Supplementary Information

Polymer control of ligand display on gold nanoparticles for multimodal switchable cell targeting

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Materials and Instrumentation.

Poly-N-isopropylacrylamide-co-acrylamide-COOH (pNIPAm-co-Am-COOH, 8 kDa, PDI 1.35, 9:1 isopropylacrylamide/acrylamide molar ratio), pNIPAm-co-Am-SH and folate-SH were prepared according to previously published methods\(^1\). Biotin-N-hydroxysuccinimide, 4-nitrophenyl disodium salt (Sigma 104\(\text{°}\)), foetal bovine serum, folate-free Dulbecco’s modified eagle’s medium (FFMEM) low glucose, L-glutamine solution, trypsin solution, penicillin-streptomycin-amphotericin B solution, sodium bicarbonate solution, D-(+)-glucose solution, were purchased from Sigma (St. Louis MO, USA). Cysteamine, cysteine, dicyclohexylcarbodiimide (DCC), N-hydroxysuccinimide (NHS), 2,4,6-trinitrobenzensulfonic acid (TNBS), 5,5’-dithio-bis(2-nitrobenzoic acid) (DTNB), p-dimethylaminocinnamaldehyde (p-DACA), silica TLC plates (20 x 20 cm), Trityl-chloride poly(styrene) (1% divinyl benzene) resin, nitric acid and hydrochloric acid TraceSELECT\(^{\circ}\) were furnished by Fluka Chemika (Buchs, Switzerland). Avidin and streptavidin-alkaline phosphatase-conjugated were obtained from Biospa (Milan, Italy). Sephadex G25 superfine resin was purchased from GE healthcare (Chalfont St Giles, United Kingdom). Vectashield\(^{\circ}\) mounting medium containing 4’,6-diamidino-2-phenylindole (DAPI) was purchased from Vector Laboratories (Burlingame, CA, USA). N-(fluorescein-5-thiocarbamoyl)-1,2-dihexadecanoyl-sn-glycero-3-phosphoethanolamine, triethylammonium salt (fluorescein-DHPE) was purchased from Invitrogen (Carlsbad, CA, USA). DB Falcon\(^{TM}\) 4 wells chamber slides were acquired by Becton, Dickinson and Company (NJ, USA).

Synthesis of AuNP.

AuNP in water were obtained by laser ablation synthesis in solution (LASiS) according to a previously reported protocol\(^1\), \(^4\) Briefly, laser ablation was obtained with 1064 nm (9 ns) laser pulses of a Quantel YG981E Nd:YAG laser focused on a 99.99% pure gold plate placed at the bottom of a cell containing bidistilled water. AuNP were characterized by UV-Vis spectroscopy.
using a Varian Cary 5 spectrometer in 2 mm optical path quartz cells, and by transmission electron microscopy (TEM) collecting images at 300 kV with a JEOL JEM 3010 microscope equipped with a Gatan Multiscan CCD Camera model 794TEM (Fig. S1). The samples for TEM analysis were prepared by evaporating AuNP suspension on a copper grid covered with an amorphous carbon holey film. AuNP concentration was estimated by the Mie-Gans model fitting of UV-Vis spectra, as previously reported.\textsuperscript{1, 4, 5}

**Synthesis and characterization of biotin-cysteamine (biotin-SH).**

The biotin-SH synthesis was carried out as described in Fig. S2A. Cysteamine (0.45 mg, 5.8 μmol) was dissolved in 100 μL of anhydrous DMF and added of biotin-NHS (1.0 mg, 2.9 μmol). After 30 minutes reaction at room temperature, the mixture was spotted on a precoated silica gel TLC plate and the plate was run with CHCl\textsubscript{3}/MeOH 8/2 v/v mixture and biotin was detected by colorimetric test using p-DACA 0.2% (p/V), 2% H\textsubscript{2}SO\textsubscript{4} (v/v) in EtOH as reported in literature\textsuperscript{6} while the thiol groups were detected by the Ellman’s test.\textsuperscript{7} Biotin-SH showed a Rf value of 0.63. The reaction mixture was purified using preparative silica TLC plates run with CHCl\textsubscript{3}/MeOH 8/2 v/v mixture and the conjugate was characterized by RP-HPLC, ESI-TOF mass spectrometry and \textsuperscript{13}C NMR.

**RP-HPLC analysis:** ten microliters of the reaction mixture was added of 10 μL of 0.2% (w/V) p-DACA in EtOH, 10 μL of 2% (V/V) H\textsubscript{2}SO\textsubscript{4} in EtOH and 70 μL of EtOH. After 1 hour incubation the sample was analysed by RP-HPLC using a Phenomenex Luna C18 column (Torrance, CA, USA) eluted with water/0.05% TFA (eluent A) and acetonitrile/0.05% TFA (eluent B) in a gradient mode from 20% to 50% eluent B in 20 minutes. The UV-Vis detector was set at 533 nm.
ESI-TOF mass spectrometry [m/z signal of 304.11 (M+H), calculated for C_{12}H_{21}N_{3}O_{2}S_{2}: 303.11, Fig. S2B] was carried out using a MARINER Biospectrometry Workstation (PerSeptive Biosystems, Stafford, TX, USA).

\[ \text{13C NMR (300 MHz, DMSO-} d_6 \text{): } \delta 24.37 (\text{C-6}), 25.13 (\text{C-8}), 28.6 (\text{C-12}), 28.94 (\text{C-7}), 34.38 (\text{C-9}), 62.55 (\text{C-5}), 65.41 (\text{C-2}), 69.21 (\text{C-4}), 162.62 (\text{C-1}), 172.88 (\text{C-10}). \]

Synthesis and characterization of Folate-cysteamine (folate-SH).

The folate-cysteamine synthesis described in Fig. S3A was carried out according to the literature protocol\(^8\), and characterised by RP-HPLC, ESI-TOF mass spectrometry and \(^1\)H NMR.

RP-HPLC analyses were performed using a Phenomenex Luna C18 column eluted with water/0.05% TFA (eluent A) and acetonitrile/0.05% TFA (eluent B) in a gradient mode from 10% to 20% eluent B in 20 minutes. UV-Vis detection was recorded at 363 nm.

Folate-SH was characterized by ESI-TOF mass spectrometry [m/z signal of 499.06 (M-H), calculated for C_{21}H_{24}N_{8}O_{5}S_{1}: 500.16 – Fig. S3B] and by \(^1\)H NMR. Peaks and assignments agreed with literature values.

\[ \text{\(^1\)H NMR (300 MHz, DMSO-} d_6 \text{): } \delta 11.4 (s, \text{1H, -C=N-C(OH)=C}), 8.65 (s, \text{1H, -C-C(H)=N-}), 8.160 (d, \text{1H, J=7.4 Hz, Ar-CO-NH-}), 8.0 (t, \text{1H, J=6.5 Hz, SH-CH}_{2}-\text{CH}_{2}-\text{CO-NH-}), 7.66 (d, \text{2H, J=8.4 Hz, aromatic protons C}_{13}-\text{H/C}_{15}-\text{H}), 6.93 (bs, \text{1H, Ar-CH}_{2}-\text{NH-Ar}), 6.62 (d, \text{2H, J=8.4 Hz}, \]

\]
aromatic protons C12-H/C16-H), 4.48 (d, 2H, J=6.0 Hz, Ar-CH2-NH-Ar), 4.29 (m, 1H, -CO-NH-CH(C)-COOH), 3.50 (m, 2H, -NH-CH2-CH2-SH), 2.54 (m, 2H, -NH-CH2-CH2-SH), 1.8-2.2 (m, 4H, -CH-CH2-CH2-COHN-).

Conjugation study of pNIPAm-co-Am-SH to AuNP.

Increasing amounts of pNIPAm-co-Am-SH (from 17.6 to 140.7 µg) were added to 4 mL of 1.57 nM AuNP in order to yield 350:1, 700:1, 1400:1 and 2800:1 polymer/AuNP molar ratio. The mixtures were maintained overnight under mild stirring at room temperature. The colloidal mixtures were centrifuged at 14000 rpm for 5 minutes and the supernatants were lyophilized and re-dissolved in 1 mL of water. The polymer amount in the supernatant was assessed by an iodine assay. All conjugation runs yielded ~ 100% pNIPAm-co-Am-SH conjugation (Table S1).

The amount of pNIPAm-co-Am on the gold nanoparticles surface was also determined by thermal gravimetric analysis (TGA) using a TA Instruments TGA SDT Q600 (TA instruments, New Castle, DE, USA) under flowing nitrogen atmosphere. The temperature was increased from 20 to 800 °C at a rate of 10 °C/min. The data obtained from the TGA analysis confirmed the results from iodine assay.

Conjugation study of biotin-SH to AuNP.

Aqueous volumes (2.7, 54.1, 108.3, 216.5 µL) of 0.29 mM biotin-SH were added to 10 mL of 1.57 nM AuNP to yield 50:1, 1000:1, 2000:1 and 4000:1 biotin-SH/AuNP molar ratios. After 6 hours of mild stirring at room temperature, the nanoparticles were removed by centrifugation at 14000 rpm for 5 minutes and the supernatants were lyophilized. The dry material was re-dissolved in 50 µL of anhydrous DMF and added to 50 µL of 0.2% (w/V) p-DACA in ethanol and 50 µL of 2% (V/V) H2SO4 in ethanol. After 1 hour incubation at room temperature, 350 µL of EtOH was
added and the resulting solution was analyzed by RP-HPLC with a Phenomenex Luna C18 column eluted with water/0.05% TFA (eluent A) and acetonitrile/0.05% TFA (eluent B) in a gradient mode from 20% to 50% eluent B in 20 minutes. UV-Vis detection was recorded at 533 nm. The biotin conjugation degree increased as the biotin/AuNP molar ratio increased. The reaction yielded 100% biotin coupling with 50:1, 100:1 and 2000:1 biotin/AuNP molar ratio while maximal biotin coupling (3320:1 biotin/AuNP) was obtained using 4000:1 biotin/AuNP molar ratio.

**Synthesis of biotin/pNIPAm-co-Am decorated AuNP.**

Water solutions (50 or 100 μL) of 18 μM biotin-SH were added to 15 mL of 1.2 nM water AuNP dispersion to yield respectively a 50:1 and 100:1 biotin-SH/AuNP molar ratio. The mixtures were incubated for 6 hours at room temperature, and then 10 mL of the biotin-SH/AuNP mixtures were added of 4.2, 8.4, 16.8 or 33.6 μL of 1.0 mM pNIPAm-co-Am-SH solution to achieve a 50:350:1, 50:700:1, 100:700:1, 100:1400:1 and 100:2800:1 biotin-SH/polymer/AuNP molar ratios. Untargeted particles were obtained by incubating naked nanoparticles with the same pNIPAm-co-Am-SH/AuNP ratios while biotinylated AuNP were produced with the same biotin-SH/AuNP molar ratios without pNIPAm-co-Am-SH addition. The colloidal mixtures were stirred overnight at room temperature. The degree of biotin and polymer conjugation was determined by chromatographic and spectrometric analysis as reported above.

**Synthesis of folate and folate/pNIPAm-co-Am decorated AuNP.**

A water solution (7 mL) of 3.1 nM AuNP was added of 71 μL water containing 30.6 μM folate-cysteamine (1.1 μg, 2.2 nmol) to yield 100:1 folate-SH/AuNP molar ratio. Part of the mixture was characterized for folate content as reported below and used for UV/Vis and DLS analysis and cell uptake studies as positive control. The remaining part of the mixture was incubated for 6 hours at
room temperature, and then added of 15.2 µL of 1.0 mM pNIPAm-co-Am-SH solution (121.5 µg, 15.2 nmol) to achieve 700:1 polymer/AuNP molar ratio. The sample was stirred overnight at room temperature and diluted to 0.62 nM with 0.025 M phosphate buffer, 0.187 M NaCl, pH 7.4 to obtain a final physiological saline solution. In order to assess the degree of conjugation of the polymer and the folate, reaction mixture volumes were centrifuged at 14000 rpm for 5 minutes and the amount of unconjugated polymer and folate in the supernatant was assessed by spectrometric analysis and the folate by RP-HPLC as reported above. The same protocol without the folate-SH conjugation step was followed to obtain pNIPAm-co-Am coated AuNP with the same degree of polymer conjugation (control).

**Dispersion/aggregation assays for AuNP.**

Naked, folate coated, folate/pNIPAm-co-Am coated AuNP and pNIPAm-co-Am coated AuNP (control) were diluted to 0.62 nM in 0.025 M phosphate buffer, 0.187 M NaCl, pH 7.4 with or without 10% foetal bovine serum (FBS). The dispersions were allowed to equilibrate to the experimental temperature (34 or 40°C) for 15 minutes and analyzed by photo correlation spectroscopy (PCS) at 34 and 40°C using a NICOMP 380ZLS Particle Sizing System (Nicomp, Santa Barbara, CA, USA) (Table S2). The dispersions were also analyzed by UV-Vis spectroscopy (Fig. S4, S5 and S6A). Folate/pNIPAm-co-Am coated AuNP were also analyzed by UV-Vis spectroscopy (Fig. S6B) and DLS (Table S3) at 37°C to evaluate the stability at physiological temperature. The tests confirmed the physico-chemical stability of nanoparticles at 37°C.

**ELISA studies on biotinylated AuNP.**

The biotin/pNIPAm-co-Am coated AuNP binding to avidin was evaluated by non-competitive enzyme-linked immunosorbent assay (ELISA). A 96-wells microtitre plate was coated at 4°C
overnight with 100 µL of a 1 µg/mL avidin solution in 0.1 M bicarbonate buffer, pH 9.5. The plate was washed three times with 220 µL/well of PBS, 0.3% Tween 20 (PBS/Tween buffer) and then was incubated at 37°C for 1 hour with 200 µL/well of a 50 µg/mL BSA solution in 0.05 M TRIS buffer, 2 mM EDTA, 0.3 M KCl pH 8. After incubation, the plate was washed three times with 220 µL/well of PBS/Tween buffer. The plates were incubated with 100 µL of increasing concentrations (from 0.05 to 1.17 nM) of biotinylated AuNP, biotinylated pNIPAm-co-Am coated AuNP and pNIPAm-co-Am coated AuNP at 34 and 40°C. Each sample was pre-warmed 15 minutes at the incubation temperature, and the plates were incubated for 3 hours. The mixtures were then discharged and plates were washed five times with 220 µL/well of PBS/Tween buffer, and then 100 µL of 0.4 µg/mL of pre-warmed streptavidin-alkaline phosphatase solution in PBS/Tween buffer were added to each well. The plates were incubated for 1.5 hours at 40°C and then washed five times with 200 µL/well of PBS/Tween buffer and treated with 200 µL/well of a 1 mg/mL solution of 4-nitrophenyl disodium salt in 1 M diethanolamine, 0.5 mM MgCl₂ pH 9.8 at room temperature. After 1 hour the enzymatic reaction was quenched by adding 50 µL/well of 3 M NaOH and the plates were analyzed by an EL311SK microplate autoreader (Bio-Tek Instruments, Winooski, VT-USA) set at 405 nm. The optical density was normalized using the maximum signal raised by 1.17 nM biotinylated AuNP at 34 and 40°C (reference) (Fig. 2 and S7).

Cell culture.

Human breast adenocarcinoma MCF7 and nasopharyngeal epidermal carcinoma KB cell lines were cultured as a monolayer in a 75 cm² tissue culture treated flask at 37°C under humidified atmosphere containing 5% CO₂ in folate-deficient Dulbecco's modified Eagle's medium with 4.5 g/L glucose (FFDMEM) supplemented with 10% (v/v) heat-inactivated fetal bovin serum (FBS), 2 mM glutamine, 100 IU/mL penicillin, 100 µg/mL streptomycin and 0.25 µg/mL of amphotericin B.
Cells were routinely harvested by treatment with 500 µg/mL trypsin in Ca\(^{2+}\) and Mg\(^{2+}\) free phosphate buffered saline (PBS).

**Cell uptake of AuNP at 34 and 40°C.**

MCF7 and KB cells were seeded in 6-well tissue culture treated plates at a density of 1.5 x 10\(^6\) cells/well. After 24 hours, the culture medium was replaced with 1.5 mL of FFDMEM, 154 mM NaCl, containing 0.62 nM pNIPAm-co-Am or folate/pNIPAm-co-Am decorated AuNP preheated 15 minutes at 34 or 40°C. The cells were incubated for 2 hours at 34 or 40°C either in the presence or absence of 10% foetal bovine serum (FBS). Cells were incubated with folated AuNP, positive control, at 40°C only in the presence of FBS. The medium was removed, and the cells were washed with FFMEM (x 2) and detached by trypsin treatment. The samples were added to 1 mL of PBS and centrifuged at 1000 rpm for 5 minutes. The pellets were washed three times with PBS and lysated by addition of 600 µL of Triton® X-100 0.1% in water. The lysates (500 µL) were digested with aqua regia (HNO\(_3\)/HCl 1:3 v/v) at 100°C for 2 hours and the acid volume was brought to 5 mL with 4% HCl addition. Quantitative analysis of gold was performed by Atomic Absorption Spectrometry (AAS) using a Varian AA240 Zeeman instrument equipped with a GTA120 graphite furnace, Zeeman background corrector and an autosampler (Varian Inc., Palo Alto, CA-USA). 100 µL of the cell lysate in Triton® X-100 was analysed by BCA Protein Assay (Thermo Fisher Scientific Inc., Waltham, MA-USA), and the cells per mL were determined by referring to a calibration curve.
Cell uptake inhibition assay.

KB cells were seeded in 6-well tissue culture treated plates at a density of 1.5 x 10^6 cells/well. After 24 hours, the culture medium was replaced with 2 mL of FFDMEM, 154 mM NaCl, 200 µM folic acid. After 3 hours incubation, the medium was removed and replaced with 0.62 nM folate/pNIPAm-co-Am decorated AuNP, 200 µM folic acid medium, with or without 10% FBS, preheated at 40°C for 15 minutes. The cells were incubated for 2 hours at 40°C. After incubation, the samples were treated as described above for gold quantification (Fig. S8).

Confocal microscopy studies.

KB cells (10^5 cells in 0.5 mL) in folic FFDMEM supplemented with 10% FBS were seeded in DB Falcon™ 4 wells chamber slides. After 24 hours the medium was removed and the wells were washed three times with PBS. AuNP decorated with folic acid/pNIPAm-co-Am or pNIPAm-co-Am were dispersed in 1 mL FFMMEM, 154 mM NaCl at a concentration of 0.62 nM and added to each wells. Chamber slides were incubated for 2 hours at 34°C or 40°C. The medium was then removed and the cells were washed three times with PBS. Fluorescein-DHPE dissolved in PBS was added to each well (1 mL, 20 µg/mL) and gently shaken in the dark for 10 minutes. The fluorescein-DHPE solution was removed, the chamber slide washed three times with PBS and samples were incubated with 500 µL of 1% paraformaldehyde in PBS for 20 minutes. The supernatant was removed, the sides of the chamber slides were pilled off and samples covered with coverslips using Vectashield® mounting media with DAPI. The samples were maintained in the dark at 4°C. Confocal microscopy was performed on a Leica TCS SP5 Leica Microsystems GmbH microscope (Wetzlar, Germany) using the Leica Application Suite advanced fluorescence 2.0.2 software for data acquisition. Images were acquired using a 63x oil immersion lens with argon laser set at 405, 488 and 561 nm to detect respectively DAPI, fluorescein-DHPE and gold nanoparticles. In the case of gold nanoparticles
scattered light was recovered between 550 and 580 nm on the base of investigations reported in the literature.\textsuperscript{12}
FIGURES

**Fig. S1.** The UV-visible spectrum of AuNP obtained by LASiS in the 0.4 mM NaCl aqueous solution and a representative TEM image of same nanoparticles.

**Fig. S2.** Panel A: coupling reaction of biotin-NHS with cysteamine. Panel B: mass spectrometry analysis of biotin-cysteamine.
Fig. S3. Panel A: synthesis of folate-cysteamine conjugate. Cysteamine conjugation to the resin through the thiol group (1); folate γ-carboxyl group conjugation to amino group of cysteamine (2); cleavage of folate-cysteamine from the resin (3). Panel B: mass spectrometry analysis of folate-cysteamine.
Fig. S4. UV-Vis spectra of naked AuNP (▲) and AuNP decorated with folate/pNIPAm-co-Am (■) and pNIPAm-co-Am (●) in 0.02 M phosphate buffer, 0.150 M NaCl, at 34°C (Panel A) or 40°C (Panel B). The analyses were carried out with 100:700:1 folate/polymer/AuNP molar ratio decorated nanoparticles.

Fig. S5. UV-Vis spectra to show difference in aggregation of AuNP decorated with folate/pNPAm-co-Am (■) and pNPAm-coAm (●) in 10% foetal bovine serum (FBS)/PBS after: 120 minutes incubation at 34°C (Panel A); 10 minutes (full symbols) and 120 minutes (empty symbols) incubation at 40°C (Panel B); incubation for 120 minutes at 40°C followed by 10 minutes incubation 34°C (Panel C). The analyses were carried out with 100:700:1 folate/polymer/AuNP molar ratio decorated nanoparticles.
Fig S6. Panel A: UV-Vis spectra of: naked AuNP in water (green); folated AuNP in 10% foetal bovine serum (PBS/FBS) (blue); folated AuNP in PBS (red). Overlapped UV-Vis spectra were obtained at 34 and 40°C. Panel B: UV-Vis spectra of: folate/pNPAm-co-Am decorated AuNP in PBS (red) and in PBS with 10% foetal bovine serum (PBS/FBS) (blue) at 37°C.
**Fig. S7.** Binding profile to avidin coated ELISA plates of gold nanoparticles: biotinylated AuNP incubated at 34° and 40°C (overlapped) (■); biotinylated pNIPAm-co-Am decorated AuNP incubated at 40°C (Δ); biotinylated pNIPAm-co-Am decorated AuNP incubated at 34°C (●); pNIPAm-co-Am decorated AuNP incubated at 40°C (□).

**Panel A:** 50:350:1 biotin-SH/polymer/AuNP molar ratio (Δ, ●); 50:1 biotin-SH/AuNP molar ratio (■); 350:1 polymer/AuNP molar ratio (□). **Panel B:** 50:700:1 biotin-SH/polymer/AuNP molar ratio (Δ, ●); 50:1 biotin-SH/AuNP molar ratio (■); 700:1 polymer/AuNP molar ratio (□). **Panel C:** 100:1400:1 biotin-SH/polymer/AuNP molar ratio (Δ, ●); 100:1 biotin-SH/AuNP molar ratio (■); 1400:1 polymer/AuNP molar ratio (□). **Panel D:** 100:2680:1 biotin-SH/polymer/AuNP molar ratio (Δ, ●); 100:1 biotin-SH/AuNP molar ratio (■); 2680:1 polymer/AuNP molar ratio (□).
Fig. S8. Cell uptake of folate/pNIPAm-co-Am decorated AuNP by KB cells at 40°C in FFDMEM (left) and in FFDMEM supplemented with foetal bovine serum (right) in folic acid free medium (blue) and with medium supplemented with 200 μM folic acid (red).
### Table S1. Polymer conjugation efficiency with gold nanoparticles.

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<th>AuNP/polymer feed</th>
<th>AuNP/bound polymer ratio</th>
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<tr>
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<td>1/700</td>
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<tr>
<td>1/1400</td>
<td>1/1400</td>
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<tr>
<td>1/2800</td>
<td>1/2680</td>
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### Table S2. Particle sizes (DLS) of naked, folate decorated and pNIPAm-co-Am decorated AuNP with or without folate.

<table>
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<th>34°C (nm)</th>
<th>40°C (nm)</th>
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<tbody>
<tr>
<td>Naked AuNP (water)</td>
<td>14.9 ±6.9</td>
<td>14.9 ±6.9</td>
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<tr>
<td>Naked AuNP (PBS)</td>
<td>638.1 ±280.1</td>
<td>551.9 ±378.6</td>
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<tr>
<td>Folate AuNP (PBS)</td>
<td>425.3 ±64.4</td>
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<td>Folate AuNP (PBS/serum 10%)</td>
<td>28.0 ±4.8</td>
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<tr>
<td>pNIPAm-co-Am AuNP (PBS)</td>
<td>36.5 ±13.0</td>
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<tr>
<td>pNIPAm-co-Am AuNP (PBS/10% serum)</td>
<td>21.1 ±9.2</td>
<td>36.2 ±15.8</td>
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<tr>
<td>Folate/pNIPAm-co-Am decorated AuNP (PBS)</td>
<td>36.3 ±13.0</td>
<td>57.5 ±21.2</td>
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<tr>
<td>Folate/pNIPAm-co-Am decorated AuNP (PBS/10% serum)</td>
<td>19.1 ±8.7</td>
<td>59.2 ±28.3</td>
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Table S3. Particle sizes (DLS) of folate/pNIPAm-co-Am decorated AuNP.

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<td>Folate/pNIPAm-co-Am decorated AuNP (PBS)</td>
<td>34.3 ±5.2</td>
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<tr>
<td>Folate/pNIPAm-co-Am decorated AuNP</td>
<td>26.9 ±4.0</td>
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REFERENCES


