Supporting Information

Multivalent DNA Nanospheres for Enhanced Capture of Cancer Cells in Microfluidic Devices

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Figure S1.

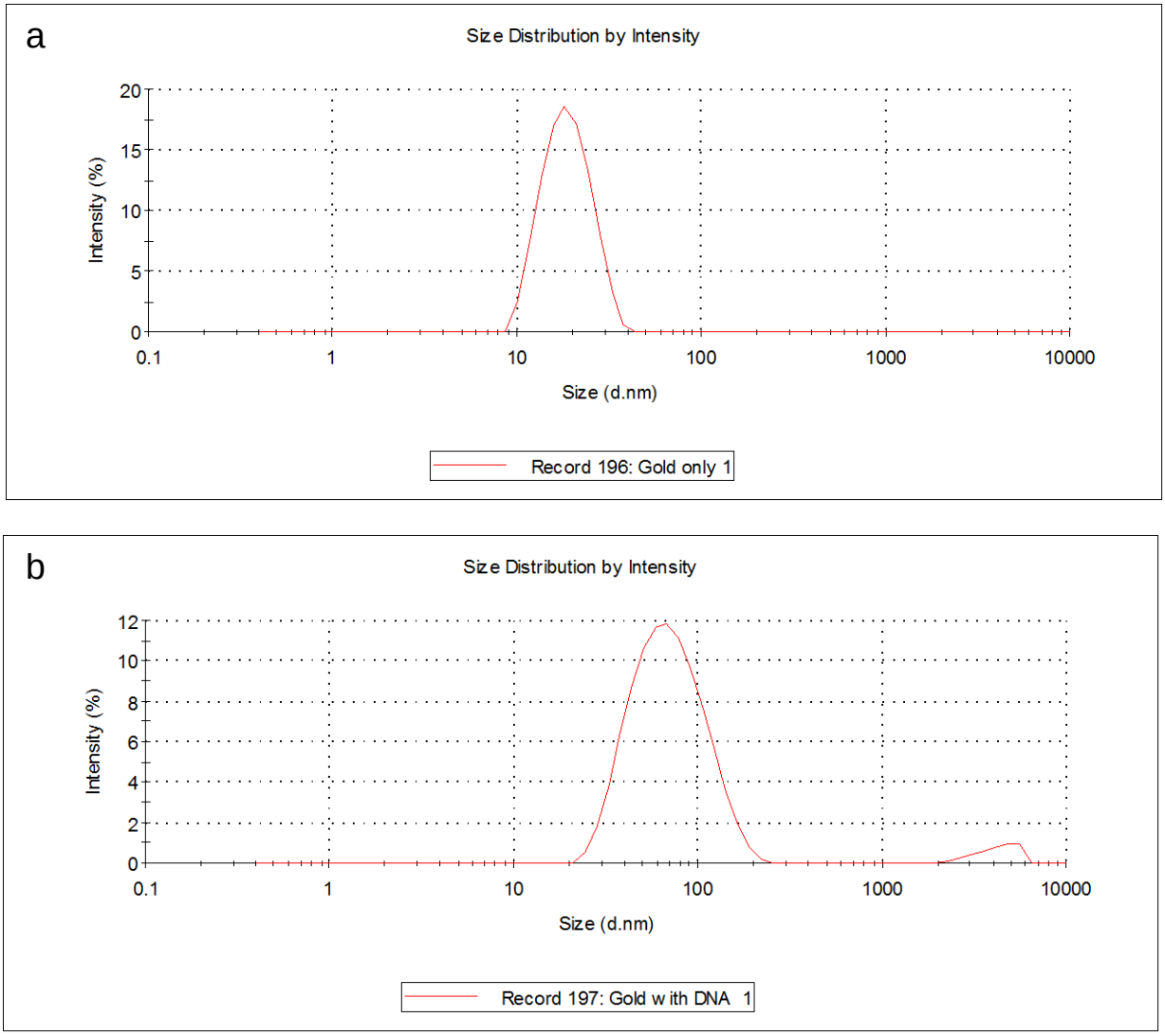

Figure S1. Dynamic light scattering (DLS) analysis of a) AuNPs; b) AuNP-sgc8 aptamer conjugates. The hydrodynamic diameter of AuNP increased from 17.4 nm to 61.8 nm after conjugation with aptamers.

Figure S2.

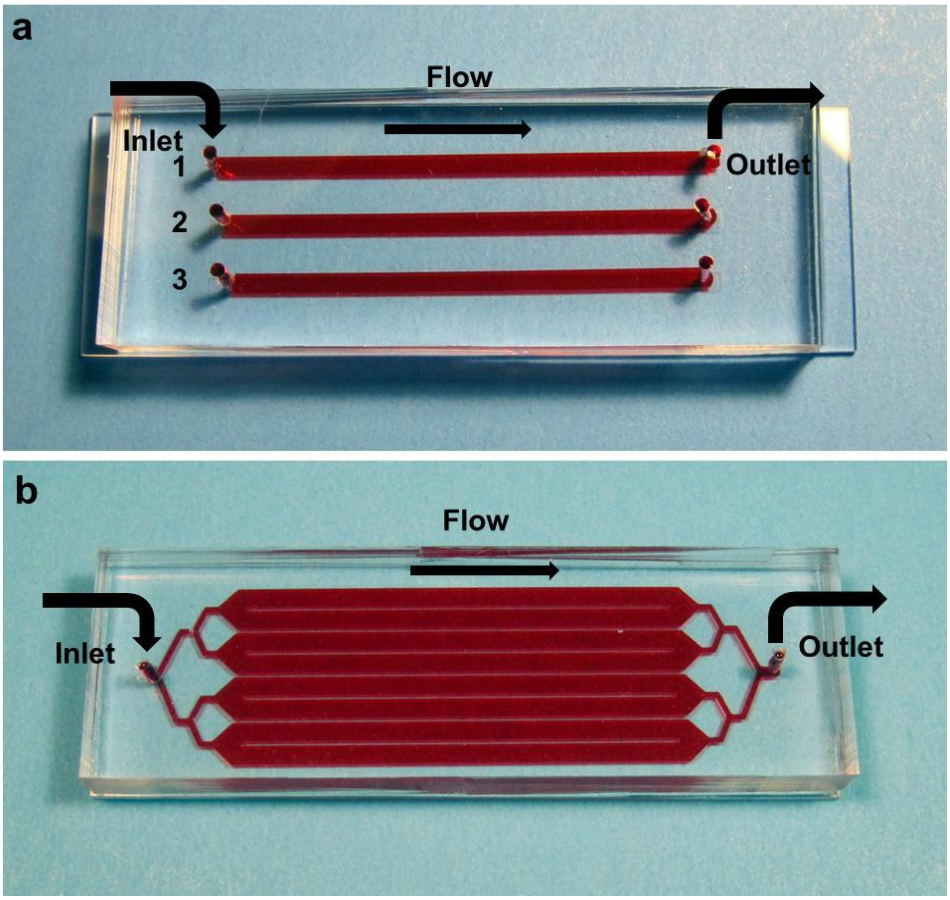

Figure S2. Pictures of a) the single flat channel device; b) the parallelized flat channel device with 8 channels connected. The single fat channel device was used for proof-of-concept studies; data from this device is not shown. All the data presented in the manuscript are from eight channel devices.

Figure S3.

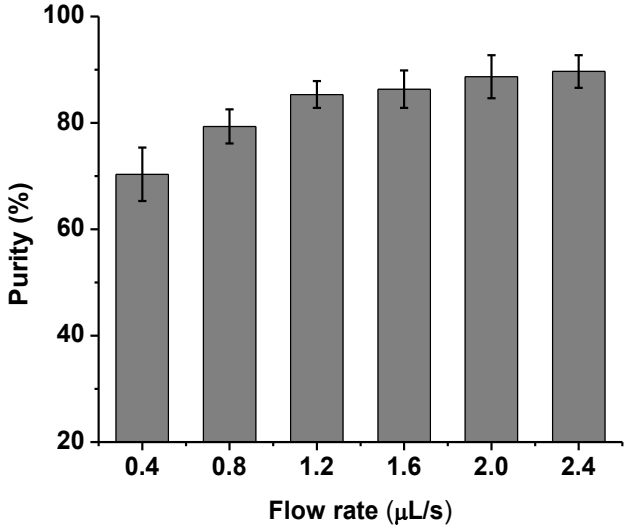

Figure S3. The purity of captured CEM cells as a function of flow rate (shear stress) in a flat channel device using AuNP-sgc8 aptamer conjugates when capturing CEM cells from a mixture of target CEM cells and control Ramos cells. Error bars represent standard deviations (n=3).

Figure S4.

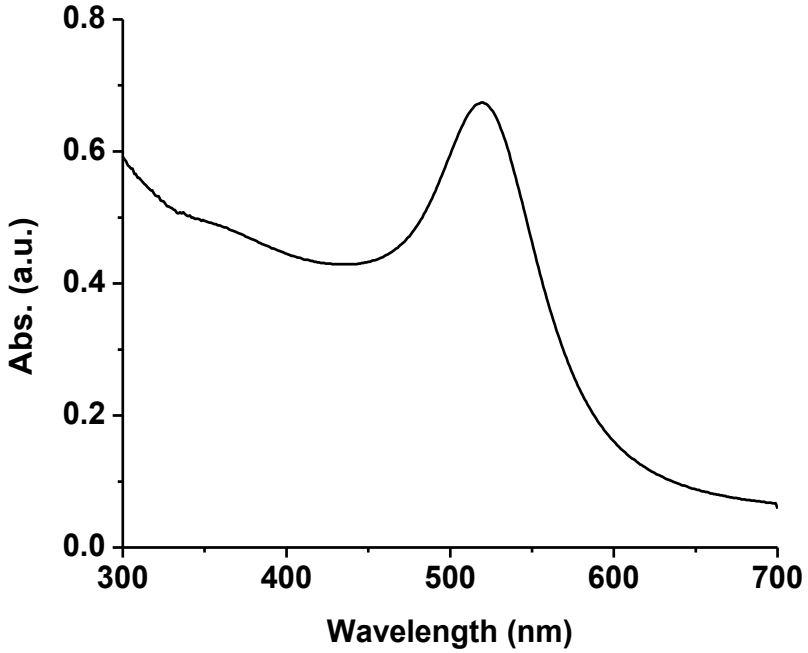

Figure S4. Adsorption spectrum of AuNPs, (λ_{max} = 520 nm), using a molar absorptivity of 2.7×10^8 L $mol^{-1}cm^{-1}$, the concentration of the AuNP is ~13 nM.

Figure S5.

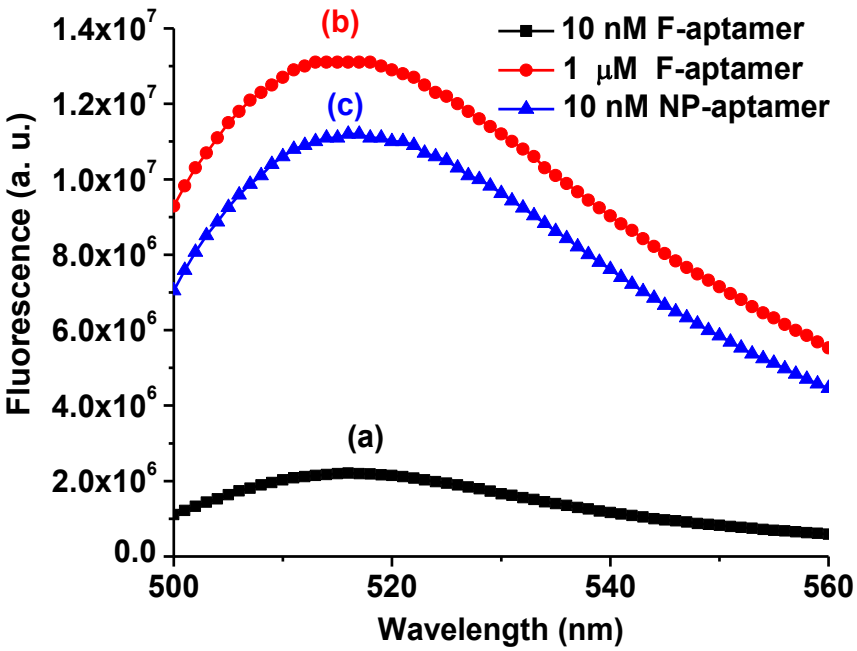

Figure S5. Fluorescence spectrum of fluorescein-labeled aptamers at (a) 10 nM and (b) 1 μM. (c) the fluorescence of AuNP-aptamer conjugates at 10 nM. Around 95 fluorescein-labeled aptamers were conjugated to each AuNP. Thus, the fluorescence signal of each AuNP-aptamer is much higher than individual aptamer, as shown in (a) and (c).

Table S1. Detailed aptamer sequence information.

Name	Sequence
sgc8	5’- ATC TAA CTG CTG CGC CGC CGG GAA AAT ACT GTA CGG TTA GAT TTT TTT TTT-biotin-3’
Thiol-sgc8	5’-thiol-$(PEG)_{24}$-ATC TAA CTG CTG CGC CGC CGG GAA AAT ACT GTA CGG TTA GA -biotin-3’
TD05	5’-AAC ACC GTG GAG GAT AGT TCG GTG GCT GTT CAG GGT CTC CTC CCG GTG TTT TTT TTT T-biotin-3’
Thiol-TD05	5’-thiol-$(PEG)_{24}$-AAC ACC GTG GAG GAT AGT TCG GTG GCT GTT CAG GGT CTC CTC CCG GTG -biotin-3’

Underscore indicates the full sequence of sgc8 aptamer or TD05 aptamer; for flow cytometric test, fluorescein isothiocyanate (FITC) is used instead of biotin linker.