Polymer Chemistry

Electronic Supporting Information for

Nanoparticles of poly([*N*-(2-hydroxypropyl])methacrylamide)-*b*-poly[2-(diisopropylamino)ethyl methacrylate] diblock copolymer for pH-triggered release of paclitaxel

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Characterization of PHPMA

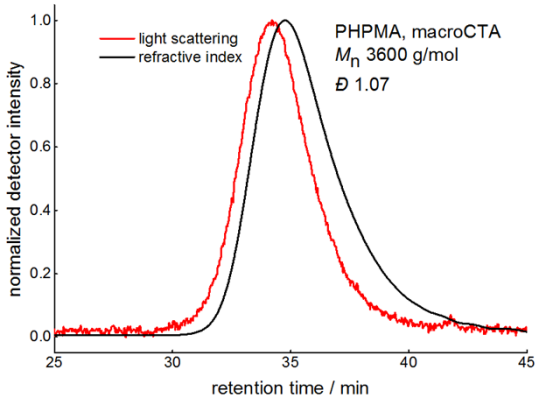

Figure S1A. SEC traces of the PHPMA macroCTA chain transfer agent utilized as macromolecular chain transfer agent for block copolymer synthesis *via* RAFT.

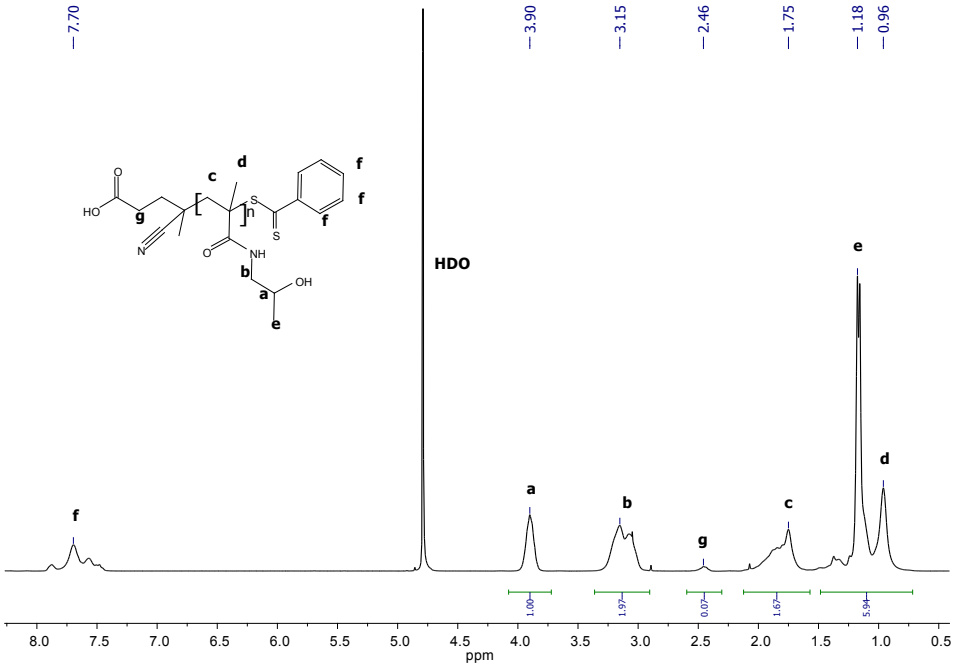

Figure S1B. ^{1}H NMR spectra of the PHPMA in D_2O.

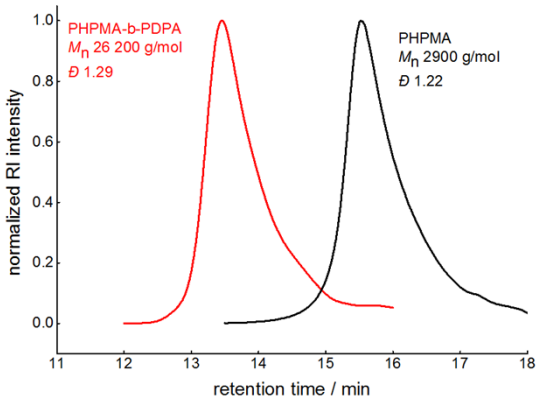

Figure S2A. SEC traces of the $PHPMA_{25}$-*b*-$PDPA_{106}$ block copolymer synthesized *via* RAFT.

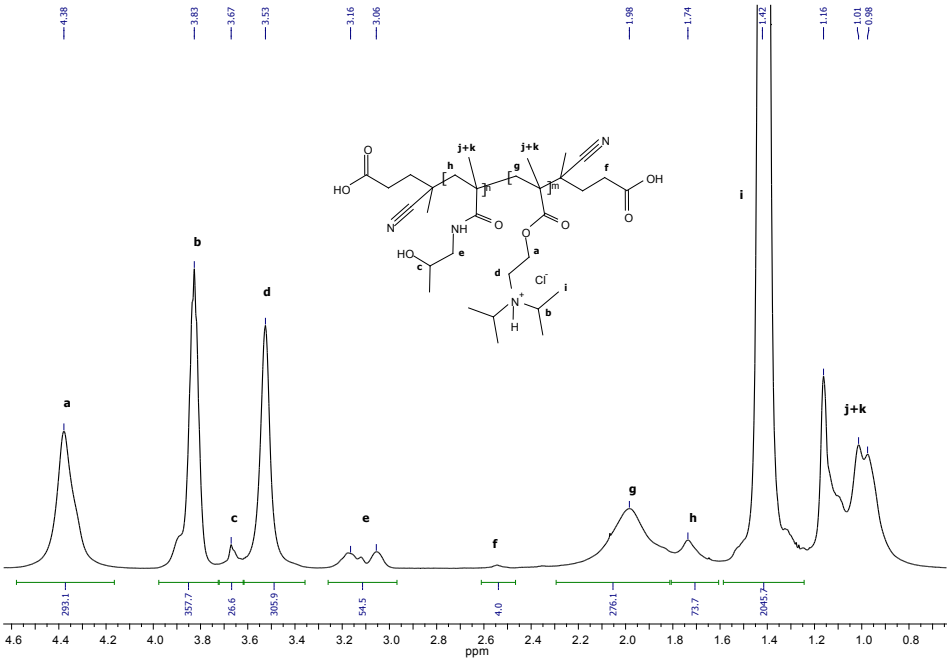

Fig. S2B. ^1H NMR spectra of the $PHPMA_{25}$-*b*-$PDPA_{106}$ in D2O/DCl (pH 2).

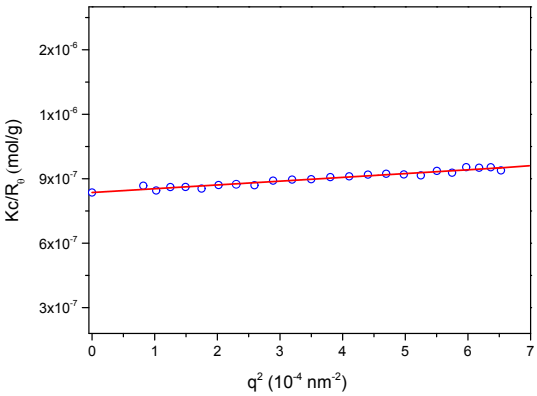

Fig. **S3**. Static light scattering measurements (Kc/R_θ vs. q^2) for PHPMA$_{25}$-*b*-PDPA$_{106}$ block copolymer NPs in PBS at 25 °C (R_G ~ 24 nm and M_w ~ 1.2 × 10^6 g/mol).

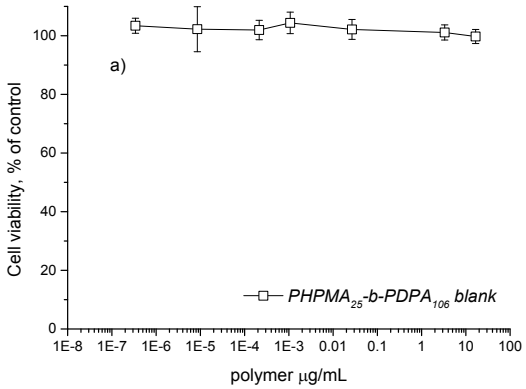

Fig. **S4A**. Cell viability of HeLa cell line after 24 h incubation with different concentrations of drug-free PHPMA25-b-PDPA106 block copolymer NPs.

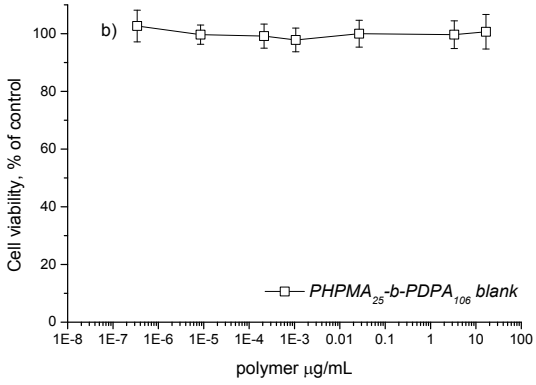

Fig. **S4B**. Cell viability of HeLa cell line after 48 h incubation with different concentrations of drug-free PHPMA$_{25}$-*b*-PDPA$_{106}$ block copolymer NPs.

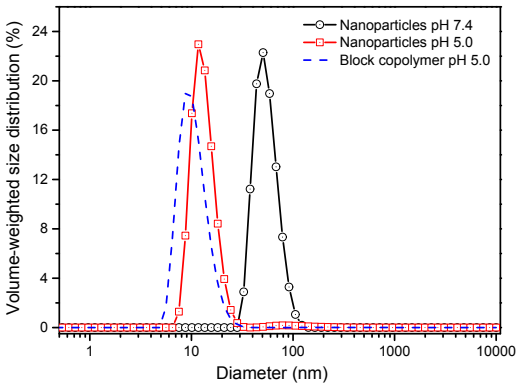

Fig. S5. Volume-weighted size distribution for the $PHPMA_{25}$-*b*-$PDPA_{106}$ NPs at pH 7.4 (black open circles) for the nanoparticles at pH 5.0 (red open squares) and the single block copolymer at pH 5.0 (blue dashed lines) and angle 173° at concentration of 1 mg·mL^{-1} diluted in PBS at 37 °C.

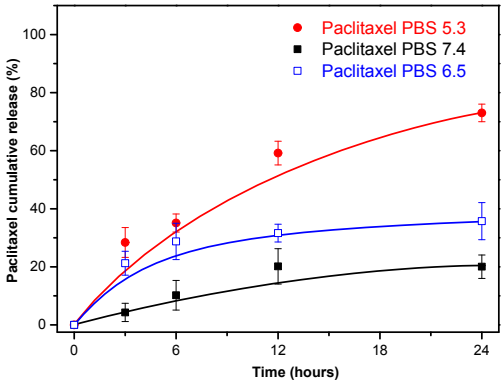

Fig. S6. Drug release profiles from paclitaxel-loaded $PHPMA_{25}$-*b*-$PDPA_{106}$ block copolymer NPs at pH of simulated transport in blood, at pH 6.5 (end stage of protonated process) and simulating the acidic environment in endosomal and lysosomal compartments at 37 °C.

Supporting Table ST1. Synthetic parameters and molecular weight data of polymers prepared via RAFT polymerization.

Sample	$[M]_0/[CTA]_0/[I]_0$	Time (h)	Conv. (%)[a]	$M_{n,th}$ [b] (g mol^{-1})	$M_{n,SEC}$ [c] (g mol^{-1})	$Đ$ [c]
$PHPMA_{25}$	120/2/1[e]	10	36	3 200	3 600[d] (2 900)	1.07[d] (1.22)
$PHPMA_{25}$-*b*-$PDPA_{106}$	300/3/1[f]	15	94	23 500	26 200	1.29

[a] Determined by ^1H NMR in D_2O.

[b] Theoretical $M_n = [M]_0/[CTA]_0 \times conv. \times MW_{mon.} + MW_{CTA}$

[c] Determined by SEC in THF/MeOH 80/20% using PMMA as standard

[d] Determined by SEC in acetate buffer pH 6.5 using light scattering and RI detectors

[e] conditions: DMAc, $[M]_0 = 1.2$ M, 70 °C

[f] conditions: 1,4-dioxane/MeOH 60/40 vol.%, $[M]_0 = 3$ M, 70 °C