

A pH-responsive natural cyclopeptide RA-V drug formulation for improved breast cancer therapy

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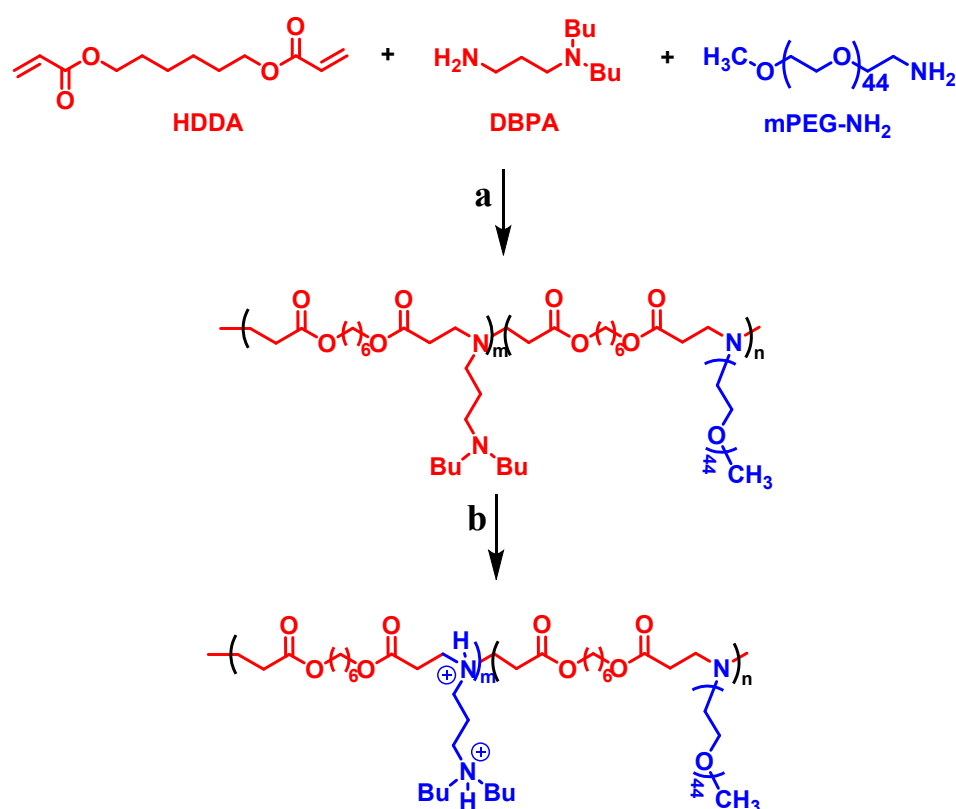
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Synthesis of copolymers

The mPEG-g-poly(amino esters) graft copolymers (PAE) were typically prepared by Michael addition and all synthetic procedures were carried out under an nitrogen atmosphere. HDDA (0.226 g, 1 mmol), DBPA (0.117 g, 0.9 mmol), mPEG-NH₂ 2K (0.200 g, 0.1 mmol) were all dissolved into 2 mL dimethyl sulfoxide (DMSO), and then bubbled over N₂ for 15 min under stirring. The mixture was allowed to react for 7 days at 50 °C, and then the final reaction solution was dialyzed against deionized water (MWCO: 3500 Da). The polymer solution was lyophilized to obtain a pale yellow solid. The M_n of PAE determined by GPC was 17400.



Scheme S1. Synthesis route and acid-triggered ionization of poly(β-amino ester)s copolymer. (a) Michael addition, DMSO, 50 °C, 7 d. (b) H₂O/H⁺.

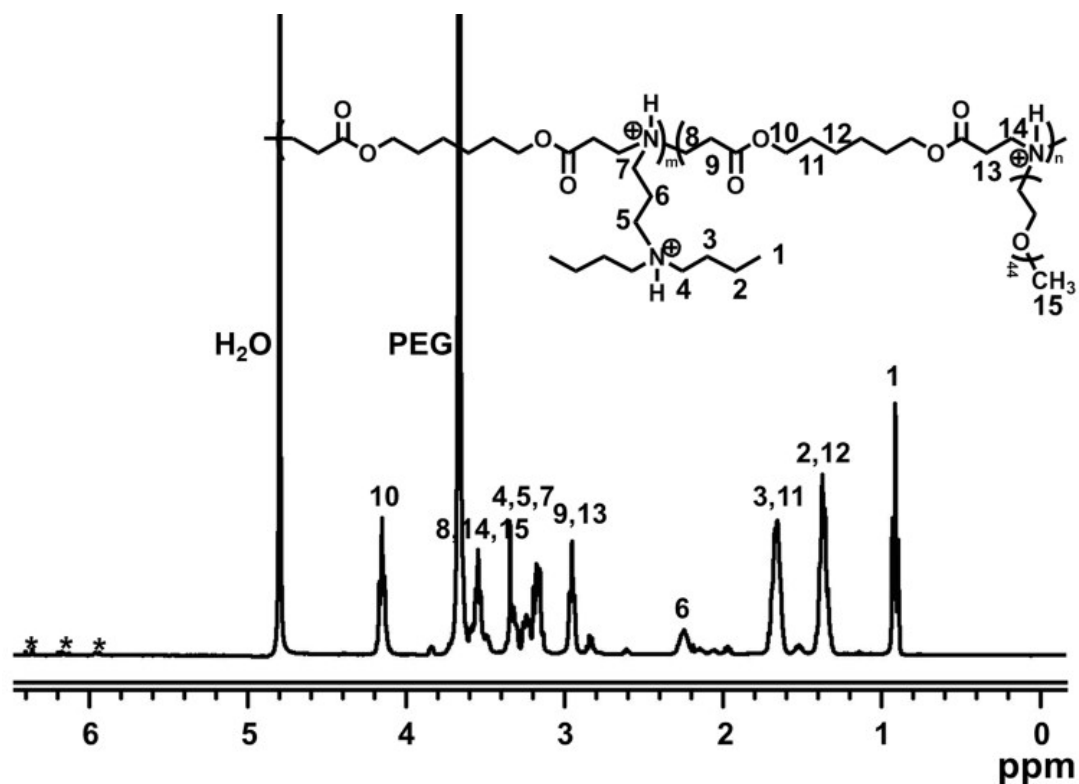
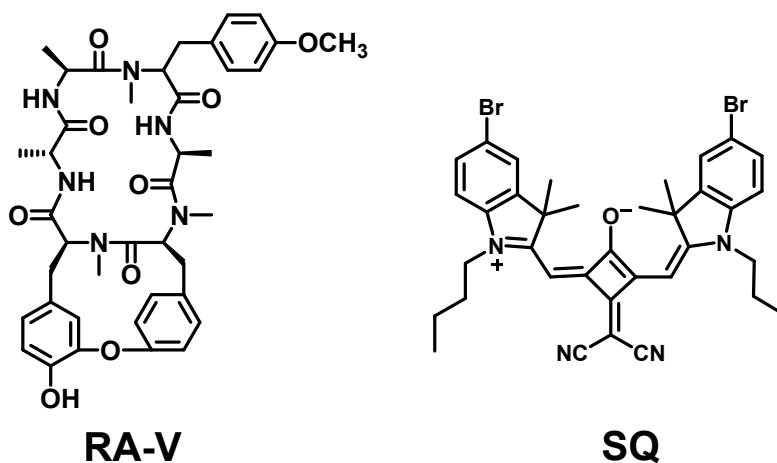


Fig. S1. ^1H NMR spectrum of poly(β -amino ester)s graft copolymers (**P1**) in D_2O containing 0.6 wt% DCl. Asterisks (*) represent the double bonds of acrylate end groups. The polymer units and the average molecular weight of P1 calculated by NMR are around 30 and 20500, respectively.



Scheme S2. The chemical structures of cyclopeptide **RA-V** and NIR probe squaraine (**SQ**).

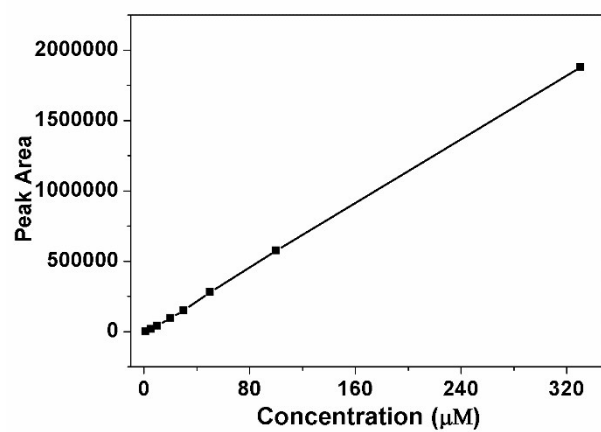


Fig. S2. The calibration curve of a series of solutions with various RA-V concentrations measured by HPLC. Mobile phase: acetonitrile/water (v/v=45/55).