Supporting Information

Simultaneous Enhancement of Cell Proliferation and Thermally Induced Harvest Efficiency Based on Temperature-Responsive Cationic Copolymer-Grafted Microcarriers

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S1. Dispersion property of copolymer-grafted beads

Two milligrams of copolymer-grafted beads (surface area: 2 cm^2) was added to the non-adhesive 12-well plate (HydroCell), and 1 mL of medium (Ham F12 containing 10% FBS) was added to each well. After incubation for 24 and 72 h at 37 ºC, the beads were imaged by a phase contrast microscope.

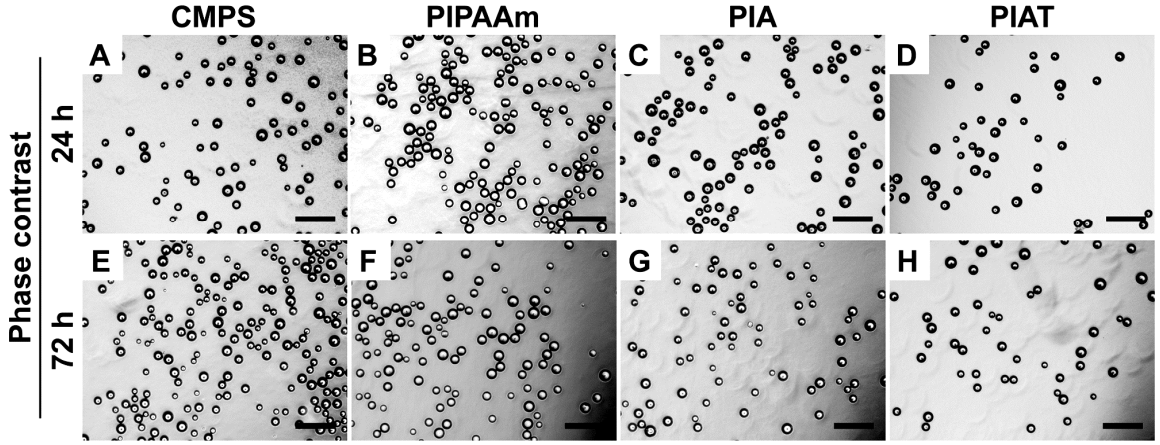

Figure S1. Phase contrast microscopic images of unmodified CMPS (A, E), PIPAAm homopolymer- (B, F), PIA bipolymer- (C, G), and PIAT terpolymer-grafted beads (D, H) after the incubation for 24 h (A-D) and 72 h (E-H) without cells (scale bars: 200 μm).

S2. Protein adsorption on the surface of temperature-responsive copolymer-grafted beads

Adsorption of fluorescein isothiocyanate-modified bovine serum albumin (FITC-BSA) (Sigma-Aldrich) on the surface of temperature-responsive copolymer-grafted beads was demonstrated at 37 ºC to evaluate the anionic protein adhesiveness of the surfaces. An FITC-BSA in phosphate buffered saline (PBS) (Sigma-Aldrich) (50 μg/mL) was incubated with beads (10 mg) in a non-adhesive 24-well plate (HydroCell) at 37 ºC for 2 h. The supernatant of incubated FITC-BSA solution was collected, and its fluorescence intensity was measured with an FP-6500 spectrofluorimeter (Jasco, Tokyo, Japan). The amount of adsorbed FITC-BSA on the surfaces was estimated from the reduction in fluorescence intensity of FITC-BSA in the supernatant. The FITC-BSA adsorbed on the surface of beads was observed using a fluorescent microscope (Eclipse TE2000-U) (Nikon) with the appropriate filter sets.

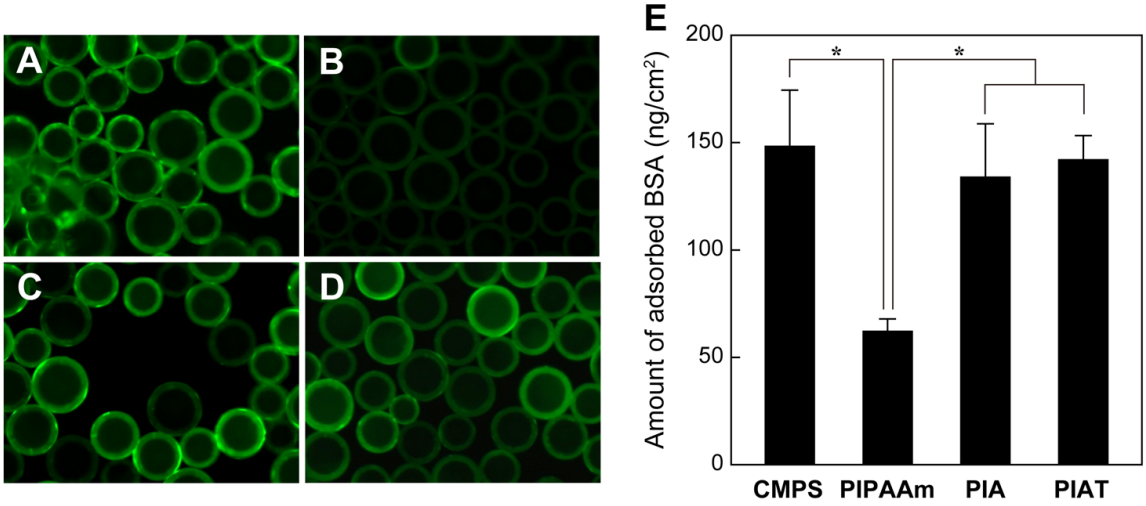

Figure S2. Fluorescence microscopic images of FITC-BSA (green) adsorbed on the surface of unmodified CMPS (A), PIPAAm homopolymer- (B), PIA bipolymer- (C), and PIAT terpolymer-grafted beads (D) after 2 h incubation at 37 °C. (E) Amount of adsorbed FITC-BSA on each bead surface after incubation with FITC-BSA (50 μg/mL) for 2 h at 37 °C. The data are expressed as the means ± S.D. of triplicate experiments (*$p < 0.05$).