Supporting Information

Genetically Programmed Clusters of Gold Nanoparticles for Cancer cell-targeted Photothermal Therapy

Mi Hwa Oh,[†] Jeong Heon Yu,[‡] Insu Kim,[‡] and Yoon Sung Nam,[‡,§,*]

[†]Department of Biological Sciences, [‡]Department of Materials Science and Engineering, [§]KAIST Institute for NanoCentury (KINC CNiT), Korea Advanced Institute of Science and Technology (KAIST) 291 Daehak-ro, Yuseong-gu, Daejeon 305-701, Republic of Korea.

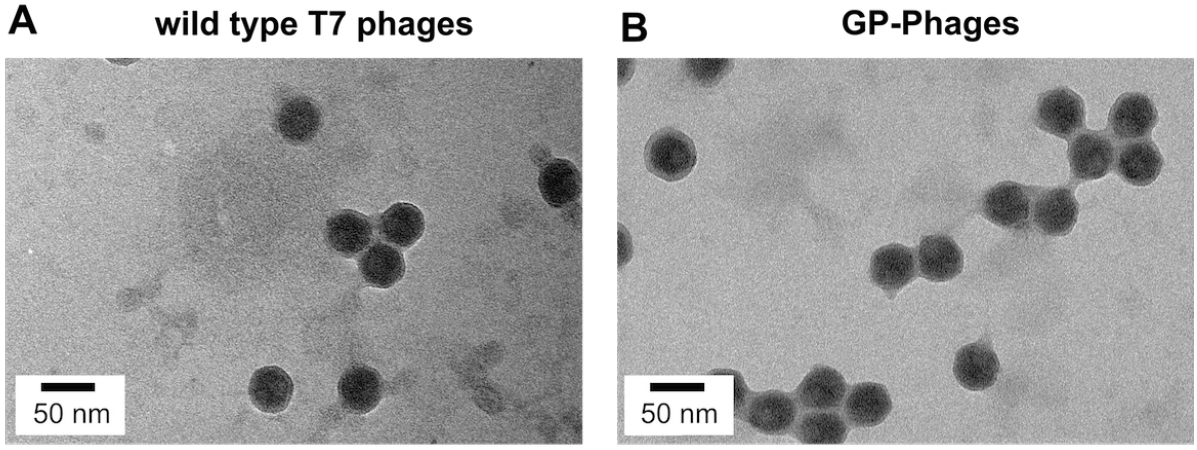

Figure S1. Morphology of unmodified wild type-T7 phages (A) and GP-phages (B). There were no significant differences of the morphology between wild type and recombinant phages. All TEM specimens were stained with 1 % uranyl acetate.

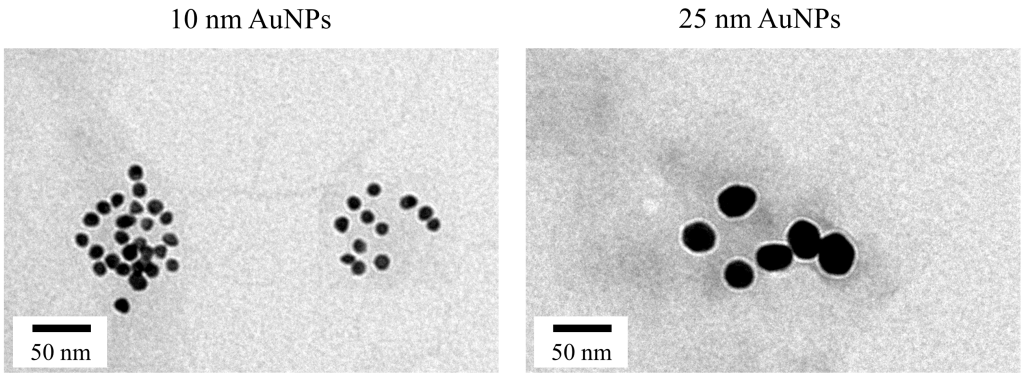

Figure S2. TEM images of GP-phages with AuNPs of 10 nm (left) and 25 nm (right) in diameter. AuNPs were not efficiently bind to the surface of T7 phages compared to 5 nm AuNPs in the same condition.

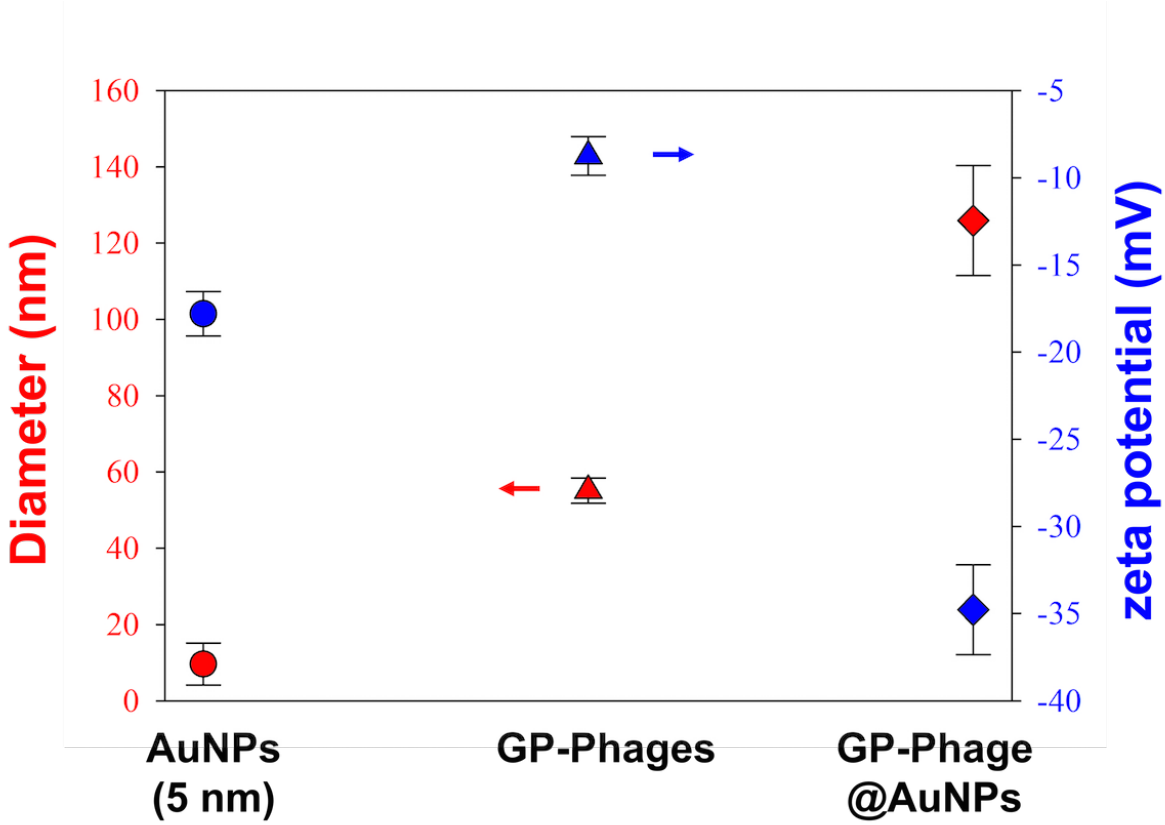

Figure S3. Hydrodynamic diameter and zeta potential of GP-phage and GP-phage@AuNPs.

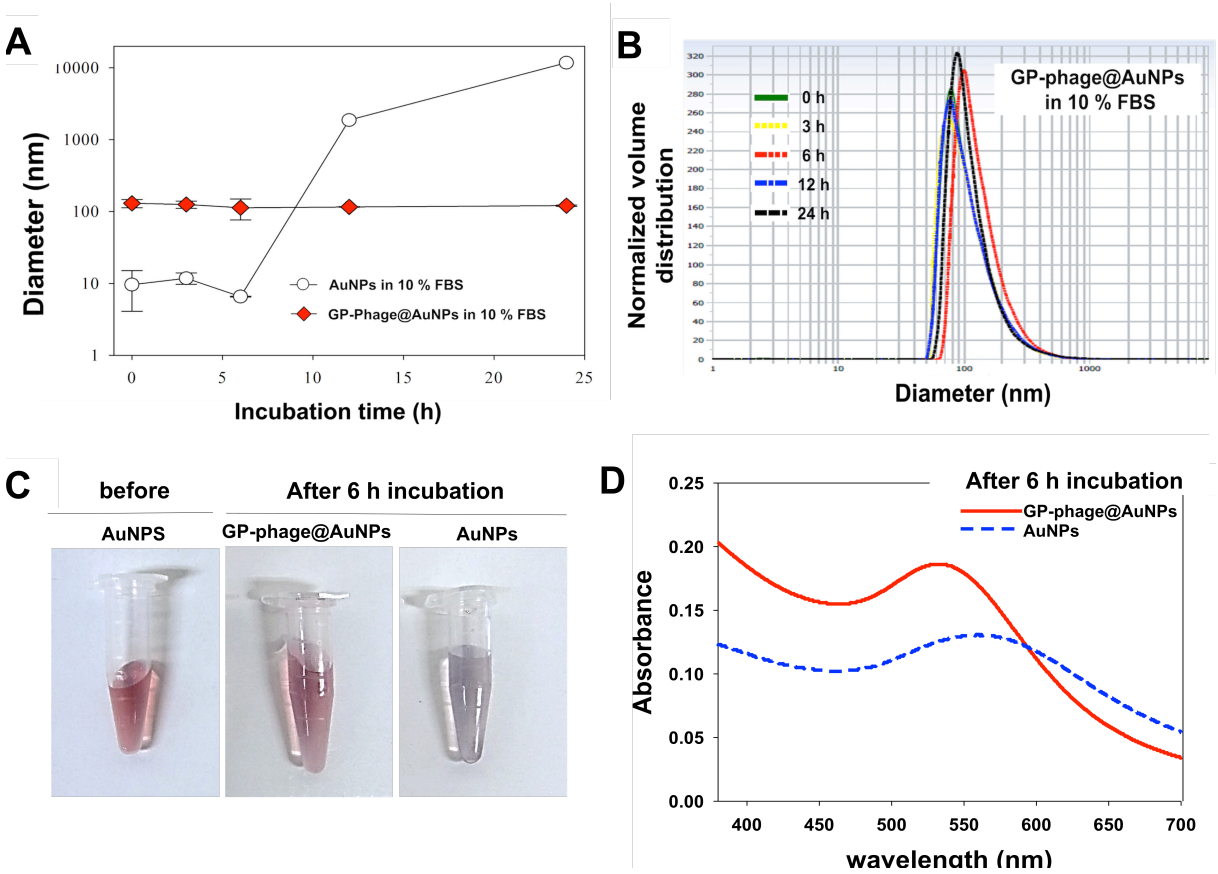

Figure S4. Average diameter (A) and size distribution (B) of GP-phage@AuNPs in 10 % FBS as a function of incubation time. The photograph images (C) and absorption spectra (D) of the AuNPs and GP-phage@AuNPs after 6 h incubation in 10% FBS.

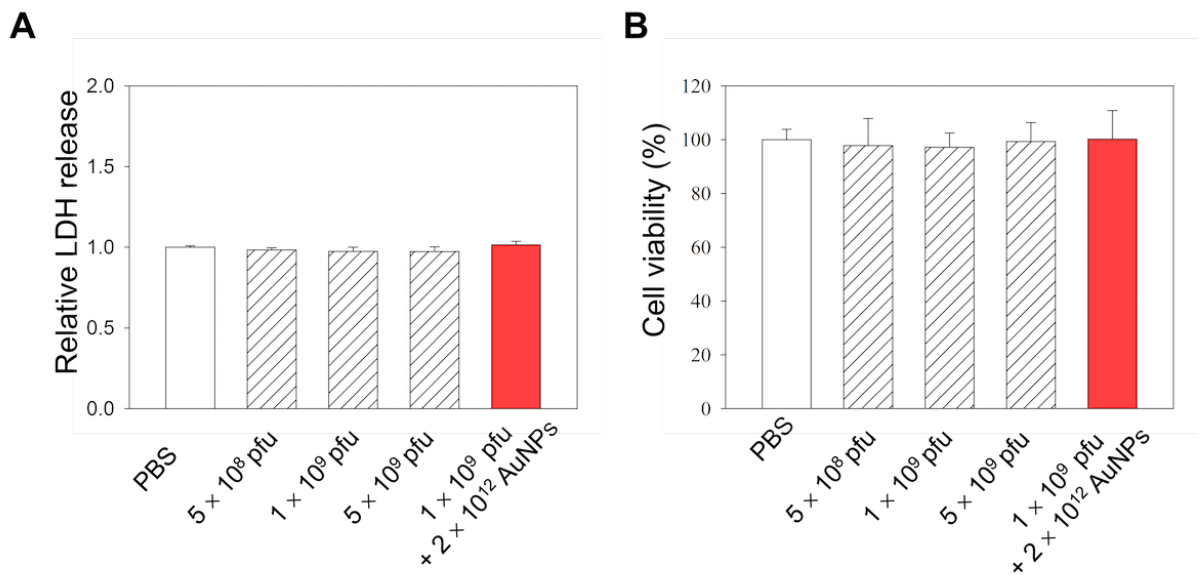

Figure S5. Cytotoxicity of GP-phage and GP-phage@AuNPs. The cytotoxic effects of GP-phage were examined in PC3 cells in 72 h. **A.** LDH release from PC3 cells treated with different concentration of phages. **B.** Cell viability of PC3 cells treated with different concentration of phages. Any significant increases of LDH release from the cells or any decreases of cell viability were not observed in all conditions, indicating innocuousness of both GP-phage and their AuNPs complex.

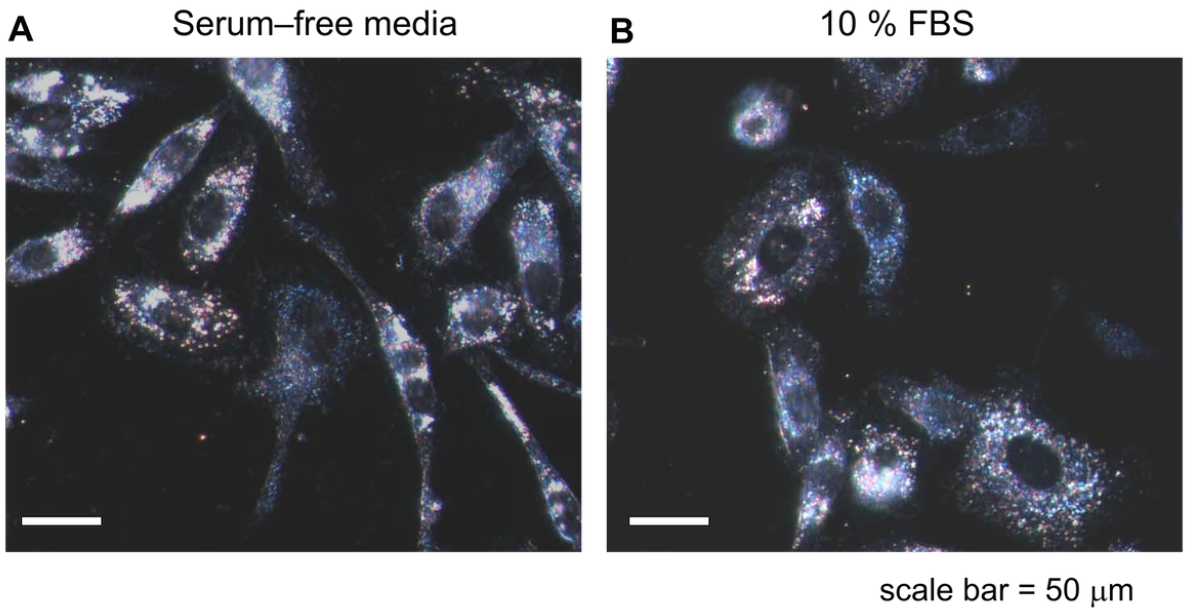

Figure S6. Comparison to the incubation condition for uptake of GP-phage@AuNPs. PC3 cells were incubated with GP-phage@AuNPs in serum-free media and media containing 10 % FBS. It confirmed that GP-phage@AuNPs were delivered and detected to target cancer cells with excellent dispersion stability in a serum-containing medium.

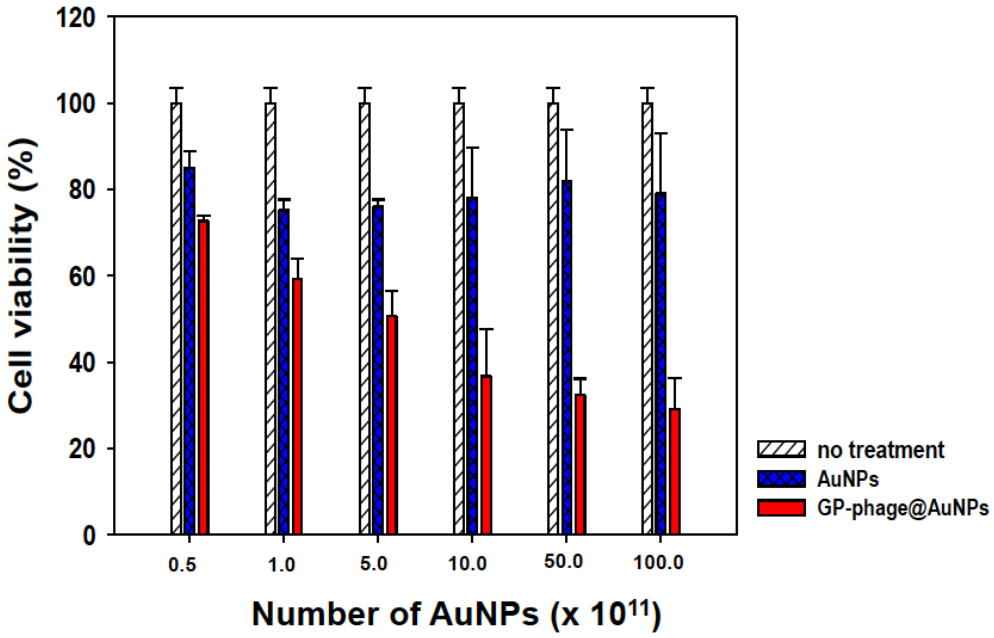

Figure S7. Cell viability after treatments with citrate-stabilized AuNPs and GP-phage@AuNPs at different concentrations of AuNPs.