Supporting Information

Patel *et al.* 10.1073/pnas.0801609105

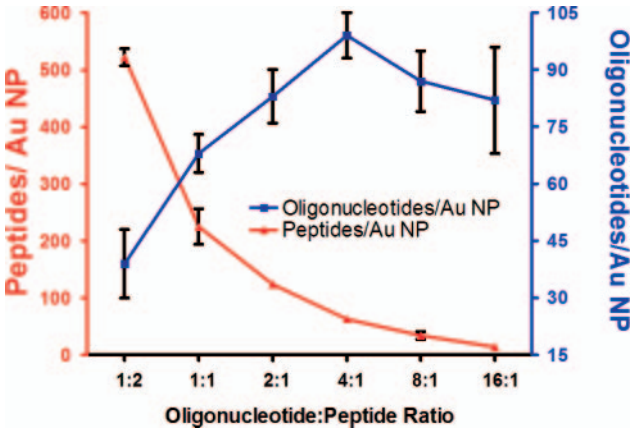

Fig. S1. Oligonucleotide and peptide density on 13-nm gold nanoparticles. Nanoparticle conjugates were prepared with oligonucleotides containing a 3′ thiol terminus and fluorescein-labeled peptide using the stoichiometries indicated on the *x*-axis. DNA loading (blue line) is plotted on the *y*-axis on the right, and peptide loading (red line) is plotted on the *y*-axis on the right. The 1:1 stoichiometry yielded a conjugate functionalized with ≈50% of the theoretical maximum of each biomolecule.

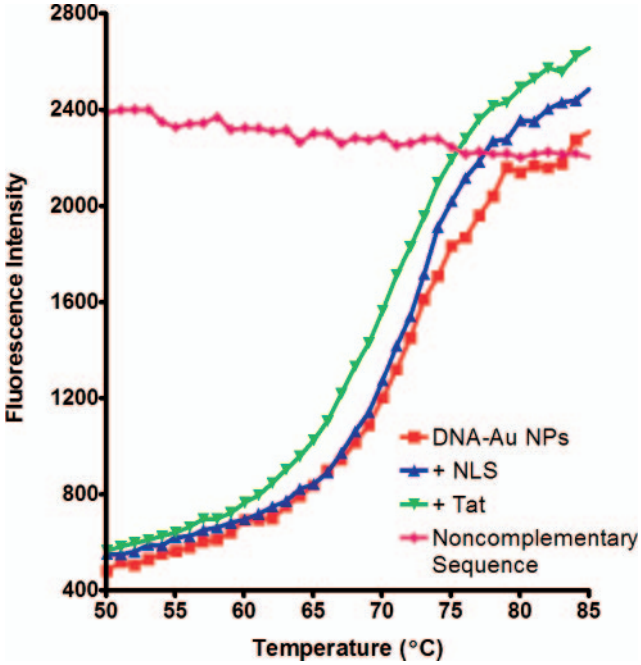

Fig. S2. Fluorescence-melting profile of peptide-ASNPs (Tat or NLS) compared with ASNPs. T_m: ASNPs = 72 ± 0.7°C; NLS peptide + ASNPs = 73 ± 0.4°C; Tat peptide + ASNPs = 71 ± 0.2°C. Noncomplementary oligonucleotides did not display a melting curve.

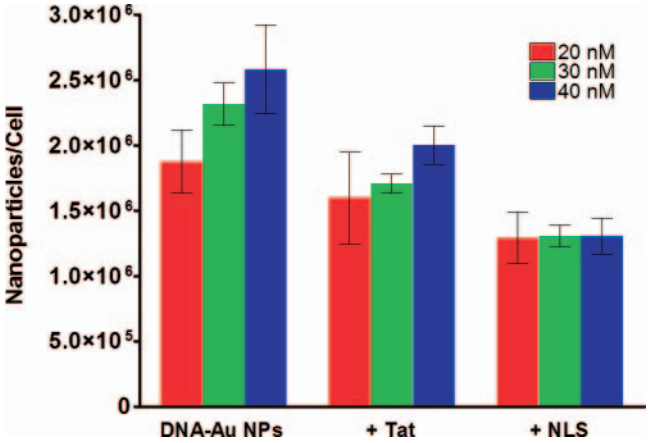

Fig. S3. Nanoparticle uptake in HeLa cells based on intercellular gold content determined by ICP-MS.

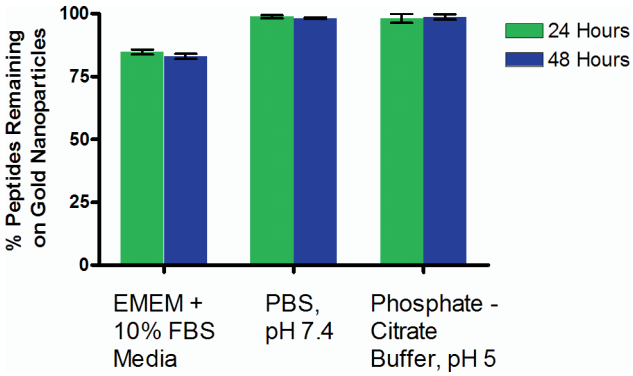

Fig. S4. Stability of peptide attachment on gold nanoparticles in various media and buffer conditions at 37°C. Fluorescent measurements were performed as described in *Materials and Methods* section.

Table S1. Dynamic light-scattering and zeta-potential data from gold nanoparticles conjugated with oligonucleotides and from oligonucleotides and peptides (1:1 stoichiometry)

	13-nm Gold core		5-nm Gold core	
Conjugate	Size (nm)	Zeta potential (mV)	Size (nm)	Zeta potential (mV)
DNA-Au NPs	33.77 ± 0.33	−31 ± 0.4	23.6 ± 0.49	−45.9 ± 0.80
+ Tat peptide	35.64 ± 0.86	−22 ± 2.2	21.0 ± 1.0	−40.9 ± 1.1
+ NLS peptide	33.48 ± 0.49	−25 ± 2.8	23.7 ± 0.71	−43.1 ± 1.2

Error bars indicate standard deviation from 3 independent measurements.

Table S2. Gold plasmon peak of nanoparticle conjugates prepared with different concentrations of NaCl added before the addition of oligonucleotides and peptides

	Gold plasmon peak (nm)		
NaCl	Oligonucleotide	+ Tat peptide	+ NLS peptide
0 mM	524	544	544
50 mM	524	541	542
100 mM	524	539	534
150 mM	524	536	532
200 mM	524	524	524

Stable 13-nm gold nanoparticles functionalized with oligonucleotides have a plasmon peak of 524 nm (bold).

Table 3. HeLa cell viability 48 h after treatment with ASNPs, peptide-ASNPs, and controls

Sequence	Sample	Treatment concentration		
		20 nM	30 nM	40 nM
Antisense Sequence	DNA-Au NPs	97.8 ± 1.0	97.9 ± 1.4	98.1 ± 0.8
	+ Tat	97.2 ± 1.4	85.5 ± 1.5	73.4 ± 3.8
	+ NLS	98.2 ± 2.0	82.8 ± 2.6	55.9 ± 2.6
Control Sequence	DNA-Au NPs	97.7 ± 0.9	98.0 ± 0.3	98.0 ± 0.7
	+ Tat	97.7 ± 0.6	98.6 ± 2.0	97.9 ± 0.1
	+ NLS	97.6 ± 1.6	97.3 ± 0.5	97.0 ± 3.1

All numbers are % viable cells expressed as average ± standard deviation from at least 3 experiments. ASNPs contained anti-GAPDH sequence; Controls contained a noncomplementary sequence.