Supporting Information

Polypeptides with Quaternary Phosphonium Side Chains: Synthesis, Characterization, and Cell-Penetrating Properties

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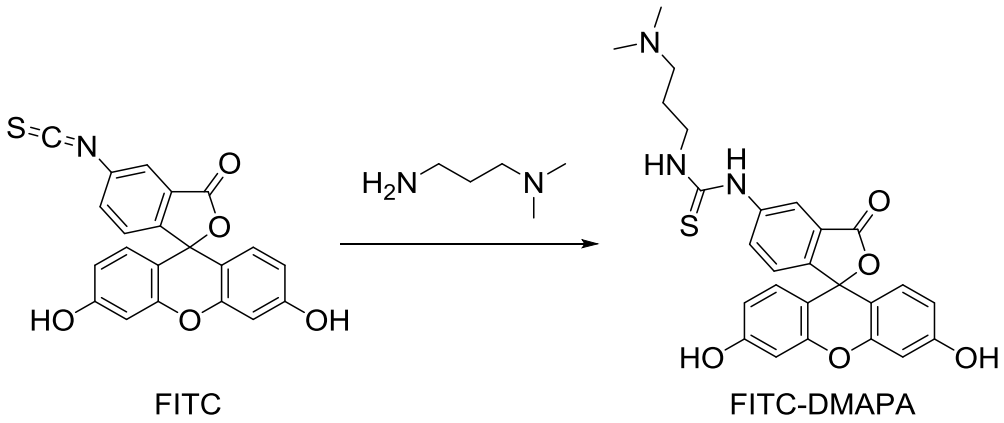
Table S1. Synthesis of polypeptides with chloroalkyl side chains[a]

entry	monomer	M/I	M_n (M_n*)[b,c] (kDa)	M_w/M_n[c]
1	CP-$_L$-Glu-NCA	40/1	8.1 (8.2)	1.02
2	CH-$_L$-Glu-NCA	40/1	10.0 (9.9)	1.02
3	CH-$_{DL}$-Glu-NCA	40/1	9.7 (9.9)	1.10

[a] Polymerizations were carried out at room temperature for 48 h. Monomer conversions were all above 99% as indicated by FTIR. [b] Obtained MW (expected MW). [c] Determined by GPC.



Scheme S1. Synthesis of fluorescein-functionalized tertiary amine (FITC-DMAPA).

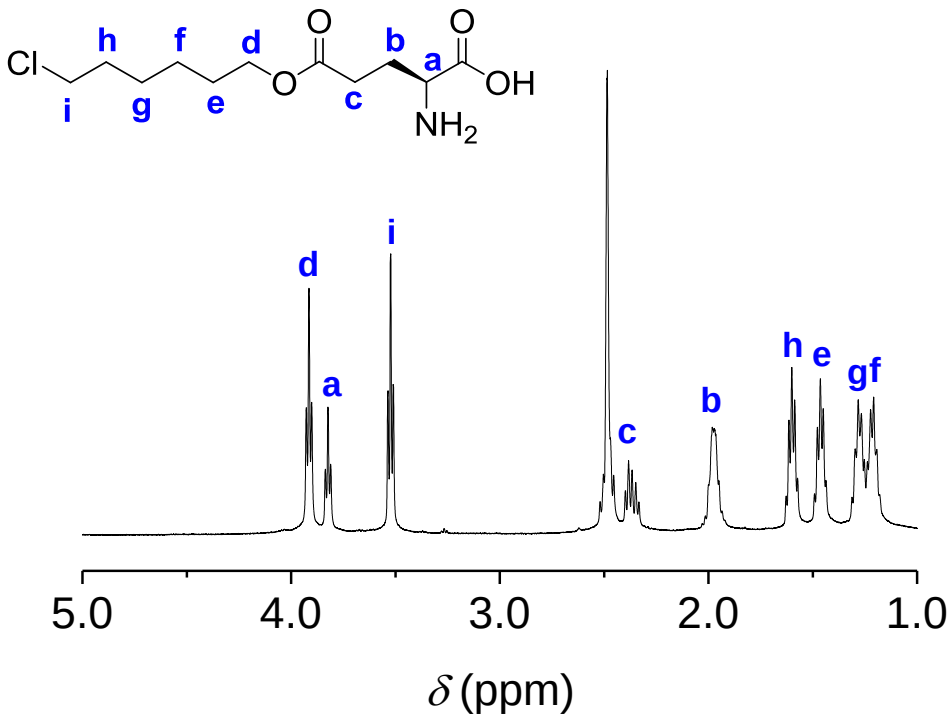


Figure S1. ^{1}H NMR spectrum of CH-$_{L}$-Glu in DMSO-d_6/D_2O-DCl (9:1, v/v).

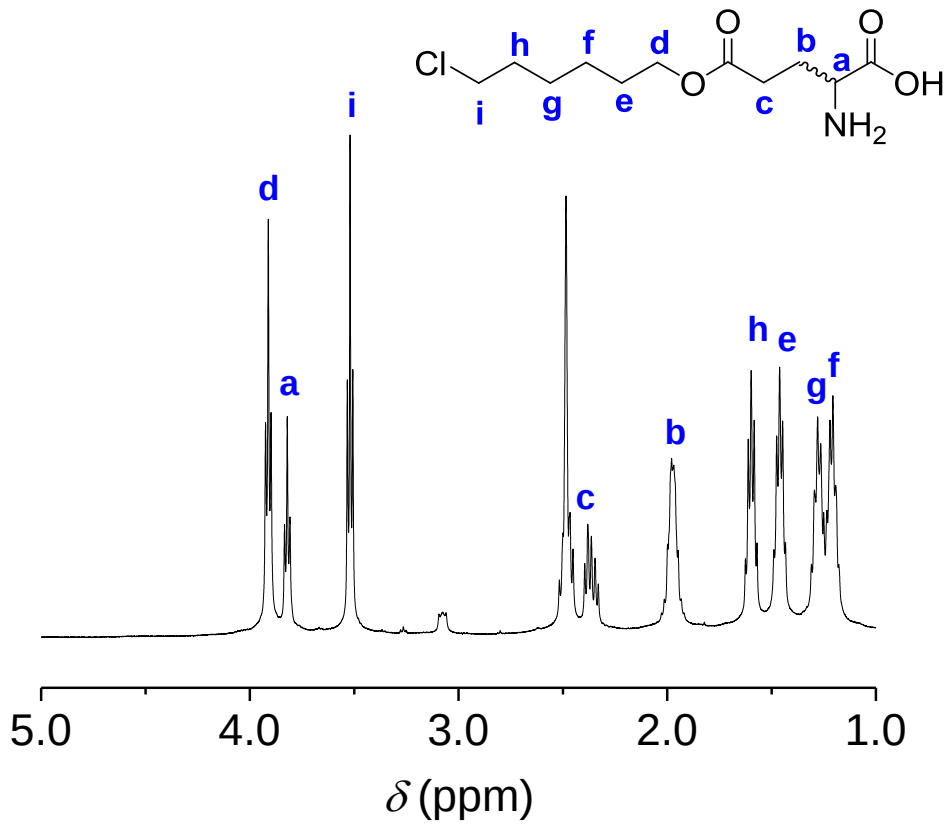


Figure S2. ^{1}H NMR spectrum of CH-$_{DL}$-Glu in DMSO-d_6/D_2O-DCl (9:1, v/v).

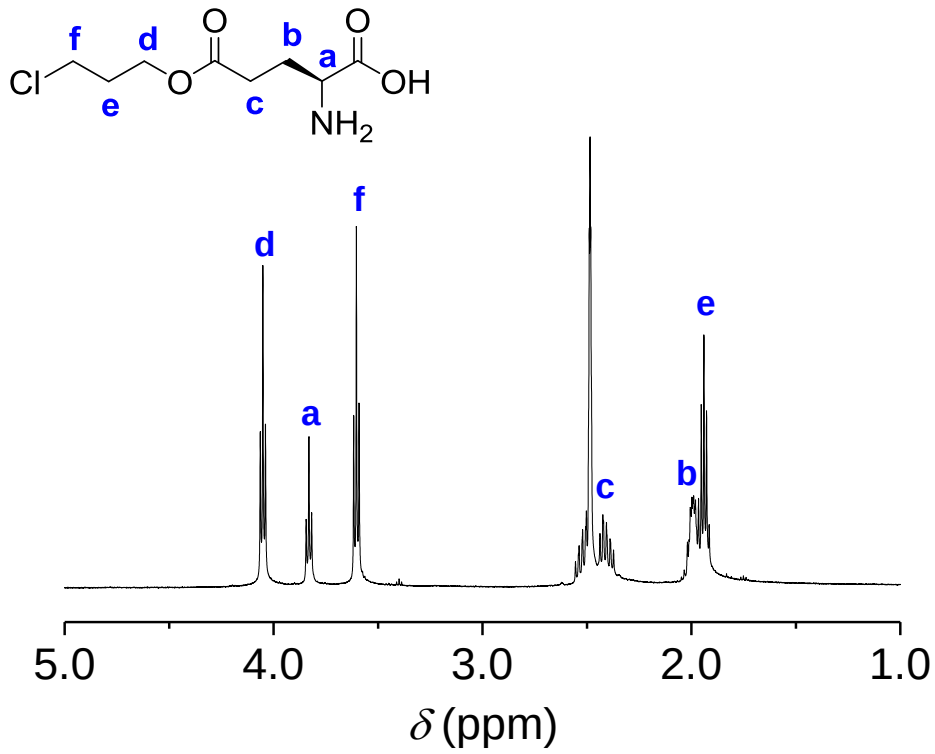


Figure S3. ^{1}H NMR spectrum of CP-$_{L}$-Glu in DMSO-d_6/D_2O-DCl (9:1, v/v).

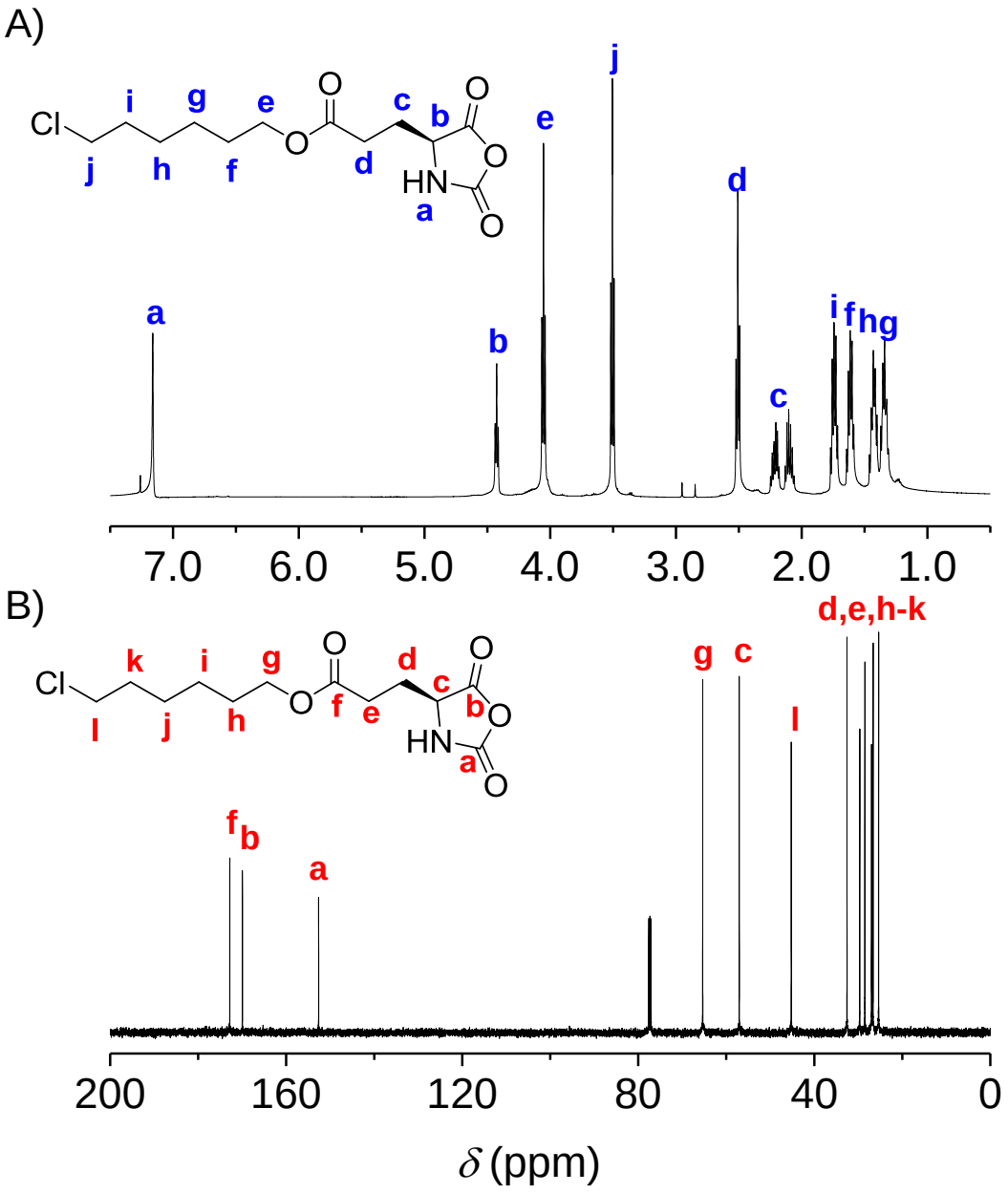


Figure S4. ^{1}H (A) and ^{13}C (B) NMR spectra of CH-$_{L}$-Glu-NCA in $CDCl_3$.

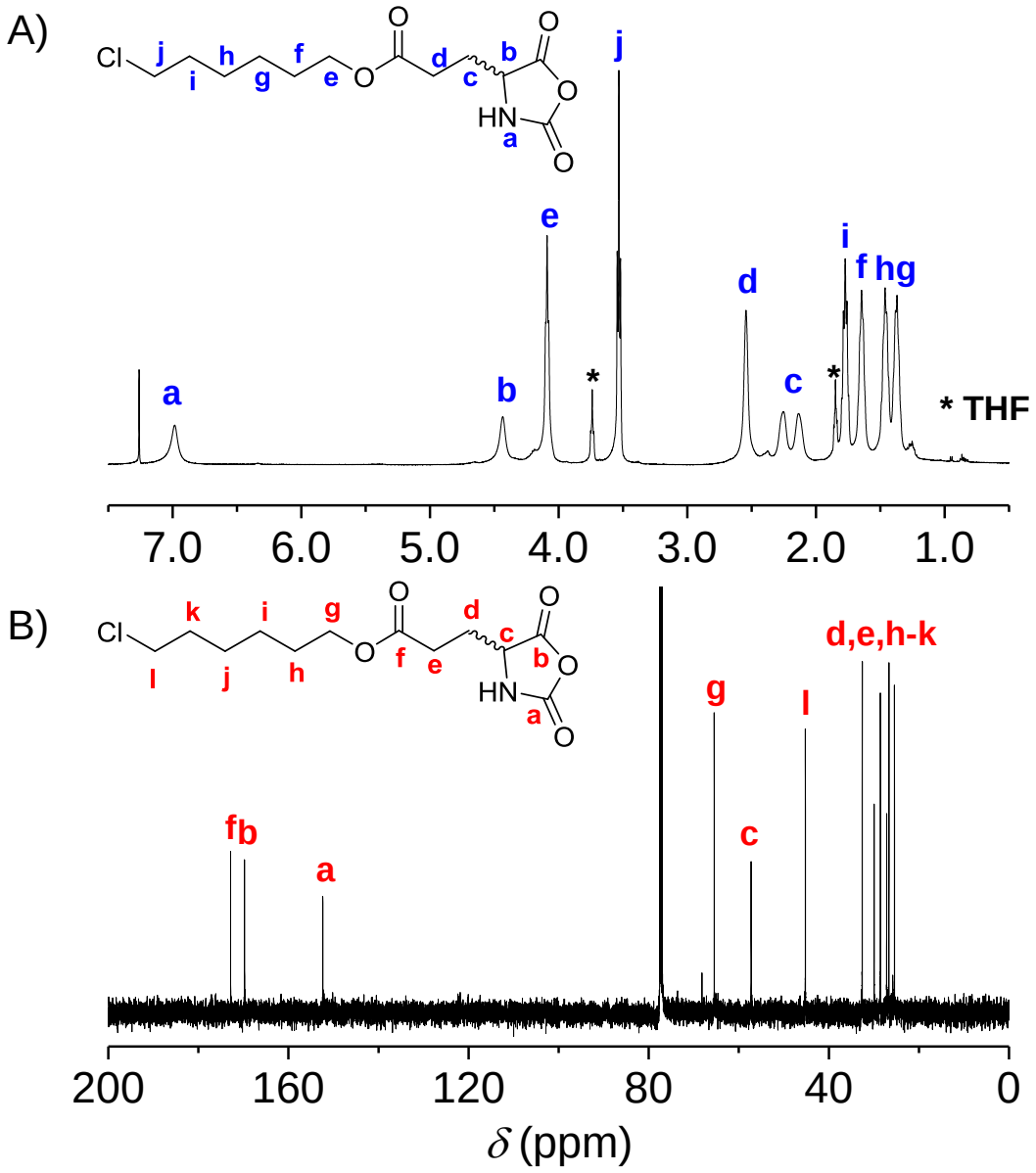


Figure S5. ^{1}H (A) and ^{13}C (B) NMR spectra of CH-$_{DL}$-Glu-NCA in $CDCl_3$.

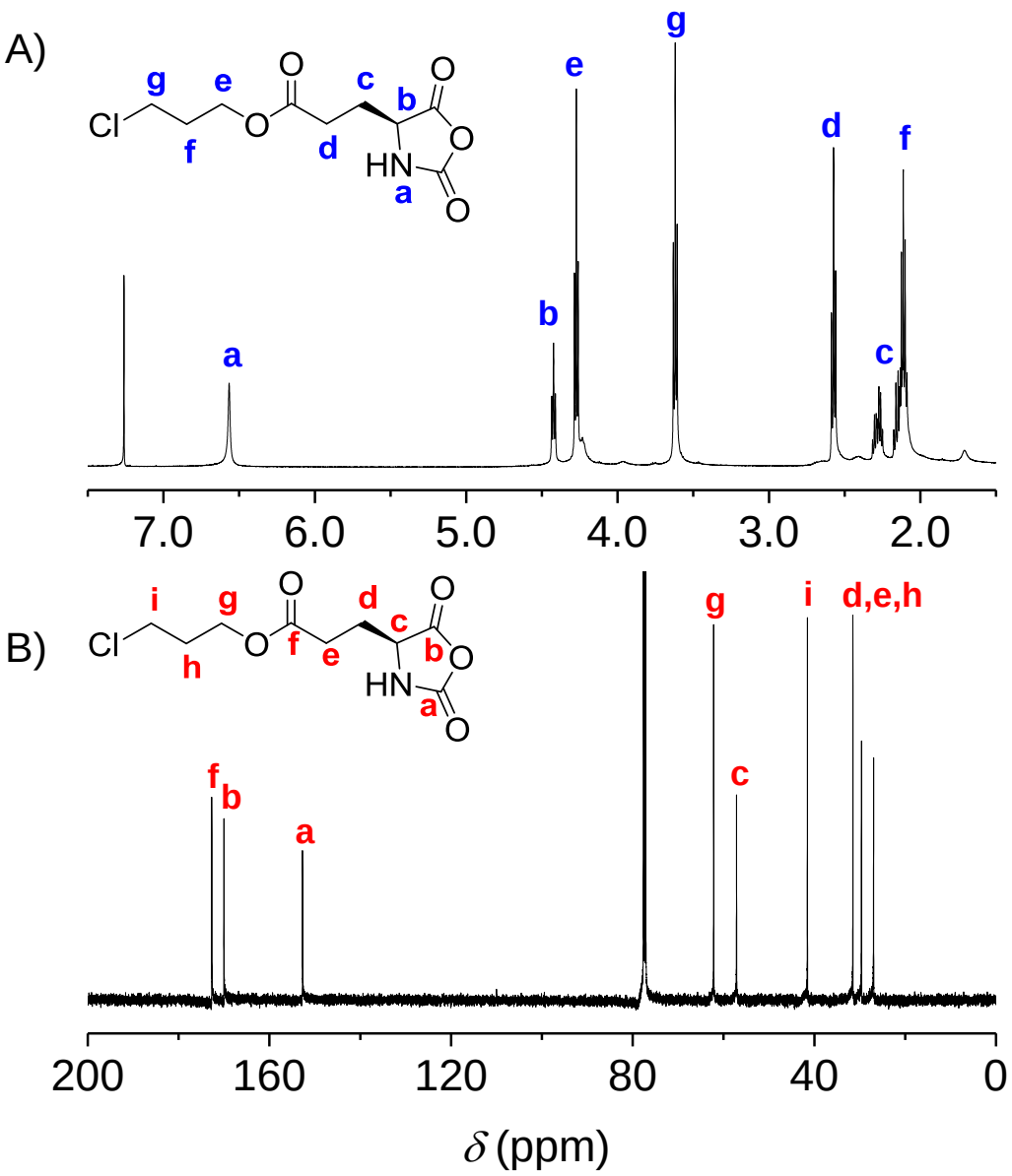


Figure S6. ^{1}H (A) and ^{13}C (B) NMR spectra of CP-$_{L}$-Glu-NCA in $CDCl_3$.

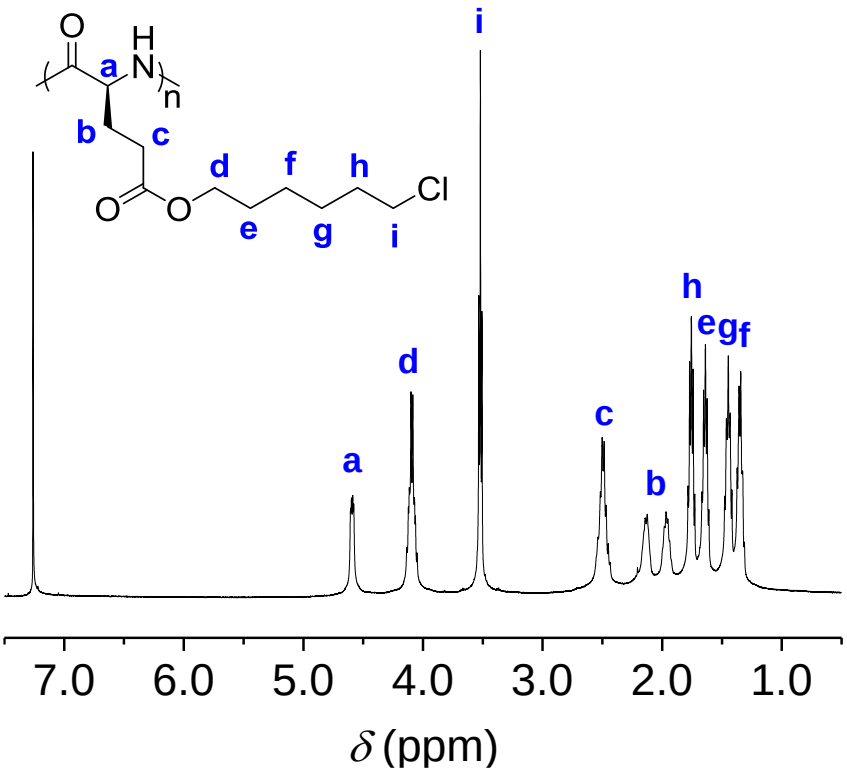


Figure S7. ^{1}H NMR spectrum of PCHLG in $CDCl_3$/TFA-*d* (85:15, v/v).

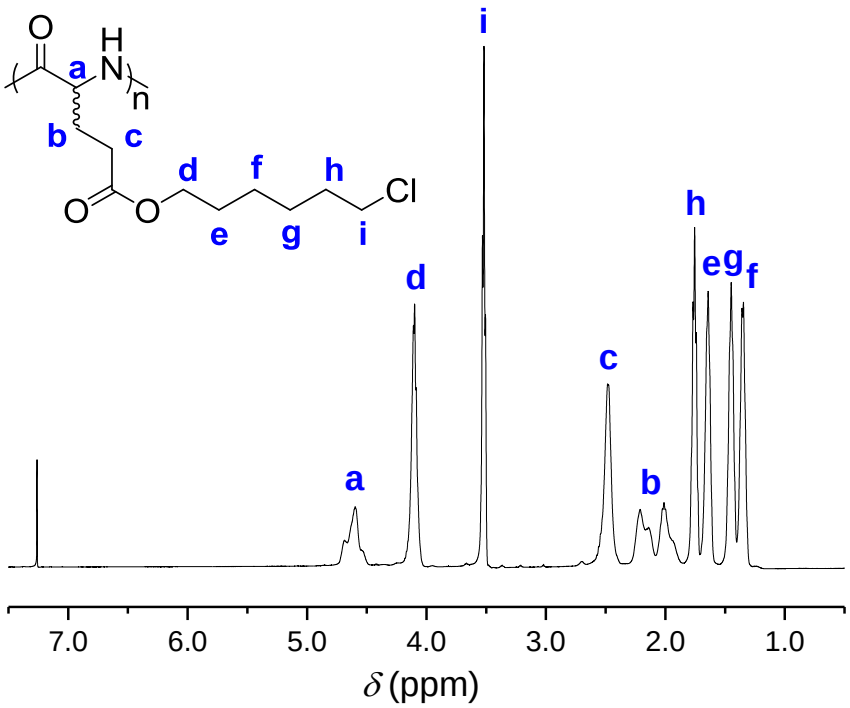


Figure S8. ^{1}H NMR spectrum of PCHDLG in $CDCl_3$/TFA-*d* (85:15, v/v).

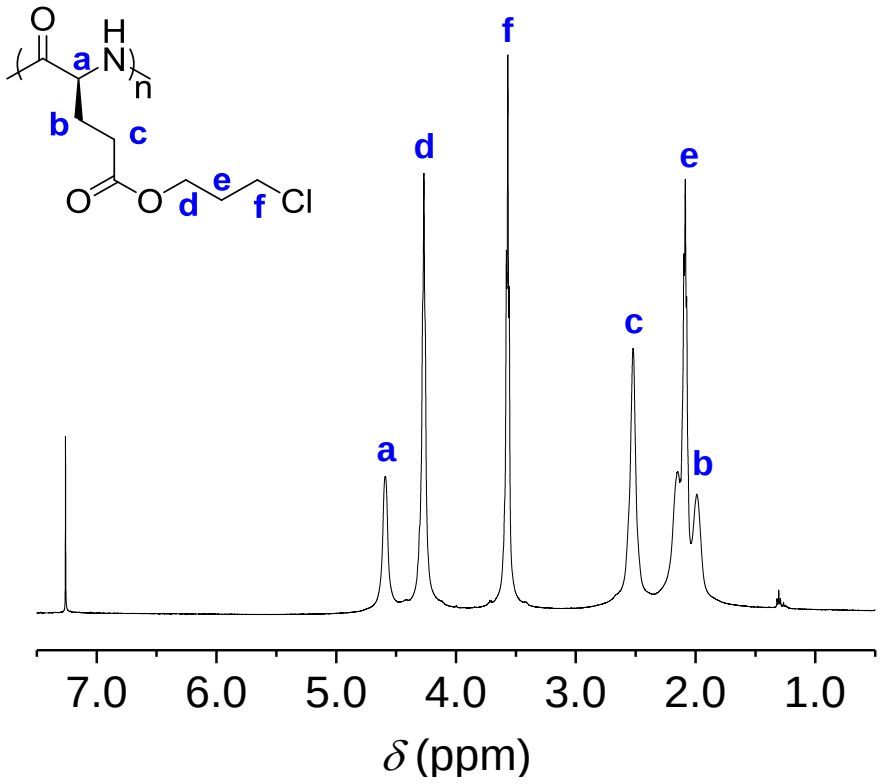


Figure S9. ^{1}H NMR spectrum of PCPLG in $CDCl_3$/TFA-*d* (85:15, v/v).

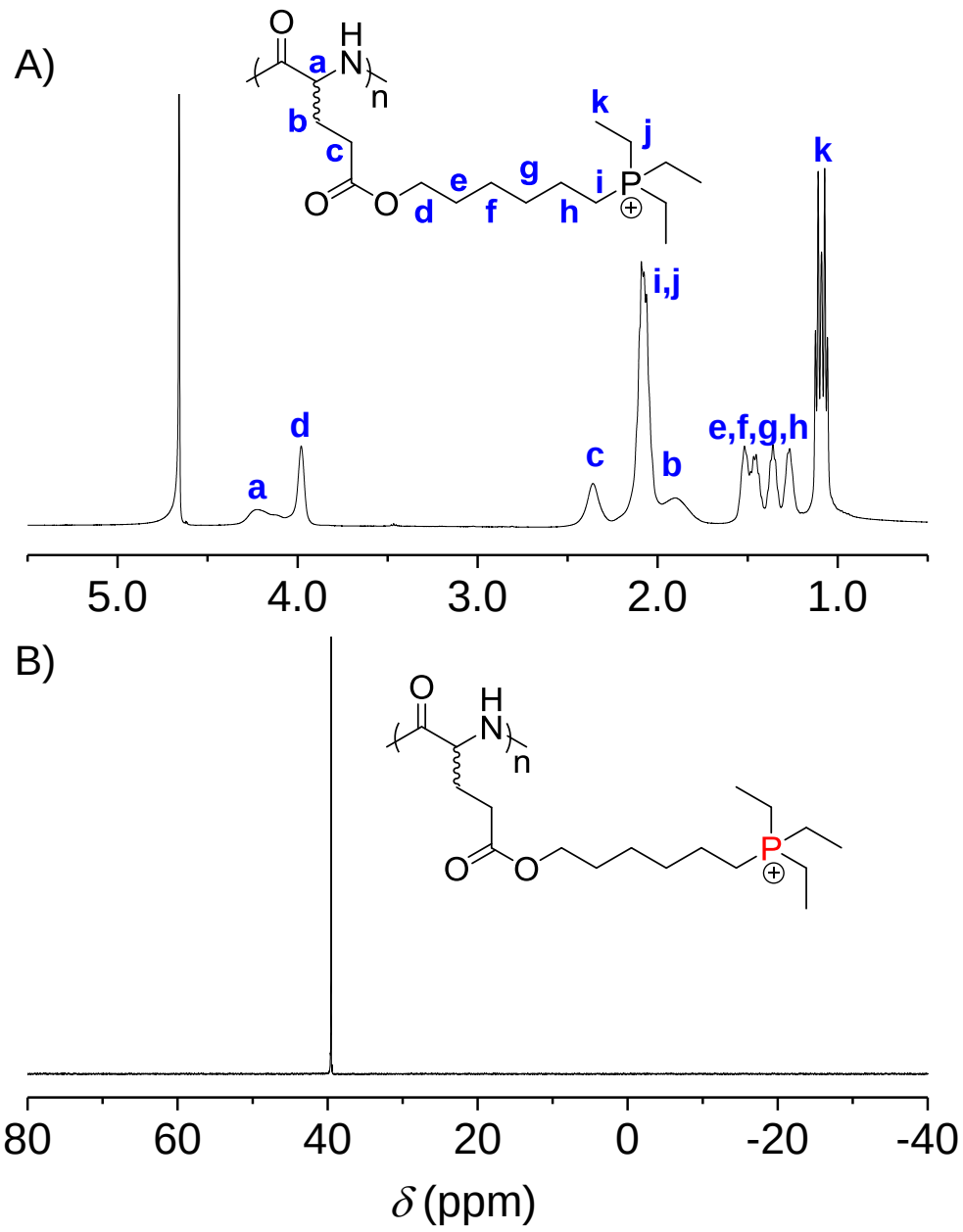


Figure S10. ^{1}H (A) and ^{31}P (B) NMR spectra of PHDLG-TEP in D_2O.

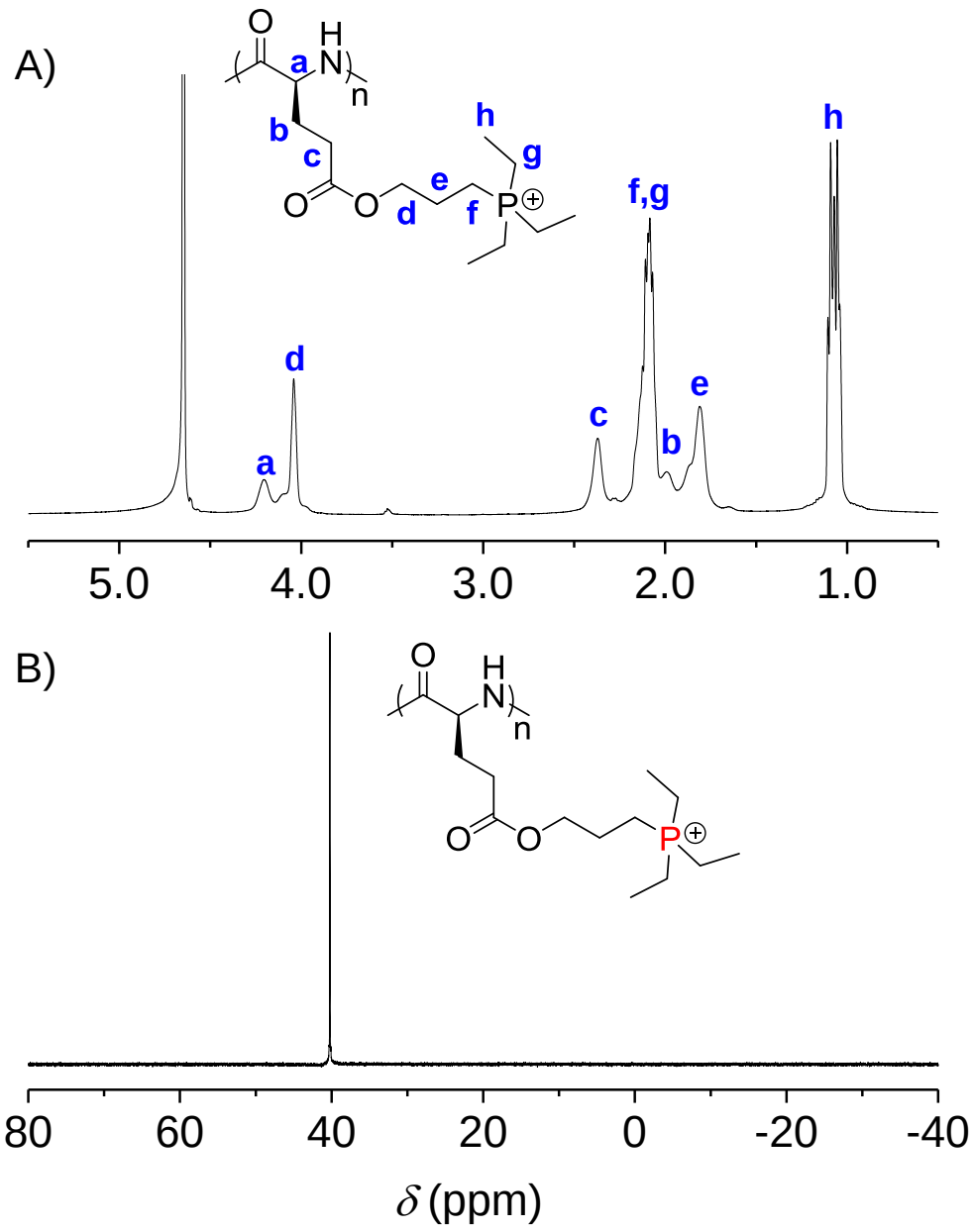


Figure S11. ^{1}H (A) and ^{31}P (B) NMR spectra of PPLG-TEP in D_2O.

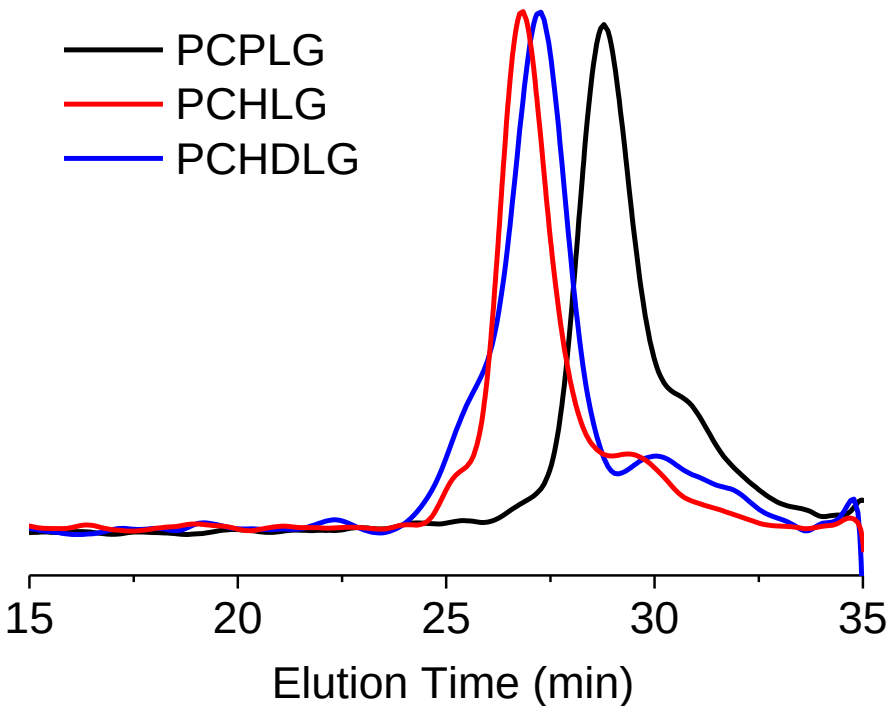


Figure S12. GPC traces of polypeptides with chloroalkyl side chains.

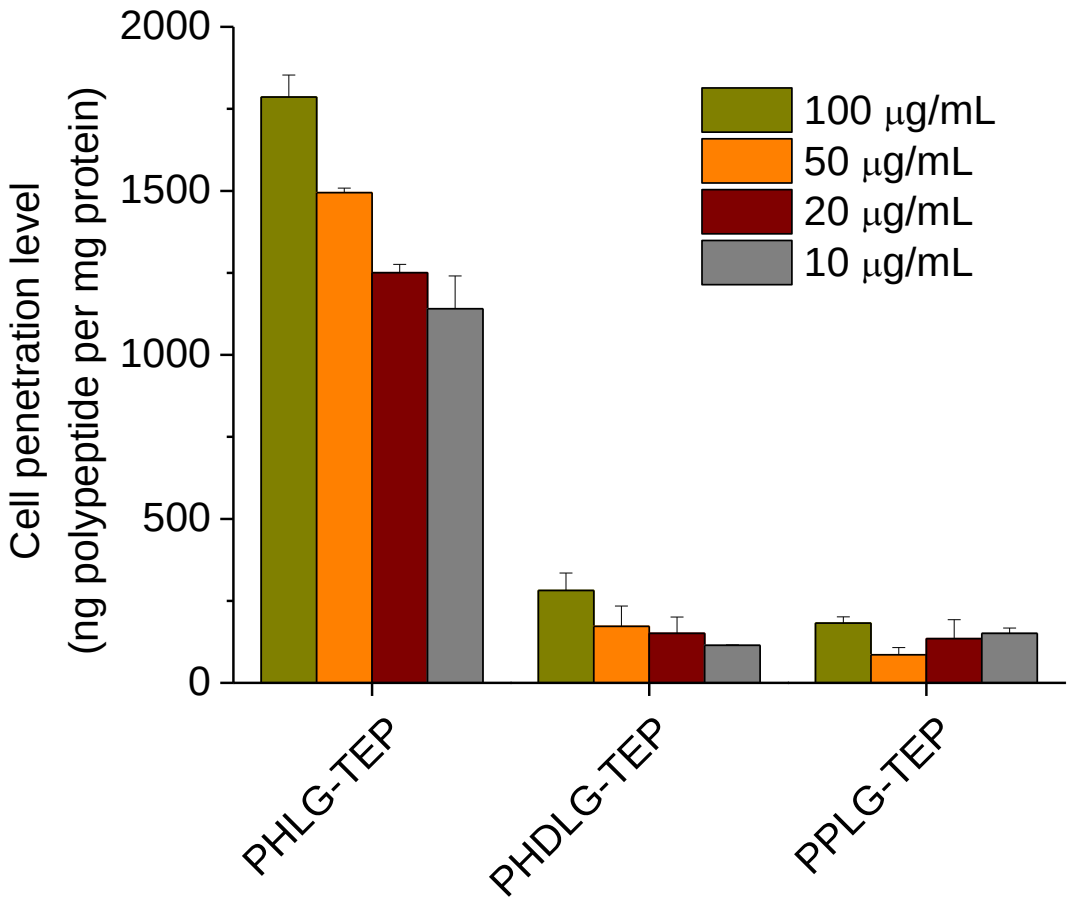


Figure S13. Uptake level of fluorescein-labeled polypeptides in HeLa cells at different polypeptide concentrations (n = 3). The incubation time was maintained constant at 2 h.

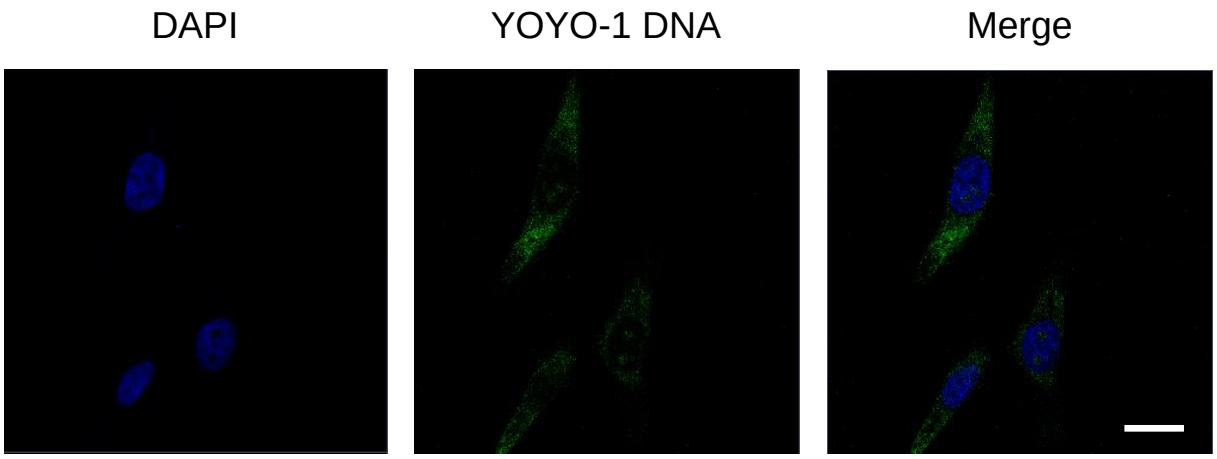


Figure S14. CLSM images of HeLa cells incubated with PHLG-TEP and YOYO-1-labeled DNA complex at 37 ^{o}C for 4 h (bar = 20 μm).