

Supporting Information

A photo-degradable injectable self-healing hydrogel based on star poly(ethylene glycol)-*b*-polypeptide as potential pharmaceuticals delivery carrier

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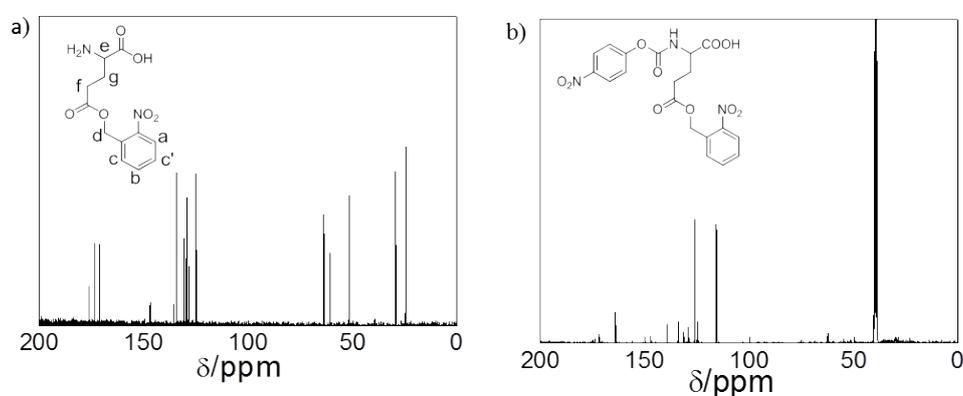


Figure S1: a) ¹³C NMR of γ -*o*-nitrobenzyl-*L*-Glutamate in D₂O with a drop of DCl. b) ¹³C NMR of *N*-(*p*-nitrophenoxycarbonyl)- γ -*o*-nitrobenzyl-*L*-Glutamate in DMSO-D₆.

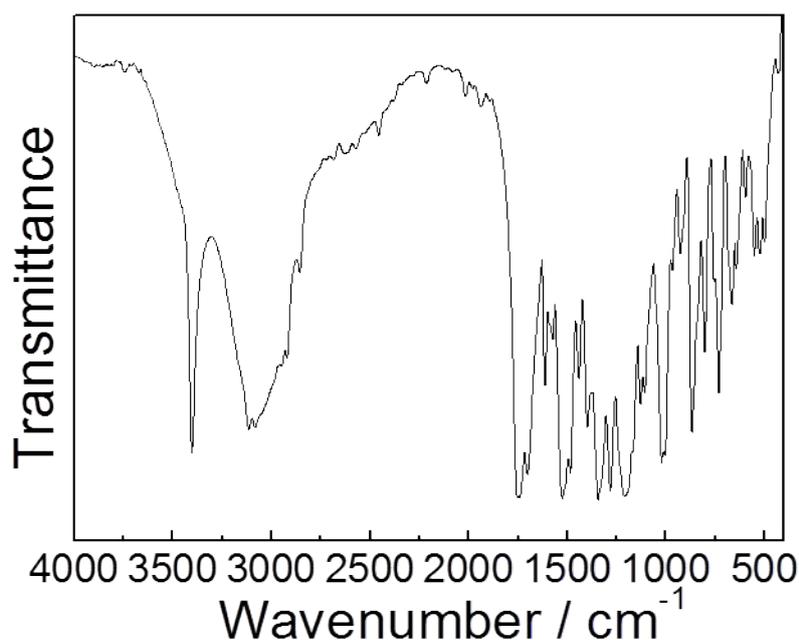


Figure S2: The FT-IR of *N*-(*p*-nitrophenoxycarbonyl)- γ -*o*-nitrobenzyl-*L*-Glutamate.

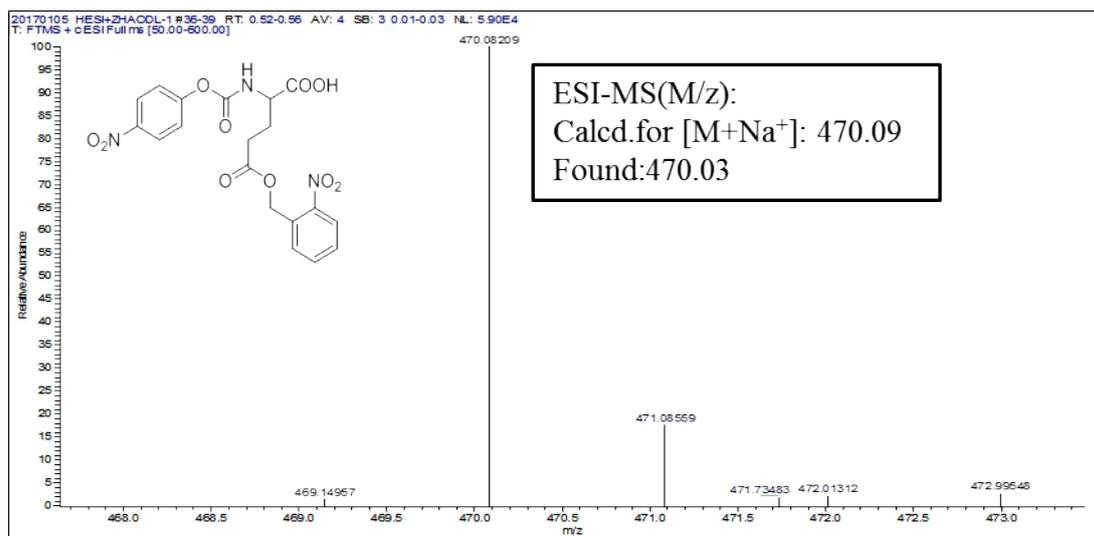


Figure S3: The MS of N-(*p*-nitrophenoxycarbonyl)- γ -*o*-nitrobenzyl-*L*-Glutamate.

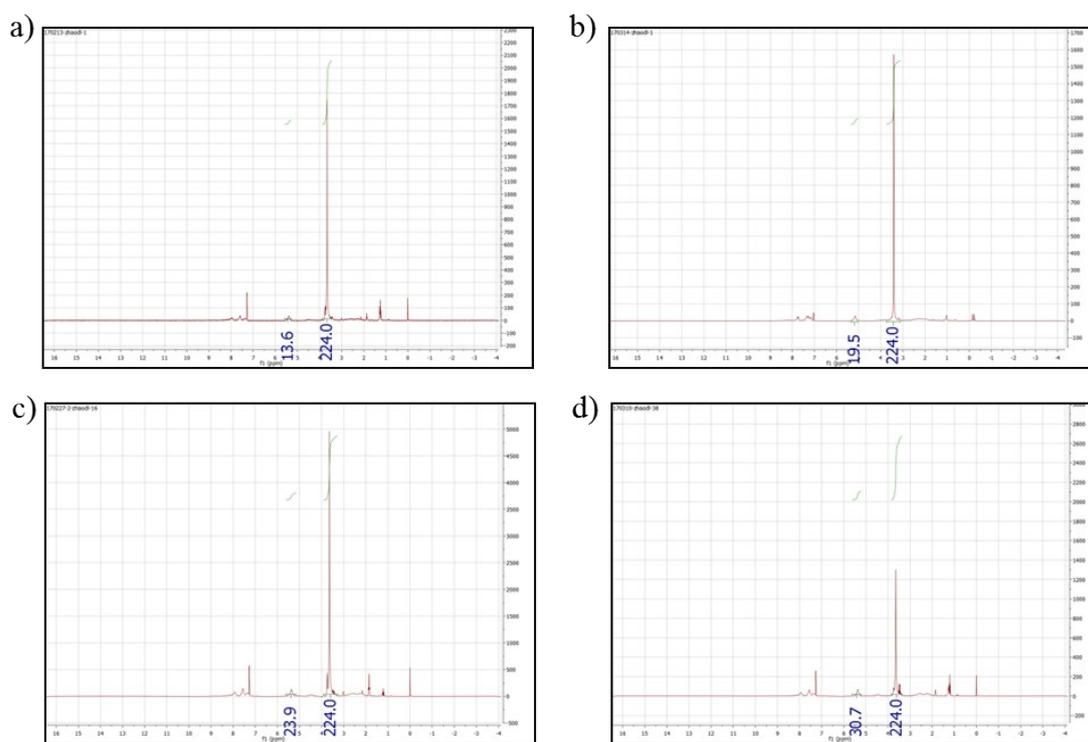


Figure S4: The ¹H NMR of amphiphilic diblock polymers in CDCl₃. a) t -P₅₆-*b*-NG₇, b) t -P₅₆-*b*-NG₁₀, c) t -P₅₆-*b*-NG₁₂, d) t -P₅₆-*b*-NG₁₅.

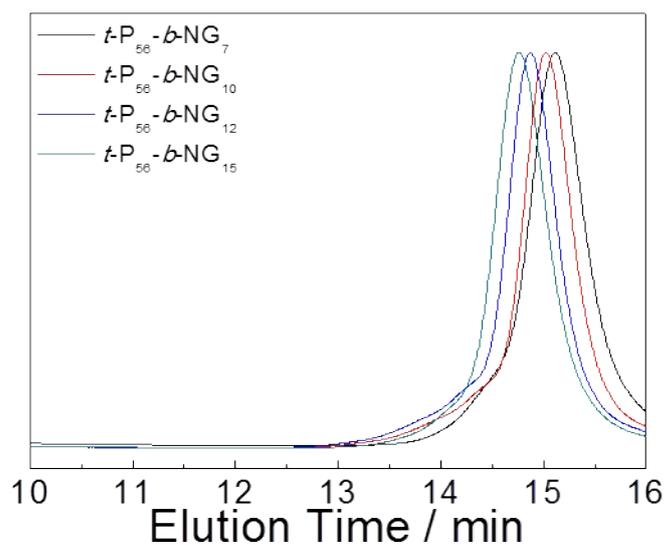


Figure S5: The GPC traces recorded for amphiphilic diblock copolymers by DMF elution.

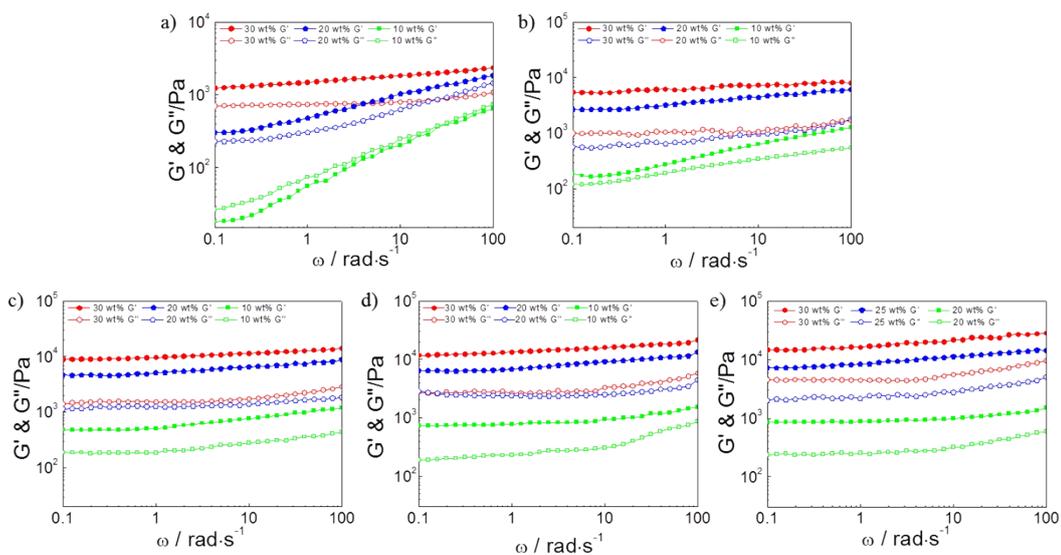
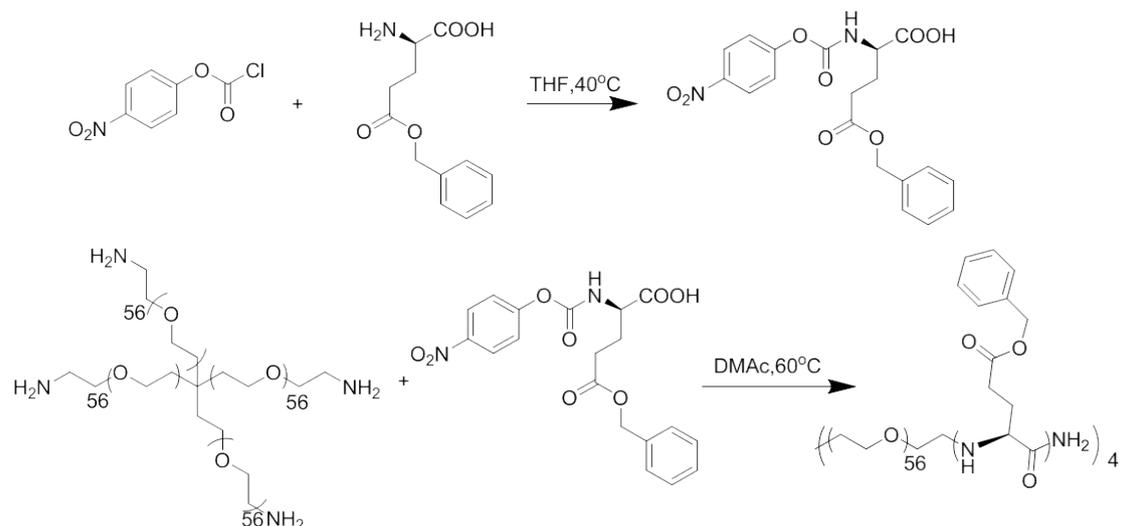


Figure S6: Frequency-sweep measurements of hydrogel Storage modulus, G' / Pa, and loss modulus, G'' / Pa, for hydrogels of different compositions a) $t\text{-P}_{56}\text{-}b\text{-NG}_5$; b) $t\text{-P}_{56}\text{-}b\text{-NG}_7$; c) $t\text{-P}_{56}\text{-}b\text{-NG}_{10}$; d) $t\text{-P}_{56}\text{-}b\text{-NG}_{12}$; e) $t\text{-P}_{56}\text{-}b\text{-NG}_{15}$ and concentrations (10 wt%, 20 wt%, 30 wt%).



Scheme S1: The synthesis and polymerization route of *N*-(*p*-nitrophenoxycarbonyl)- γ -benzyl-*L*-Glutamate.

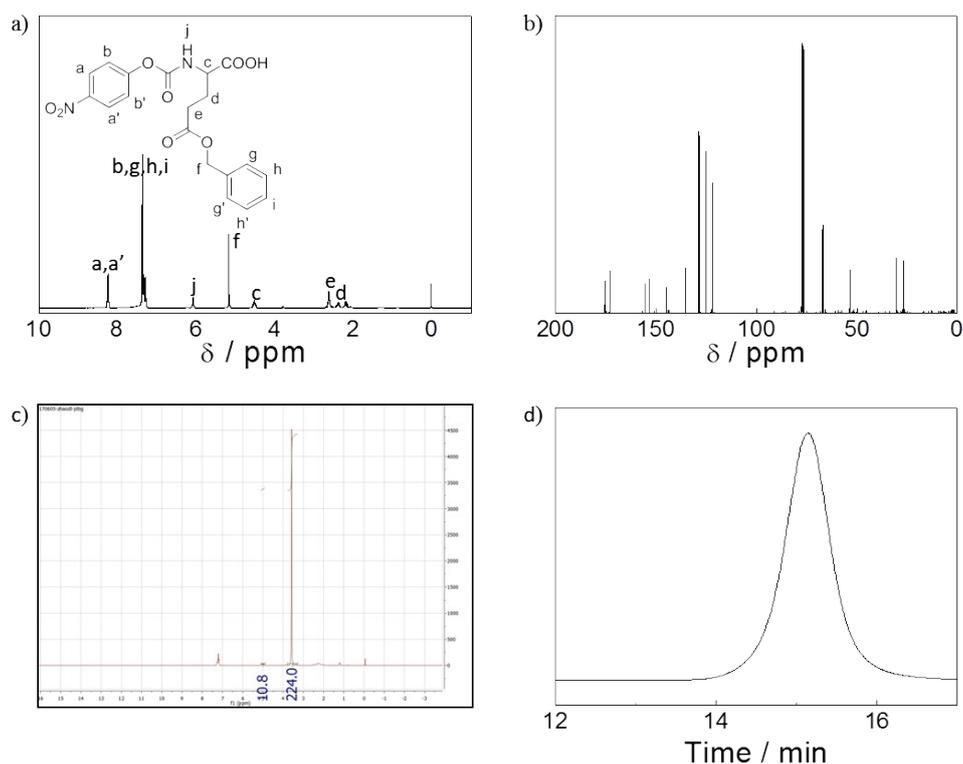


Figure S7: a) The ^1H NMR of *N*-(*p*-nitrophenoxycarbonyl)- γ -benzyl-*L*-glutamate in CDCl_3 , b) The ^{13}C NMR of *N*-(*p*-nitrophenoxycarbonyl)- γ -benzyl-*L*-glutamate in CDCl_3 , c) The ^1H NMR of amphiphilic diblock polymer(*t*-P₅₆-*b*-BG₅) in CDCl_3 . d) The GPC trace recorded for amphiphilic diblock copolymer by DMF elution.

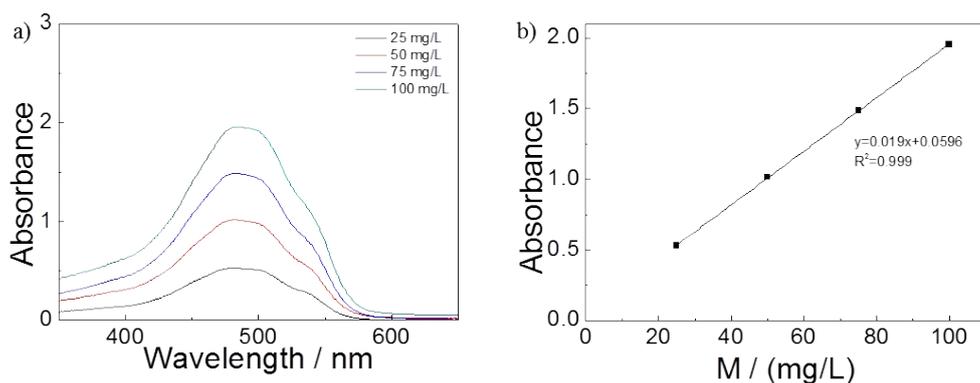


Figure S8: a) UV-vis absorbance spectra of different concentrations Dox(25 mg/L, 50 mg/L, 75 mg/L, 100 mg/L) in PBS buffer (pH=7.4, 100 mM). b) The absorbance intensity at 482 nm recorded for different Dox concentrations.

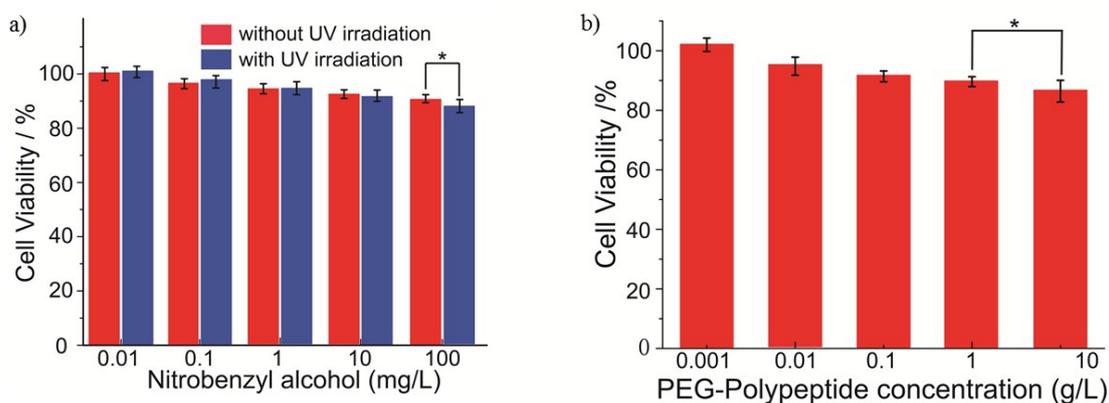


Figure S9: a) Cytotoxicity of various concentration leaving group nitrobenzyl alcohol without or with 30 min UV irradiation against HeLa cells. b) Cytotoxicity of various concentration PEG-polypeptide conjugates against HeLa cells. The data are expressed as mean \pm sd (n = 6). *P < 0.05 (t-test).

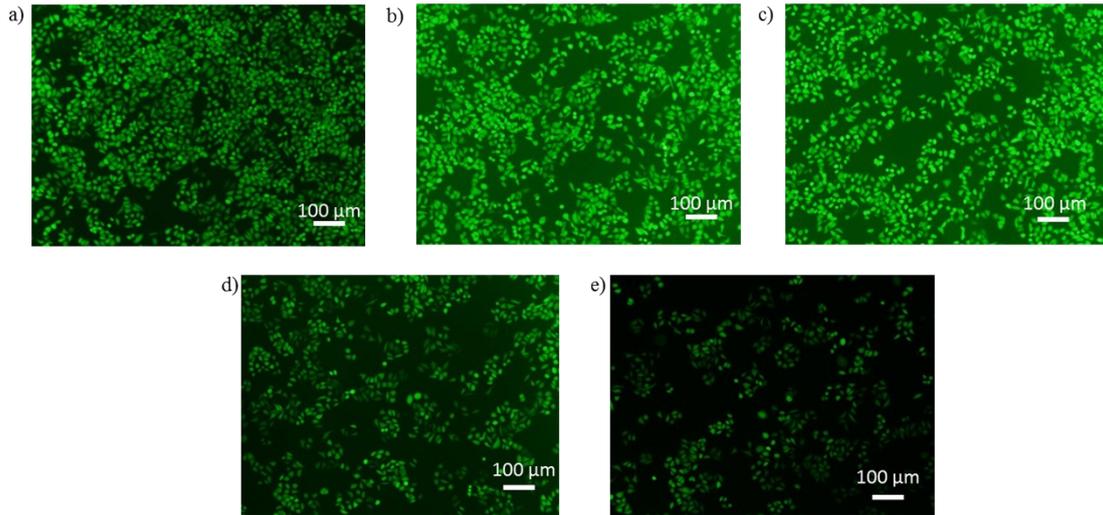


Figure S10: Effect of reaction conditions on HeLa cells viability-FDA studies. a) control, b) micelles solution of $t\text{-P}_{56}\text{-}b\text{-NG}_5$ at a concentration of 3.0 mg/mL without irradiation and c) with UV irradiation, d) Dox-loaded micelles solution of $t\text{-P}_{56}\text{-}b\text{-NG}_5$ at a concentration of 3.0 mg/mL without irradiation and e) with UV irradiation 30 min were added to cell culture medium and further incubated for 24h. Cell were stained with FDA(Fluorescein diacetate) and observed under a fluorescent microscope.

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