Electronic Supplementary Material (ESI) for Biomaterials Science
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"Nail" and "Comb" effects of cholesterol modified NIPAm oligomers on cancer targeting liposomes†

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Preparation and characterization of NIPAm oligomers.

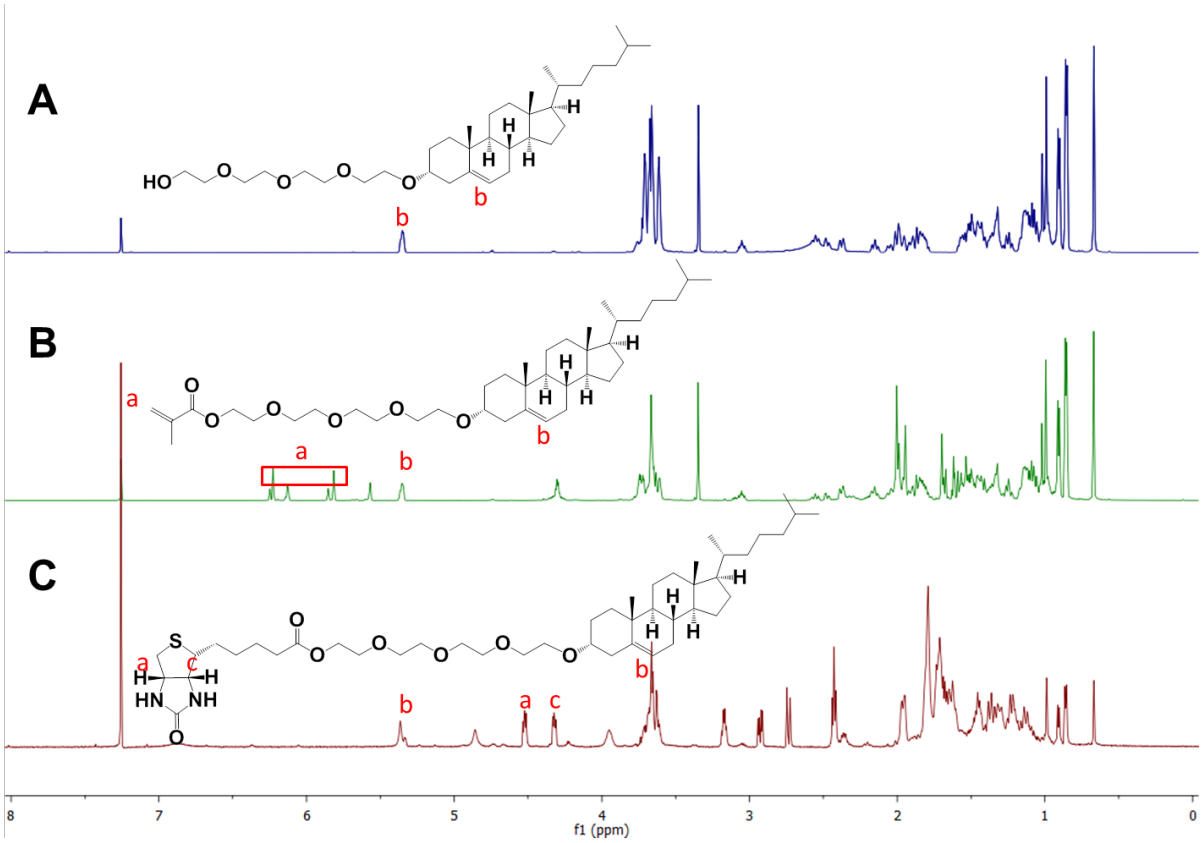

Fig. S1. ^{1}H NMR spectra of important molecules in the synthesis: A. TEG-cholesterol (**2**, Fig. 1), B. cholesterol monomer (**8**, Fig 1) and C. biotinylated cholesterol (**3**, Fig. 1).

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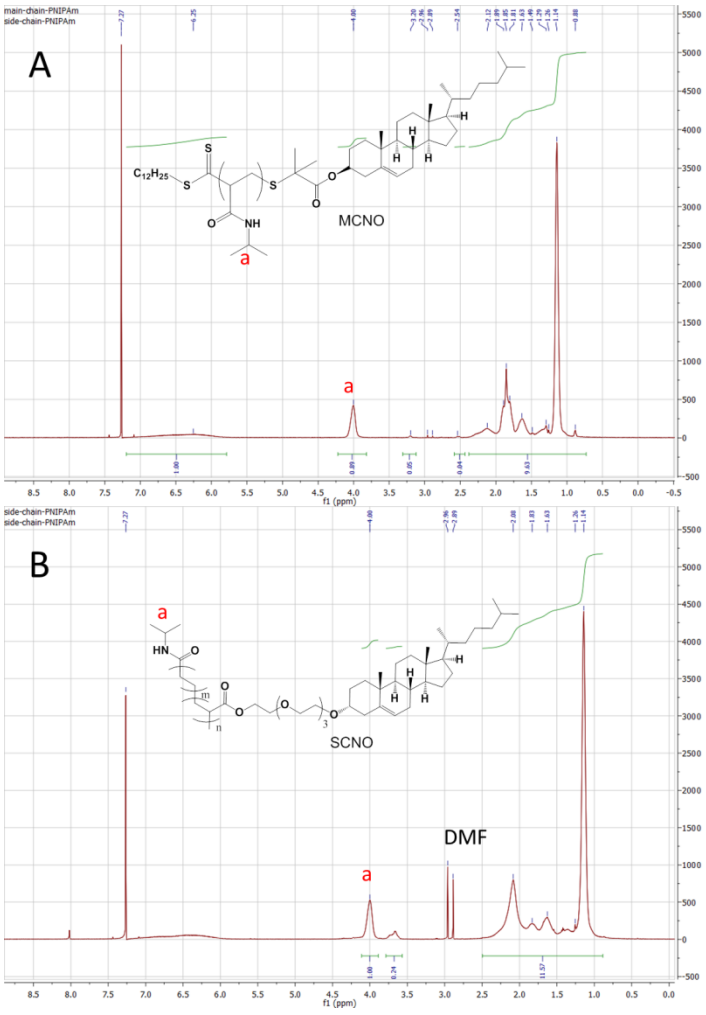

Fig. S2. ^{1}H NMR spectra of cholesterol modified oligomers: A. main-chain NIPAm oligomers (MCNOs), B. side-chain NIPAm oligomers (SCNOs).

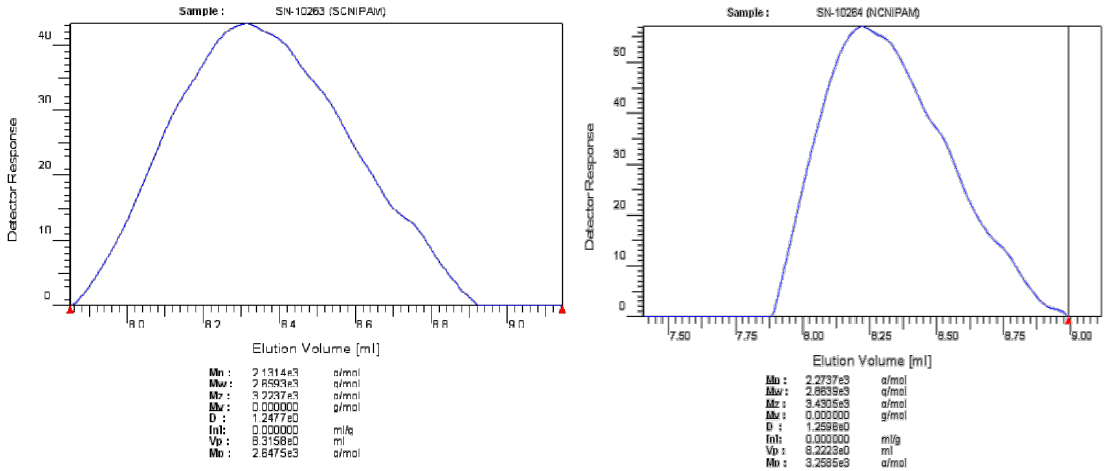

Fig. S3. GPC for SCNO (left) and MCNO (right). GPC data was obtained by Agilent 1200 GPC in THF, $M_{n\text{-}MCNO}$= 2270, DPI=1.26; $M_{n\text{-}SCNO}$=2130, DPI=1.24.

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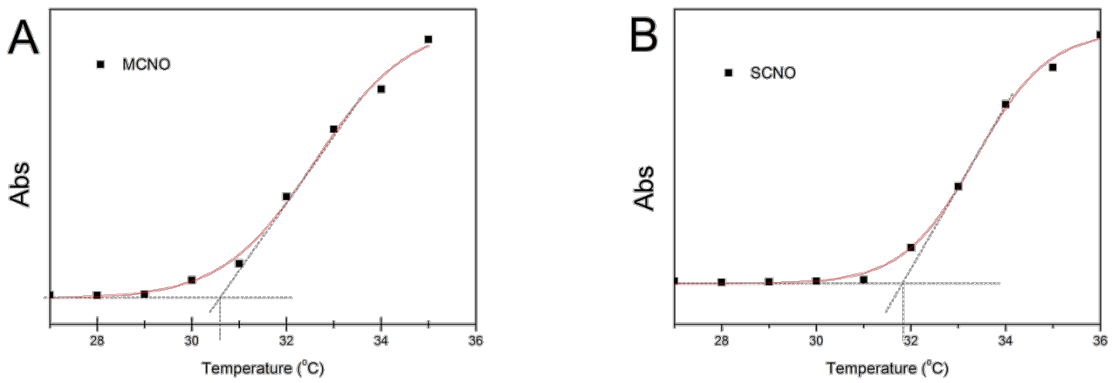

Fig. S4 LCST data determined with turbidity method of A. MCNOs (30.8 °C) and B. SCNOs (31.8 °C).

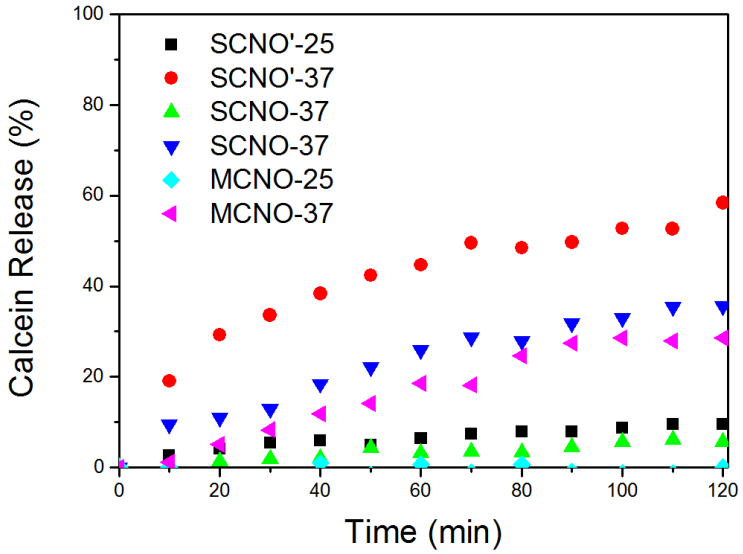

Fig. S5. Release profile of MCNO, SCNO (Mw 2200) and SCNO' (Mw 4500) liposomes at 25 and 37 °C.

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Liposomal fusion test

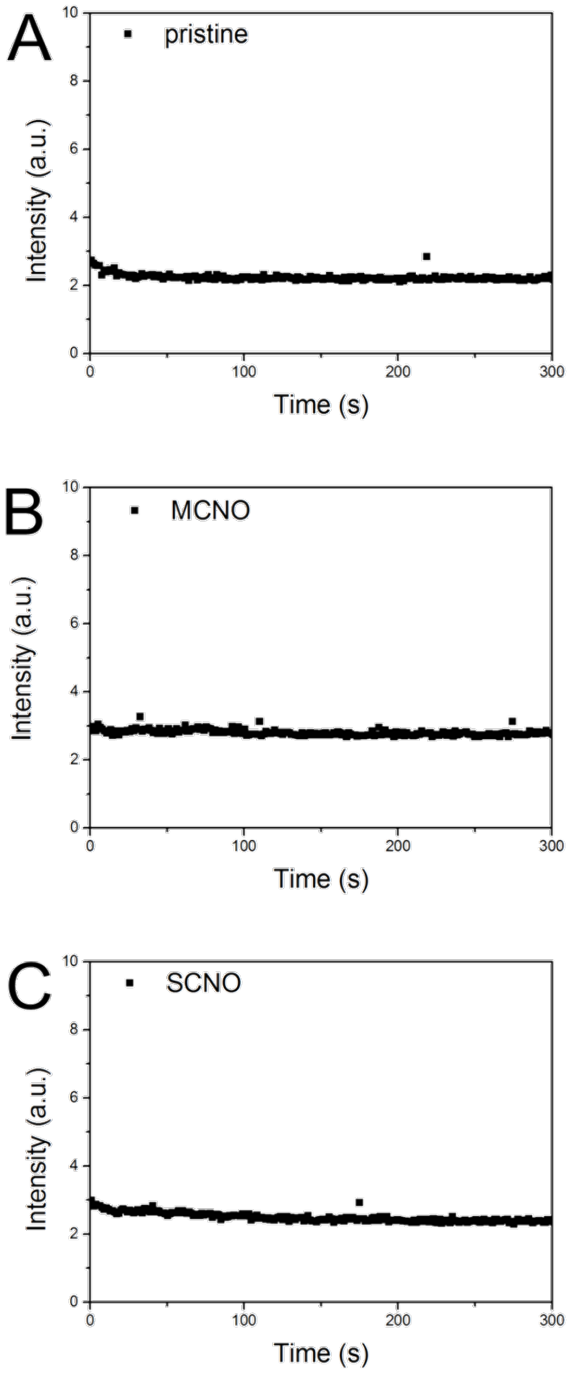

Fig. S6. Tb^{3+}/DPA assays (Ext: 276 nm; Ems:545 nm) of liposomes at 37 ^{o}C for 300 s: A. pristine, B. SCNO and C. MCNO.

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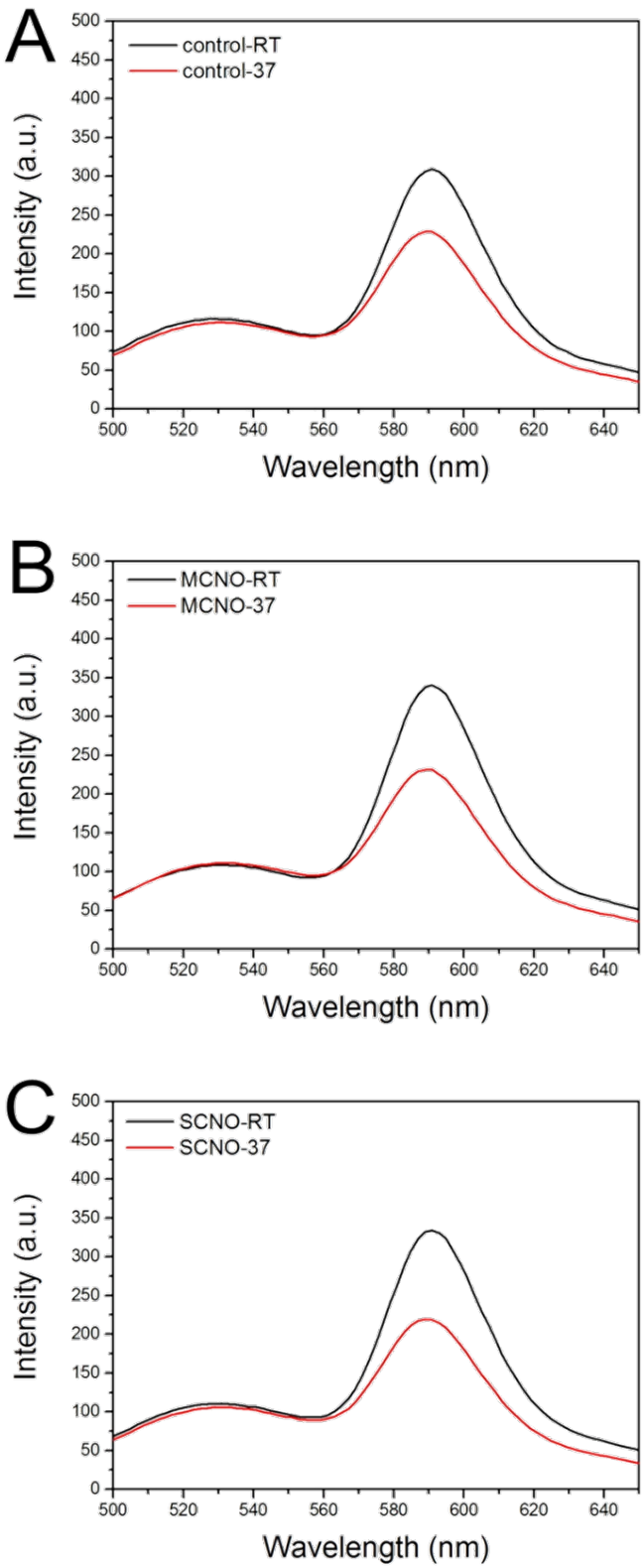

Fig. S7. NBD/RhB assays of liposomes at RT and heated at 37 °C for 5 min (NBD/RhB-labeled liposomes: pure liposomes=1:9): A. pristine, B. MCNO and C. SCNO.

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***In vitro* characterizations for pristine, MCNO and SCNO liposomes.**

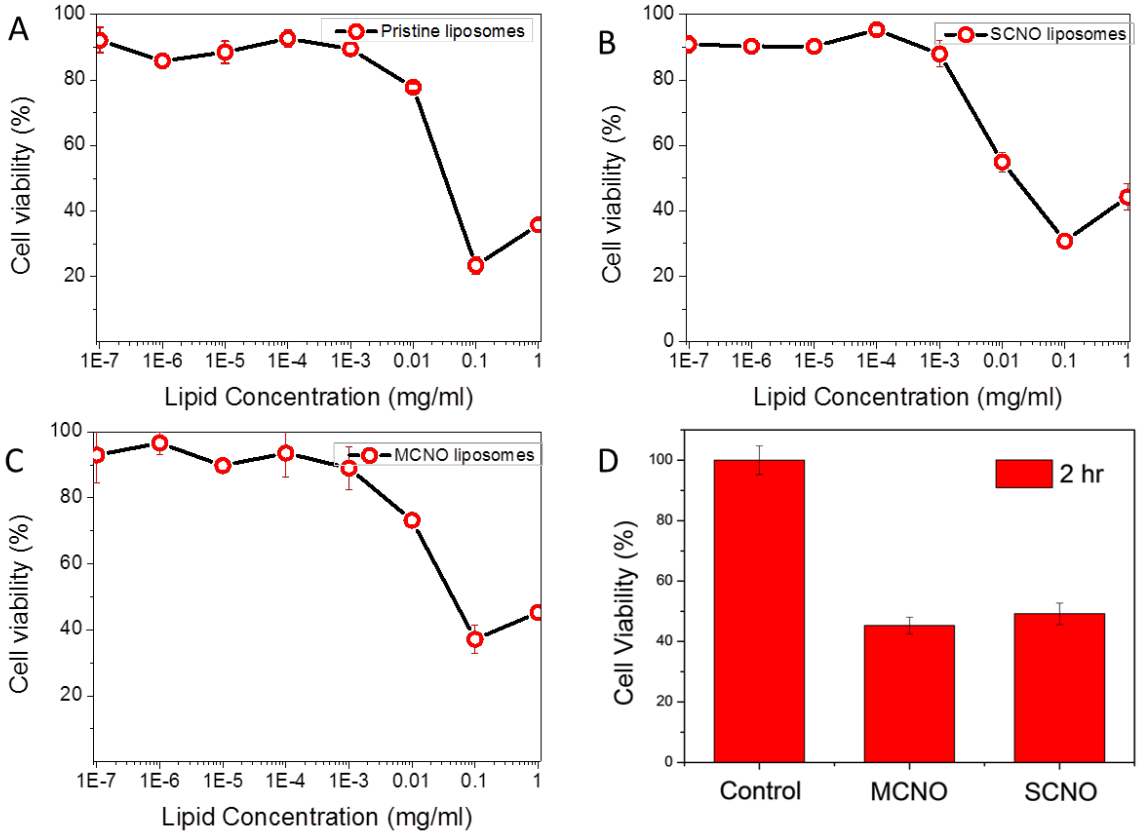

Fig. S8. *In vitro* cytotoxicity of pristine and modified liposomes (A. pristine liposomes, B. SCNO liposomes, C. MCNO liposomes) incubated with HeLa cells for 24 hrs (37 ^{o}C) and (D) MTT assays for dox loaded SCNO and MCNO liposomes incubated with HeLa cells for 2 hrs (37 ^{o}C).

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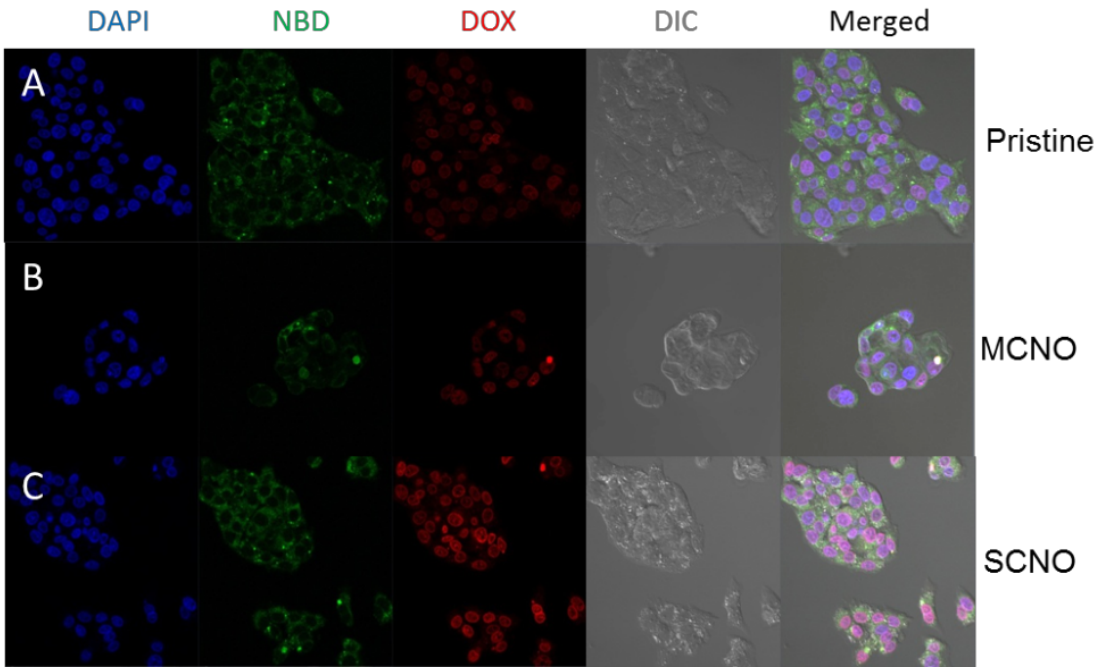

Fig. S9 CLSM images of dox loaded liposomes incubated with HepG2 cells at 37 ^{o}C for 1 hr (from left to right, DAPI, NBD, Dox, bright field, merged): A. pristine liposomes, B. MCNO liposomes, C. SCNO liposomes.

Localization and cellular uptake of biotinylated liposomes.

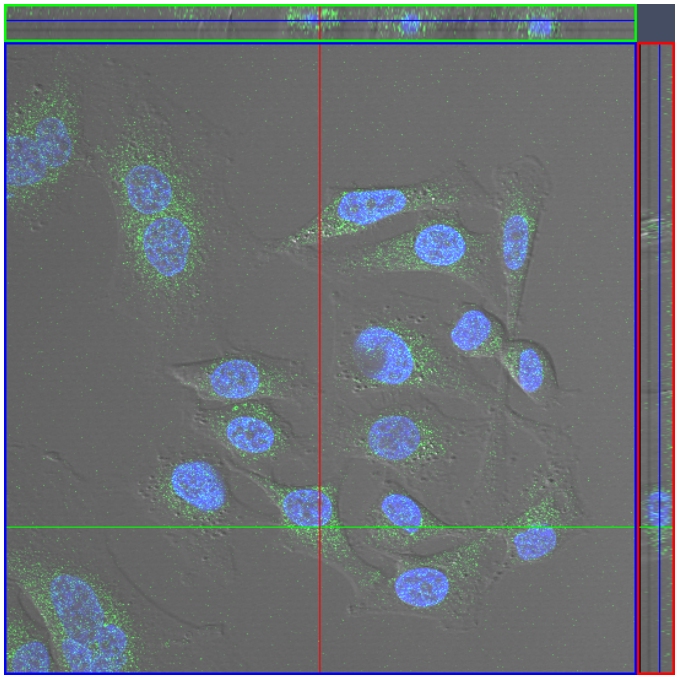

Fig. S10. Z-stack CLSM image for Biotinylated liposomes incubated with HeLa cells for 30 min.