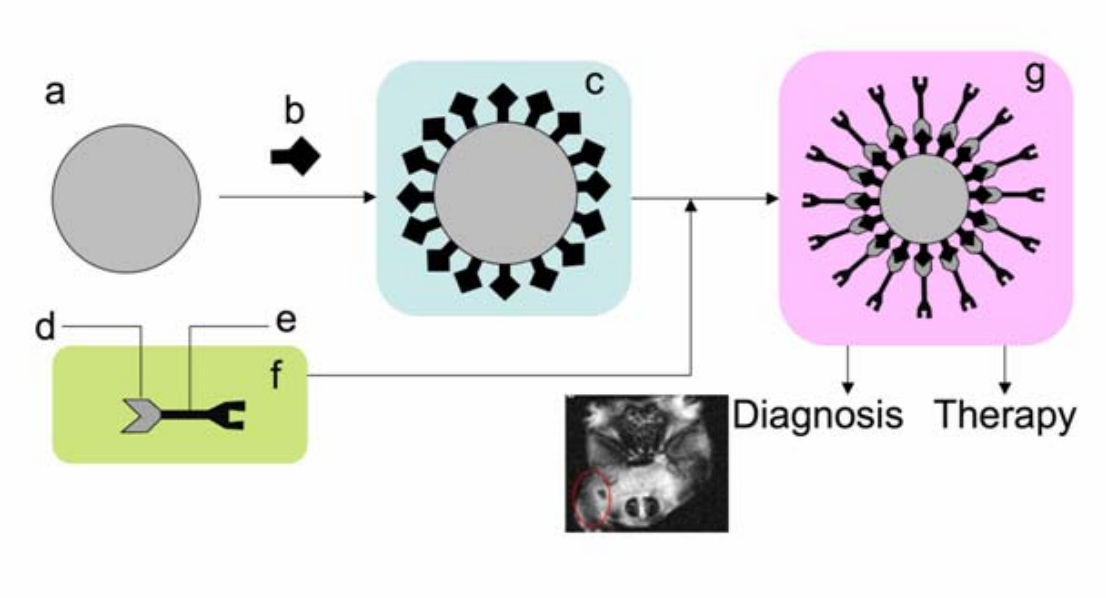

Figure S2. We developed a new concept of modular-targeting functional nanoparticles through self-assembly of the targeting moiety and the functional nanoparticles by modifying the nanoparticle surface with a small "key molecule" and the targeting peptide or recombinant antibody with an affinity peptide tag for the "lock molecule".

Schematic diagram illustrating the concept of modular-targeting functional nanoparticles for diagnostic imaging and therapeutic applications. Nanoparticle module (c) is composed of a functional nanoparticle (a) with a common surface "key molecule" (b), Ni-NTA for example, to self-assemble with targeting moieties in biomolecular module (d~f). Biomolecular module (f) is composed of a biomolecule (d) such as antibody or a peptide with a genetically engineered “lock molecule” (e) tag (6-his domain for example) for binding to "key molecules" on the nanoparticles. The two modules self-assembled to form functional targeting nanoparticles (g) that not only gives a versatile combination for biological end and the nanoparticle end based on clinical applications , but also may improve the targeting because of the orientation-control and enrichment of the effective targeting moiety through self-assembly.