**Electronic supplementary information**

# Hydrophobically Modified Carbon Dots as Multifunctional Platform for Serum-Resistant Gene Delivery and Cell Imaging

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**Table S1.** The QY of **PEI-CD** and **Ole-CDs**.

| | **PEI-CD** | **Ole0.5-CD** | **Ole1-CD** | **Ole1.5-CD** | **Ole2-CD** | **Ole2.5-CD** |
|---|---|---|---|---|---|---|
| YQ（%） | 21.49% | 16.00% | 12.00% | 11.20% | 7.70% | 4.95% |

**Table S2.** Mean DLS PDI of **Ole-CDs** under the concentration of 20 mg/L. Data represent mean ± SD (n = 3).

| | **Ole0.5-CD** | **Ole1-CD** | **Ole1.5-CD** | **Ole2-CD** | **Ole2.5-CD** |
|---|---|---|---|---|---|
| **PDI** | 0.322 ± 0.017 | 0.381 ± 0.075 | 0.293 ± 0.013 | 0.299 ± 0.026 | 0.305 ± 0.054 |

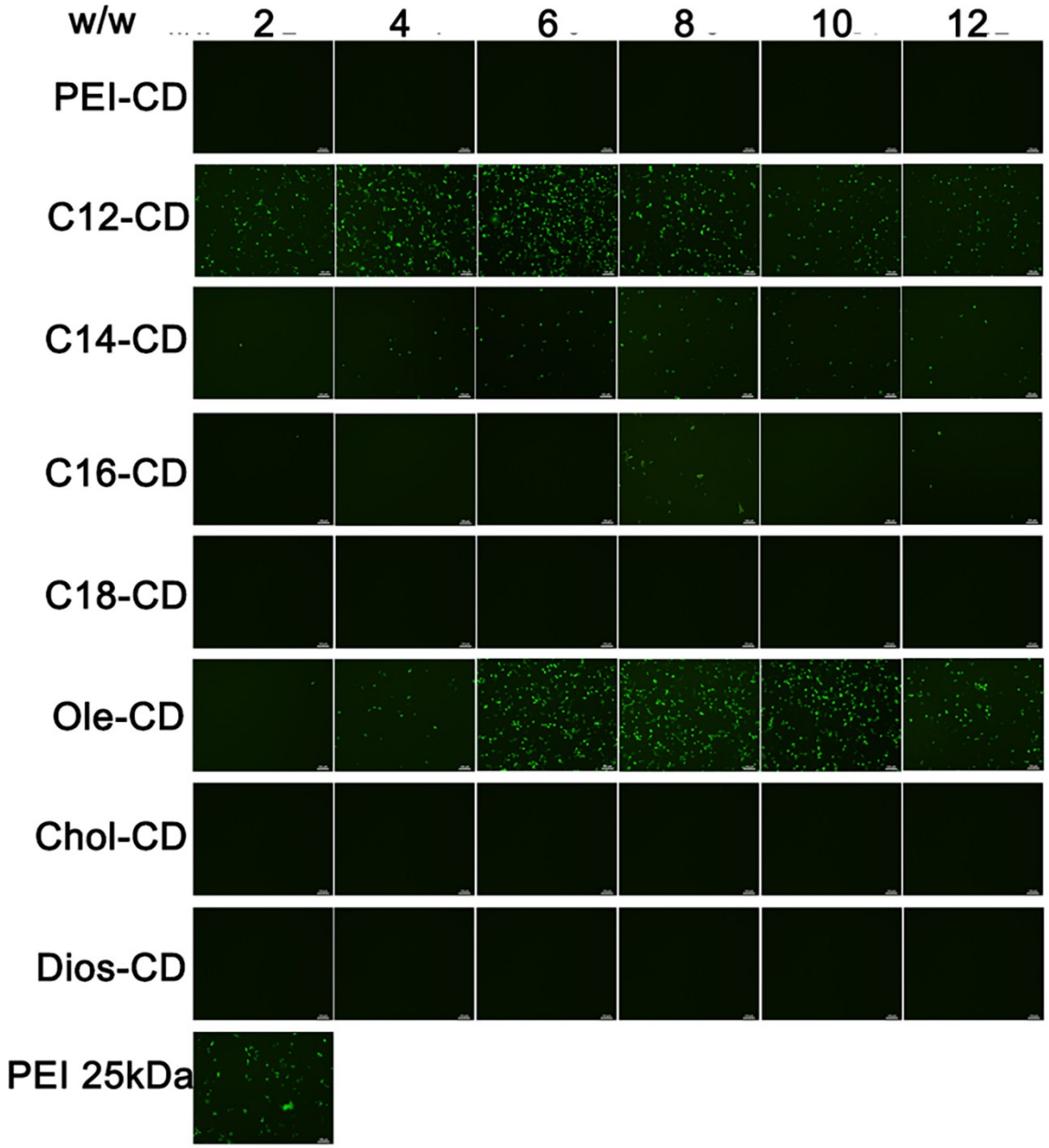


**Fig. S1.** Fluorescence microscopy images of pEGFP transfected by **PEI-CD** and **X-CD** in A549 cells. Scale bar = 100 μm.

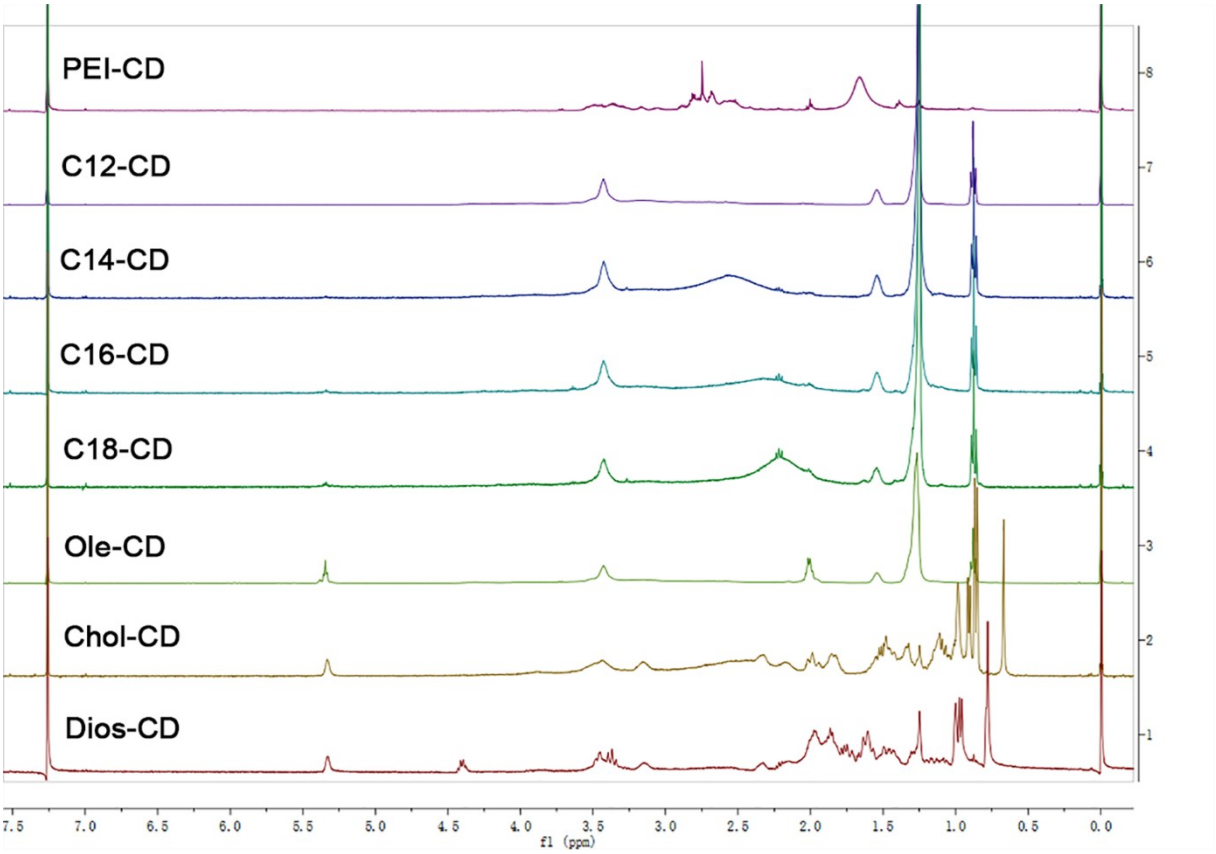


**Fig. S2.** $^{1}$H NMR spectrum of **PEI-CD** and **X-CD** in $CDCl_3$.

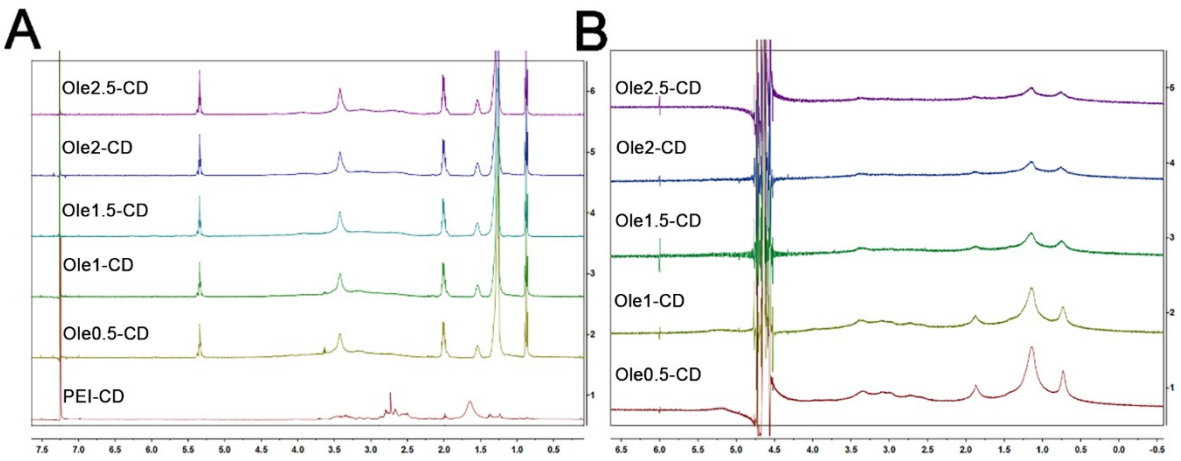


**Fig. S3.** $^{1}$H NMR spectrum of **PEI-CD** and **Ole-CDs** in $CDCl_3$(A) and $D_2O$ (B).

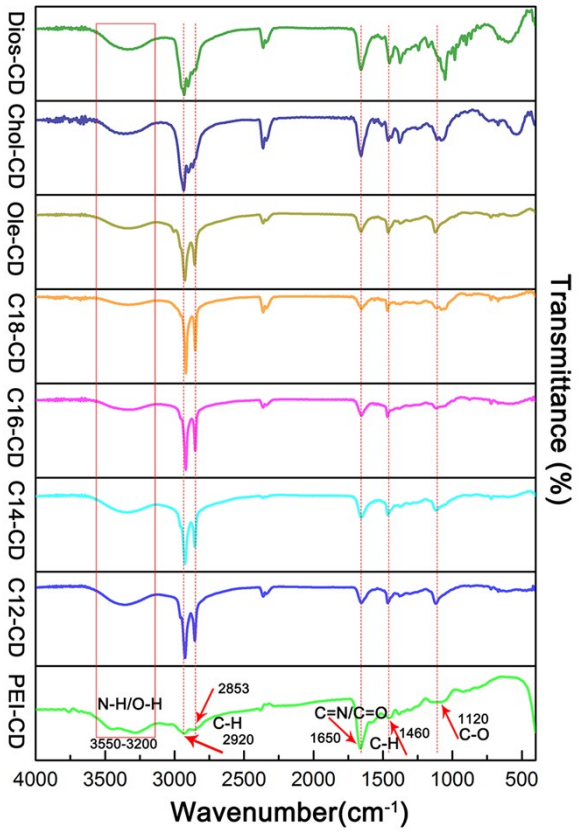


**Fig. S4.** FT-IR spectrum of **PEI-CD** and **X-CD**.

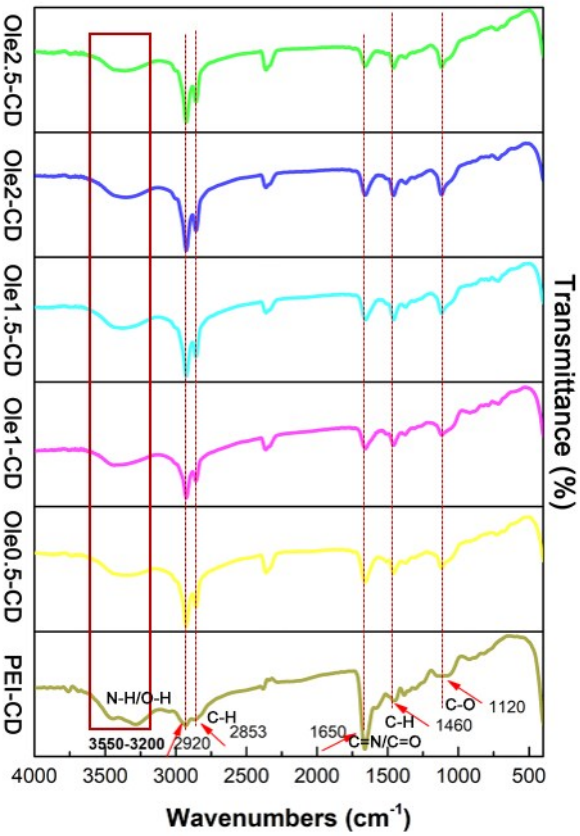


**Fig. S5.** FT-IR spectrum of **PEI-CD** and **Ole-CDs**.

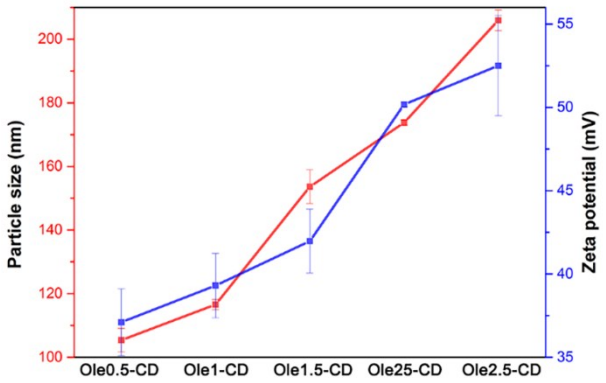


**Fig. S6.** Mean DLS particle sizes (red) and surface charge (blue) of **Ole-CDs** under the concentration of 20 mg/L. Data represent mean ± SD (n = 3).

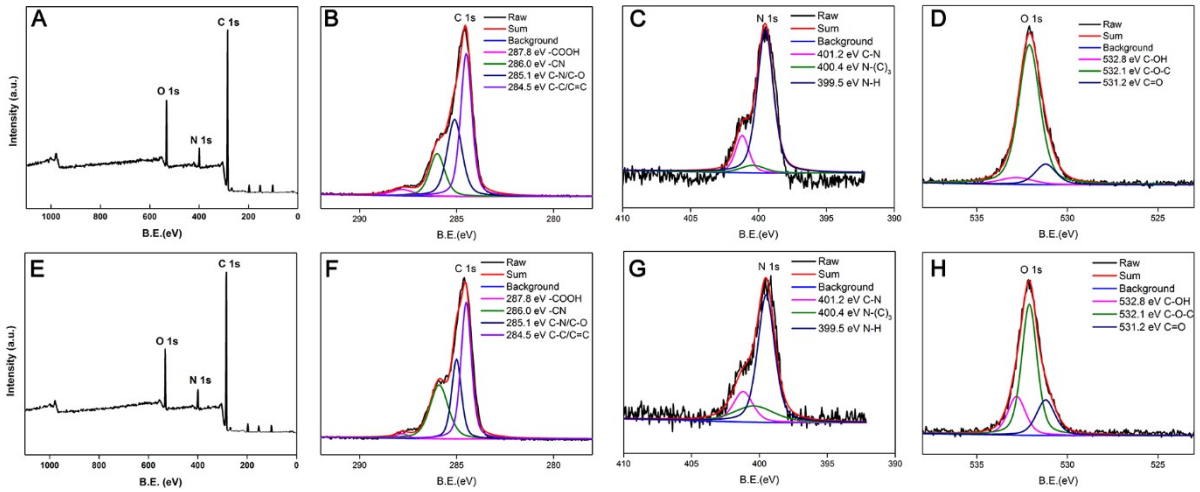


**Fig. S7.** The full spectra (A & E) and high resolution XPS spectra of C 1s (B & F), N 1s (C & G), O 1s (D & H) for **PEI-CD** (upper) and **Ole1.5-CD** (lower).

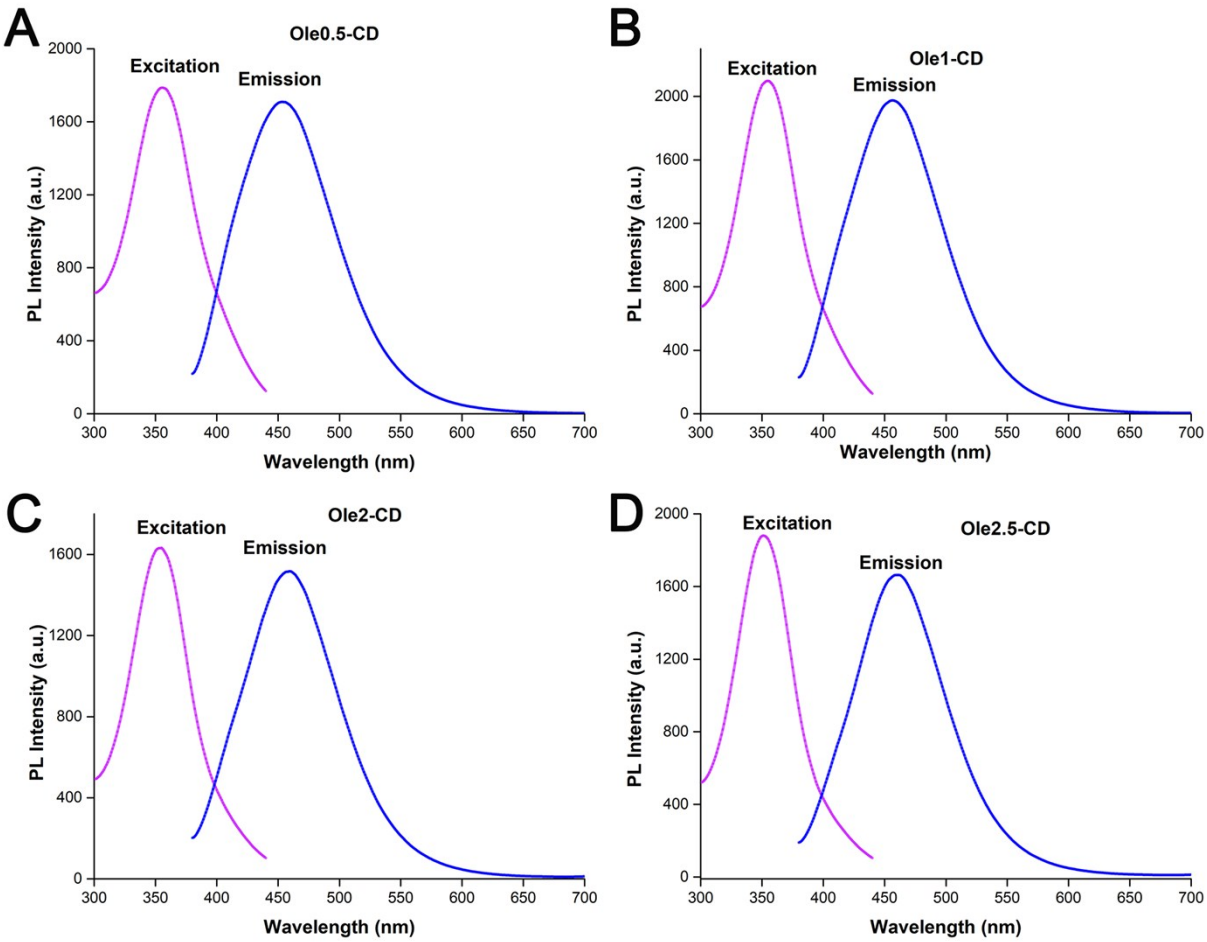


**Fig. S8.** The maximum PL excitation and emission spectra of **Ole-CDs** aqueous solution, (A) **Ole0.5-CD**, (B) **Ole1-CD**, (C) **Ole2-CD**, (D) **Ole2.5-CD**.

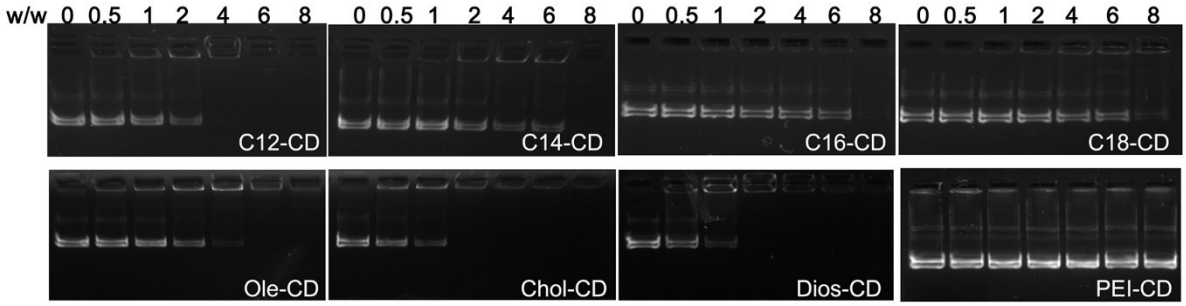


**Fig. S9.** Electrophoretic gel retardation assays of pDNA binding for **X-CD**/pDNA complexes under various mass ratios.

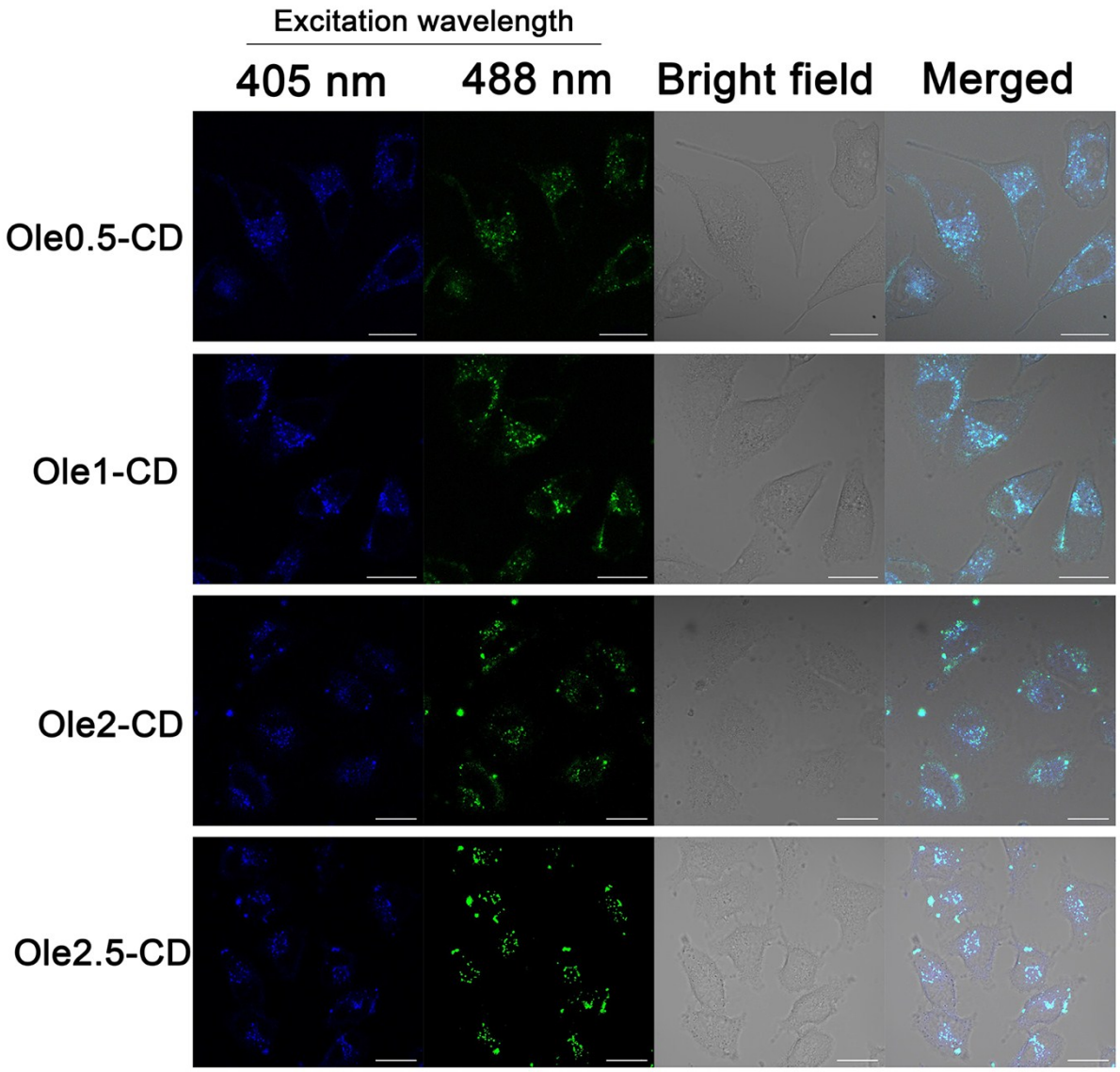


**Fig. S10.** Confocal fluorescence images of A549 cells incubated with **Ole-CDs** under the concentration of 10 mg/L. Scale bar = 20 μm.

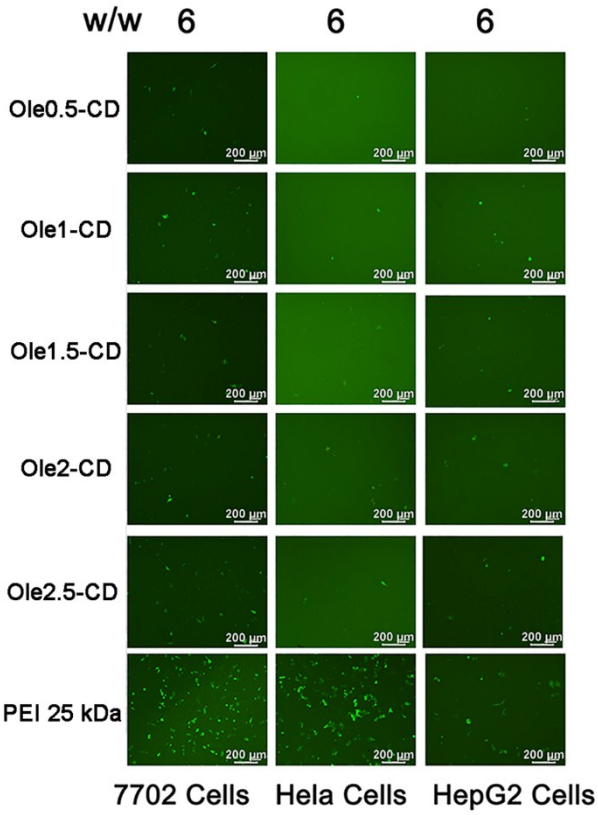


**Fig. S11.** Fluorescence microscopy images of pEGFP-transfected Hela, 7702 and HepG2 cells by **Ole-CDs** and PEI 25 kDa. Scale bar =200 μm.

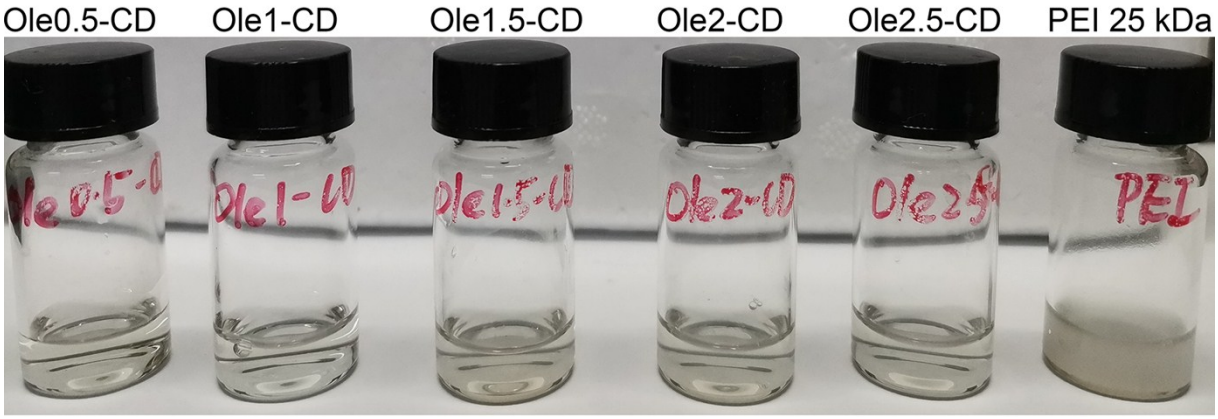


**Fig. S12.** BSA adsorption assays, photographs show the PEI solution(0.5 mg/mL) turned turbid by addition of BSA(1mg/mL), while Ole-CD solution(0.5 mg/mL) is still clear.