Supporting Information

A pH sensitive polymeric micelle for co-delivery of Doxorubicin and α-TOS to colon cancer therapy

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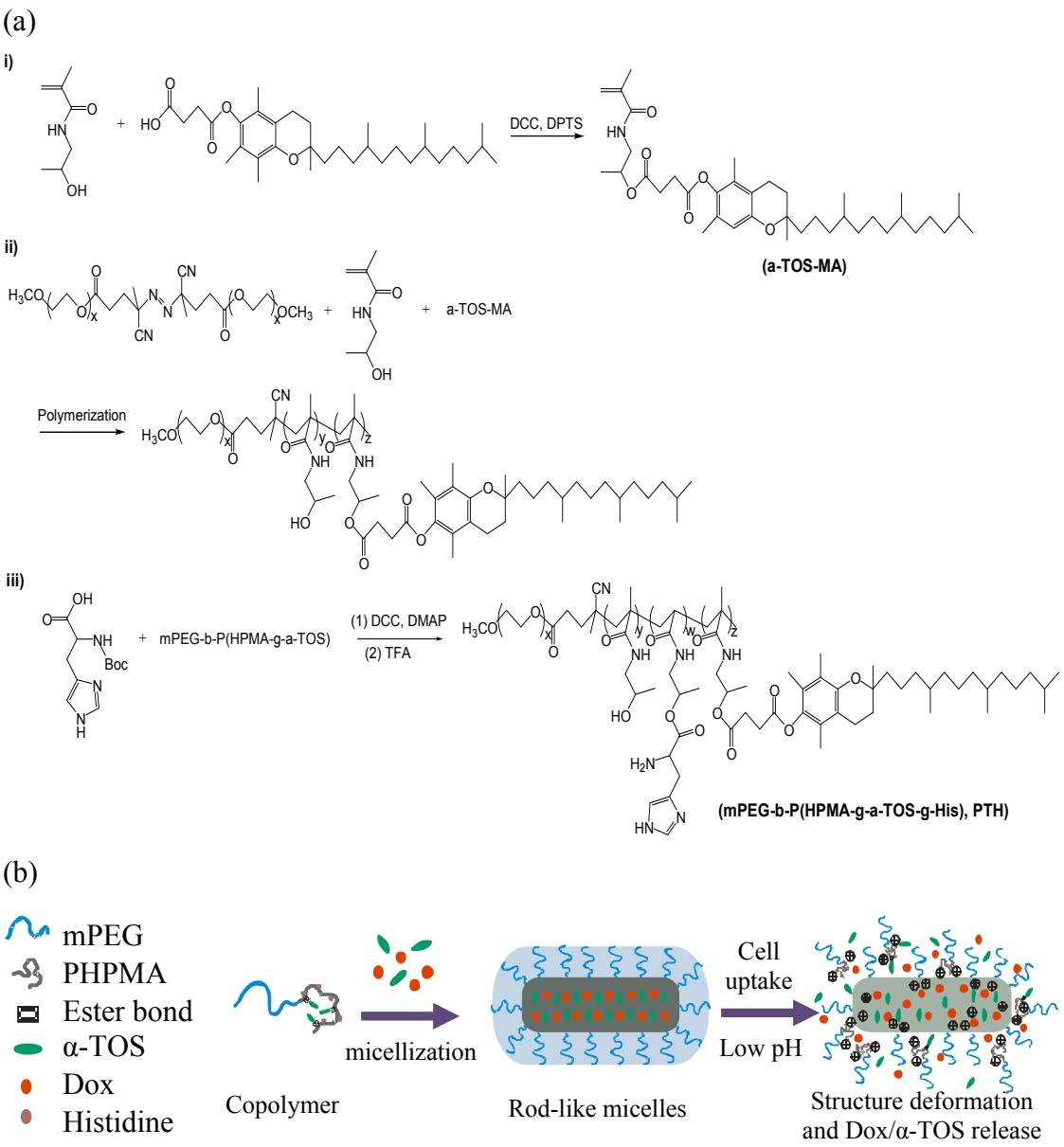
Tilahun Ayane Debele and Kuan-Yi Lee have equal contribution.



Scheme S1. A) Schematic illustration of the synthesis and working principle of PTH copolymers. B) Preparation of drug loaded rod like micelle and intracellular drug release at low pH environments.

The mPEG-b-P(HPMA-*g*-α-TOS-*g*-His) was characterized by ^{1}H-NMR (DMSO-*d*6) (**Fig. S1**) and FT-IR (KBr) (**Fig. S2**). ^{1}H-NMR (DMSO-d6): δ0.8 (a, CH3 from α-TOS);δ1.9 broad (b, CH2 from chromanol ring);δ1.9-2.1 (d+e+f, CH3 from chromanol ring);δ2.6 (c, CH2 from chromanol ring);δ2.7 (g, CH2 from α-TOS);δ2.7-3.2 (h+j+q, CH2 from α-TOS, HPMA and histidine);δ3.4-3.6 (n+n', CH2CH2 from mPEG);δ3.6-3.8 (i, CH from HPMA);δ4.6-5.0 (m, OH from HPMA);δ7.2 (o, CH from imidazole ring);δ8.5 (p, CH from imidazole ring). FT-IR: 700 cm^{-1} (NH);1300 cm^{-1} (NH from aromatic amine);1600 cm^{-1} (NH);1700 cm^{-1} (NH from primary amine);1670-1820 cm^{-1} (C=O stretch);2850-3000 cm^{-1} (CH stretch);3300-3700 cm^{-1} (NH).

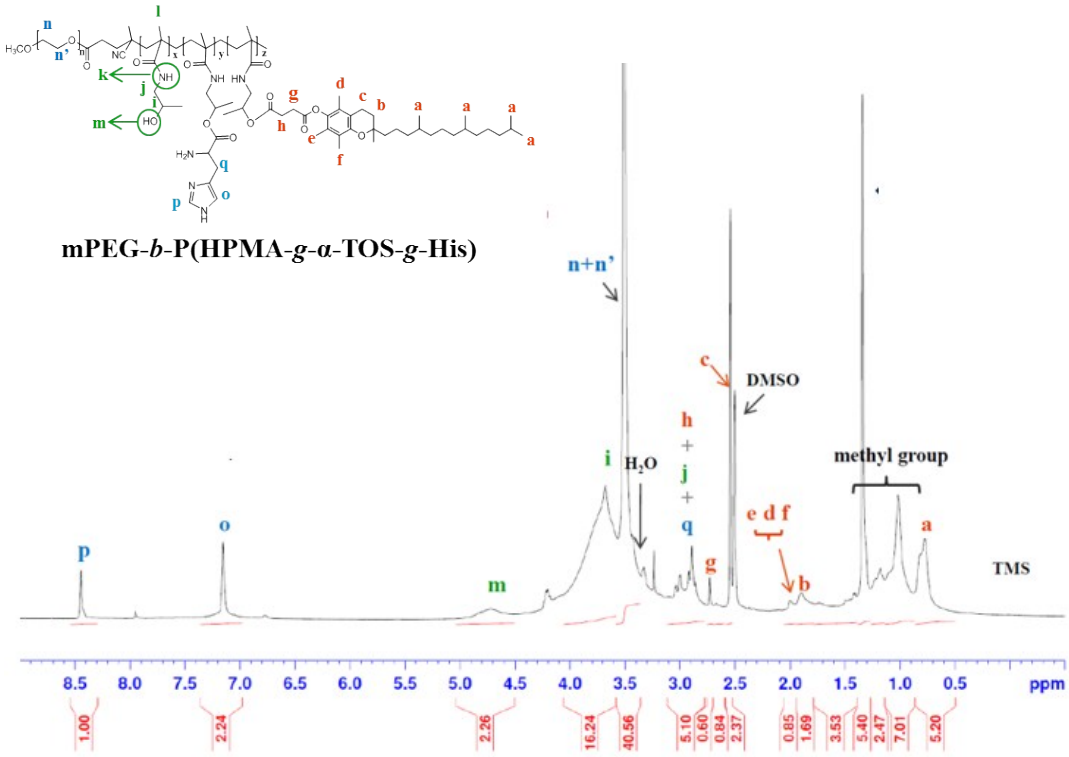


Fig. S1.^{1}H-NMR spectrum of mPEG-b-P(HPMA-*g*-α-TOS-*g*-His).

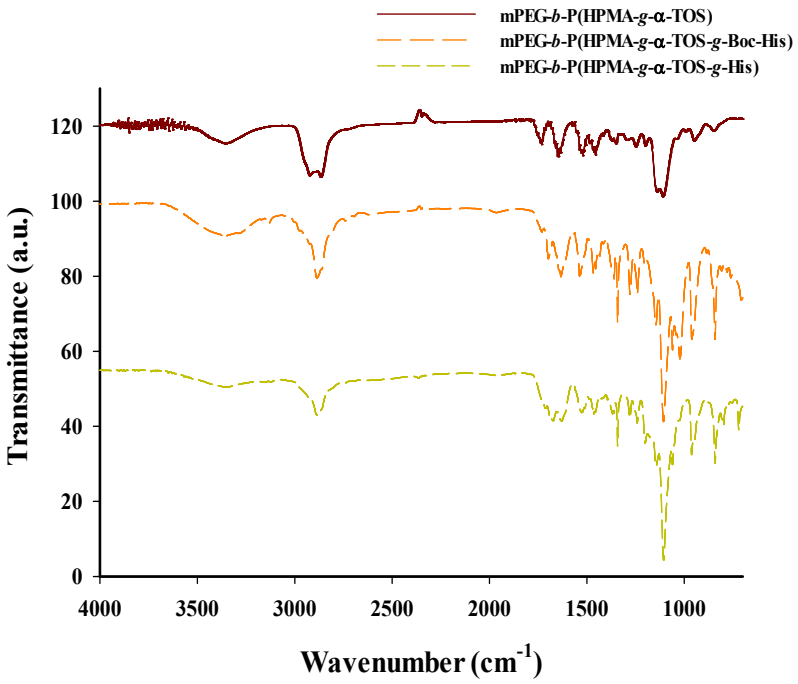


Fig. S2. FT-IR spectrum of mPEG-b-P(HPMA-*g*-α-TOS-*g*-His).

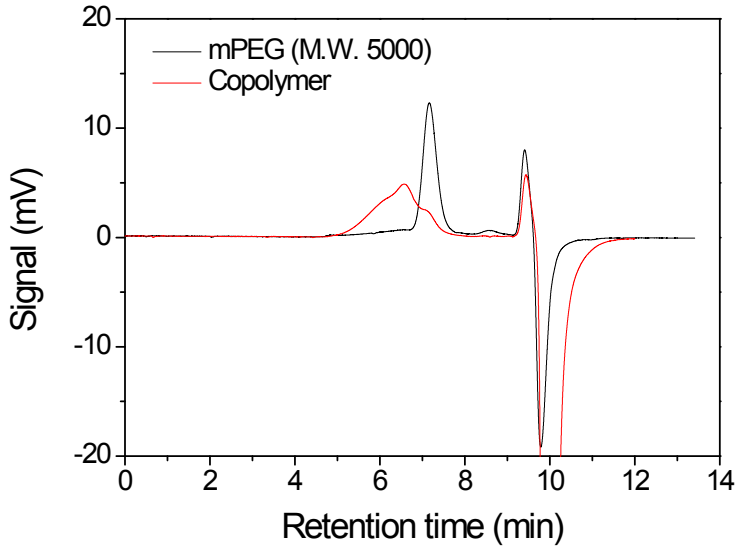


Fig. S3. The weight average molecular weight and polydispersity of copolymers detected by GPC system.

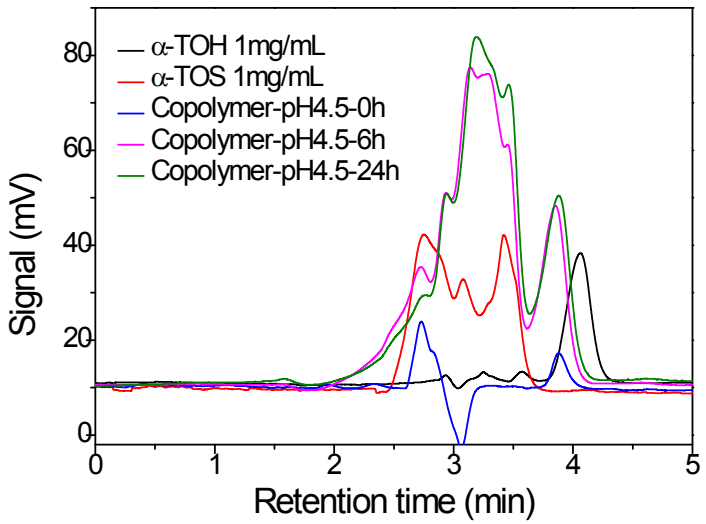


Fig. S4. Degradation of copolymers at pH 4.5 determined by HPLC.