Electronic Supplementary Information

One step preparation of quantum dot-embedded lipid nanovesicles by a microfluidic device

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Table S1 Structure of a) phosphatidylcholines (PC), b) ceramide (Cer), c) cholesterol (Chol) and d) dicetyl phosphate (DCP).

Fig. S1: a) and b) Absorption and emission spectra of green- and orange-emitting QDs, respectively. c) Gel electrophoresis migration of PEG-coated green- and orange-emitting QDs. The left panel refers to the gel picture acquired with the black/white camera of the Gel analyzer, while the right panel with a colored camera. d) and e) TEM images of the green-emitting QDs and of the vesicles embedded with the green-emitting QDs, respectively; f) and g) TEM images of the orange-emitting QDs and of the vesicles embedded with the orange-emitting QDs, respectively.
Table S2 Size distribution of PC vesicles formed at total volumetric flow rate (Q<sub>t</sub>) of 37 μl/min and 74 μl/min, for a constant FRR (18:1) and their stability over time (up to 7 days). As expected the vesicles size distribution remain nearly unaffected by the Q<sub>t</sub>.

Table S3 Size distribution of vesicle formed with pure PC, PC/Chol/DCP and PC/Chol/Cer at Q<sub>t</sub> = 74 μl/min (FRR 18:1), soon after the preparation and after 7 days.

Fig. S2: Size distribution and pdi evolution of PC/Chol/Cer vesicles formed at Q<sub>t</sub> 74 μl/min, FRR 18:1, and monitored over 45 days. Experimental results show low polydispersity and high stability during the observation time. Curves were shifted vertically for better graphic representation.
**Fig. S3**: TEM images of PC/Chol/Cer vesicles. a) vesicles prepared with TOPO-coated QDs dissolved in chloroform: in this experimental condition, QDs were observed outside the vesicles (darker dots); b, c) PC/Chol/Cer vesicles produced with 0.6 µM PEG-modified QDs at b) \( Q_t = 6.33 \, \mu l/min \), and c) \( Q_t = 171 \, \mu l/min \), for a constant FRR =9:1. Nanovesicles exhibit a spherical structure. Electron-dense QDs appear as darker dots in the vesicles.

<table>
<thead>
<tr>
<th></th>
<th>MHD (nm) 0d</th>
<th>pdi 0d</th>
<th>MHD (nm) 3d</th>
<th>pdi 3d</th>
<th>MHD (nm) 7d</th>
<th>pdi 7d</th>
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</thead>
<tbody>
<tr>
<td>PC/Chol/Cer</td>
<td>225±13</td>
<td>0.23±0.01</td>
<td>225±0.56</td>
<td>0.3±0.02</td>
<td>225±47</td>
<td>0.3±0.03</td>
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<td>PC/Chol/Cer/QDs</td>
<td>295±4</td>
<td>0.19±0.02</td>
<td>294±20</td>
<td>0.17±0.01</td>
<td>294±15</td>
<td>0.17±0.02</td>
</tr>
</tbody>
</table>

**Table S4** Size distribution and stability of PC/Chol/Cer/QDs vesicles formed at \( Q_t = 57 \, \mu l/ml \) using 0.6 µM QDs concentration. DLS measurements confirmed their stability and low polidispersity up to 7 days.