Supporting Information

A Sensitive Signal Amplifying Diagnostic Biochip Based on Biomimetic Periodic Nanostructure for Detecting Cancer Exosomes

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Results

Figure S1. Characterization of monodisperse polystyrene spheres. Representative (A) SEM and (B) TEM image and size distribution of monodisperse polystyrene spheres. Scale bar: 200nm. (C) Size distribution (236 ± 2 nm) and (D) zeta potential (-38 ± 6 mV) of the monodisperse polystyrene spheres analyzed by DLS, respectively.
Figure S2 Characterization of prepared PCs. (A) Transmittance spectra of prepared PCs using polystyrene spheres diluted with Milli-Q water in a different ratio. (B) Fluorescent images of prepared PCs using polystyrene spheres diluted with Milli-Q water in a different ratio. (C) Fluorescence intensity corresponding to (B).
Figure S3 Optimization of test parameters. (A) Fluorescence spectra of the same content of QD525 conjugated with anti-GPC1/ biotin at different molar ratios (1:5, 1:10, 1:20, 1:80, 1:160 and 1:640). (B) Fluorescence intensity in different reaction time and temperature.

Figure S4 Characterization of QD. (A) Representative TEM and (B) size distribution of QD. Scale bar: 50 nm.
Figure S5 SEM image of exosomes/anti-GPC1/QD on the surface of biochip. Scale bar: 100 nm.

Figure S6 NTA analysis of the concentration and size of exosomes from Panc-1, B16F10 and MCF10A cells.
Figure S7 Fluorescent images of Panc-1 exosomes with different concentrations in mimetic serum. The concentrations of Panc-1 exosomes were $1.0 \times 10^7$, $5.0 \times 10^7$, $1.0 \times 10^8$, $5.0 \times 10^8$ and $1.0 \times 10^9$ particles/mL. (B) The linear relationship between fluorescence intensity and concentration of Panc-1 exosomes in serum ranging from $1.0 \times 10^7$ to $1.0 \times 10^9$ particles/mL. Error bars represent the standard deviation of three replicate experiments.

Table S1 Results of size and concentration distribution of exosomes (dilution 100-fold with PBS) from Panc-1, B16F10 and MCF-10A cell lines.

<table>
<thead>
<tr>
<th>Sample</th>
<th>Size (nm) Mean ± SD</th>
<th>Concentration (particles/mL) Mean ± SD</th>
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<tbody>
<tr>
<td>Panc-1 Exo</td>
<td>150 ± 5</td>
<td>$4.4 \times 10^8 \pm 6.1 \times 10^7$</td>
</tr>
<tr>
<td>B16F10 Exo</td>
<td>119 ± 5</td>
<td>$5.6 \times 10^8 \pm 2.8 \times 10^7$</td>
</tr>
<tr>
<td>MCF-10A Exo</td>
<td>94 ± 1</td>
<td>$9.8 \times 10^8 \pm 1.1 \times 10^8$</td>
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