Stability and *in vivo* and *in vitro* activity of viral derived fluorescent parotein nanoparticle

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We synthesized green fluorescent protein nanoparticles(GFPN) by genetically engineered eGFP into each of monomer of protein nanoparticles. That is, when expressed in E. coli, particles formed spherical nanoparticles with uniform diameter of about 45 nm owing to the self-assembly function of protein nanoparticle and were successfully purified through Ni+2 affinity- and sucrose gradient based purification. We also added the glycine-rich fexible linker peptides in between eGFP and protein nanoparticle to reduce fluorescence quenching among the densly displayed eGFPs on each monomer surface. As compared to eGFPs, it is notable that GFPNs showed significantly amplified (167-fold) fluorescence intensity and far enhanced conformational stability even in 50% serum solution at 37°C. When estimated with continuous exposure to strong excitation light, GFPNs also showed high photostability, or much higher photostability than eGFP and a commonly used organic fluorescent dye, which happened presumably because the enhanced conformational stability of GFPNs significantly reduced photobleaching of fluorophores.