Electronic supplementary information (ESI)

Fabrication of substrates for multiple cell patterning using a copolymer with a UV-degradable oligoethylene glycol side chain

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S1. Evaluation of protein adsorption on the surface modified with polymers

A solution of 1800 μL PBS was put on 36 mm × 26 mm glass substrates modified with the polymer for priming treatment and was removed after 10 min. Next, 1800 μL BSA solution was put on the substrates and kept for 2 h at 25 °C. Also, 1800 μL PBS solution was cast on substrates to obtain a background reading at room temperature. After removing the solution, the substrates were rinsed ten times with PBS. Thereafter, BCA solution was cast on the substrates and incubated for 2 h at 37 °C. Finally, the absorbance of the BCA solution at 570 nm was measured by a microplate reader (Multiskan JX, Thermo Fisher Scientific Inc., MA). The amount of BSA adsorption on the substrates was determined by a calibration curve calculated from solutions of known concentration.

Table S1. X-ray photoelectron spectroscopy results for glass substrates modified with various copolymers.

Copolymer	Atom (%)			
	C	N	O	Si
85H	12.9 ± 0.6	1.8 ± 0.16	59.8 ± 1.1	25.5 ± 0.3
85H UV	8.1 ± 1.2	1.9 ± 0.20	60.1 ± 0.91	29.9 ± 0.6
90H	15.6 ± 0.7	1.7 ± 0.11	59.6 ± 0.63	23.1 ± 0.7
90H UV	9.9 ± 1.3	1.7 ± 0.05	60.9 ± 1.3	27.5 ± 0.6
95H	15.9 ± 3.9	1.6 ± 0.84	57.9 ± 3.4	24.6 ± 1.1
95H UV	11.3 ± 5.5	1.3 ± 0.77	58.5 ± 5.0	28.9 ± 1.0
85L	14.4 ± 1.8	1.4 ± 0.42	58.8 ± 1.3	25.4 ± 0.6
85L UV	11.9 ± 1.6	1.6 ± 0.38	59.1 ± 1.2	27.4 ± 0.3
90L	13.9 ± 2.3	1.4 ± 0.33	59.2 ± 2.8	25.5 ± 1.4
90L UV	10.8 ± 3.8	1.2 ± 0.42	61.7 ± 2.9	26.3 ± 3.8
95L	14.1 ± 5.8	1.3 ± 0.68	59.2 ± 4.6	25.4 ± 4.2
95L UV	11.5 ± 7.4	1.4 ± 0.81	60.3 ± 6.3	26.8 ± 0.9

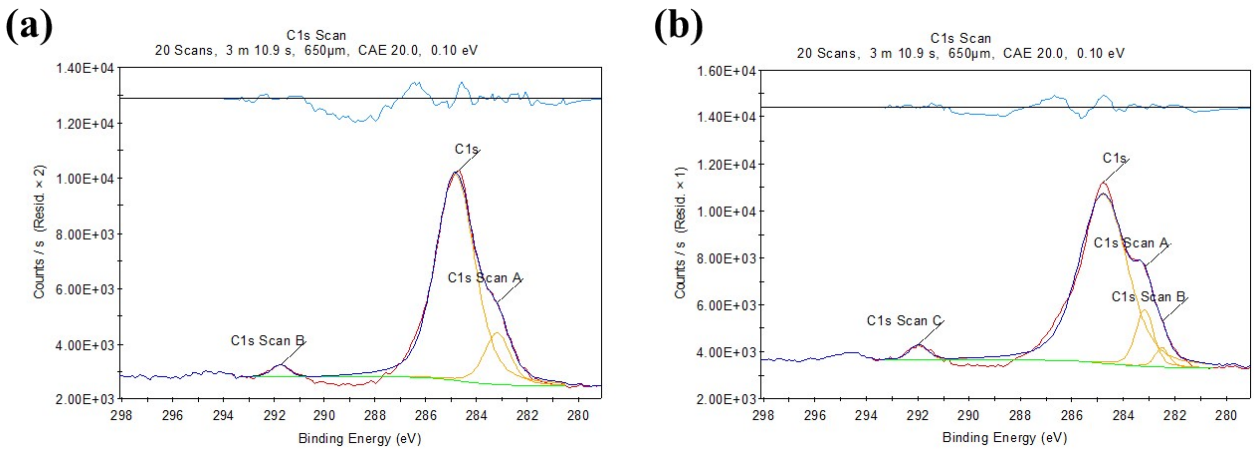

Figure S1. XPS spectra of substrates modified with the copolymer: (a) before; and (b) after UV irradiation.

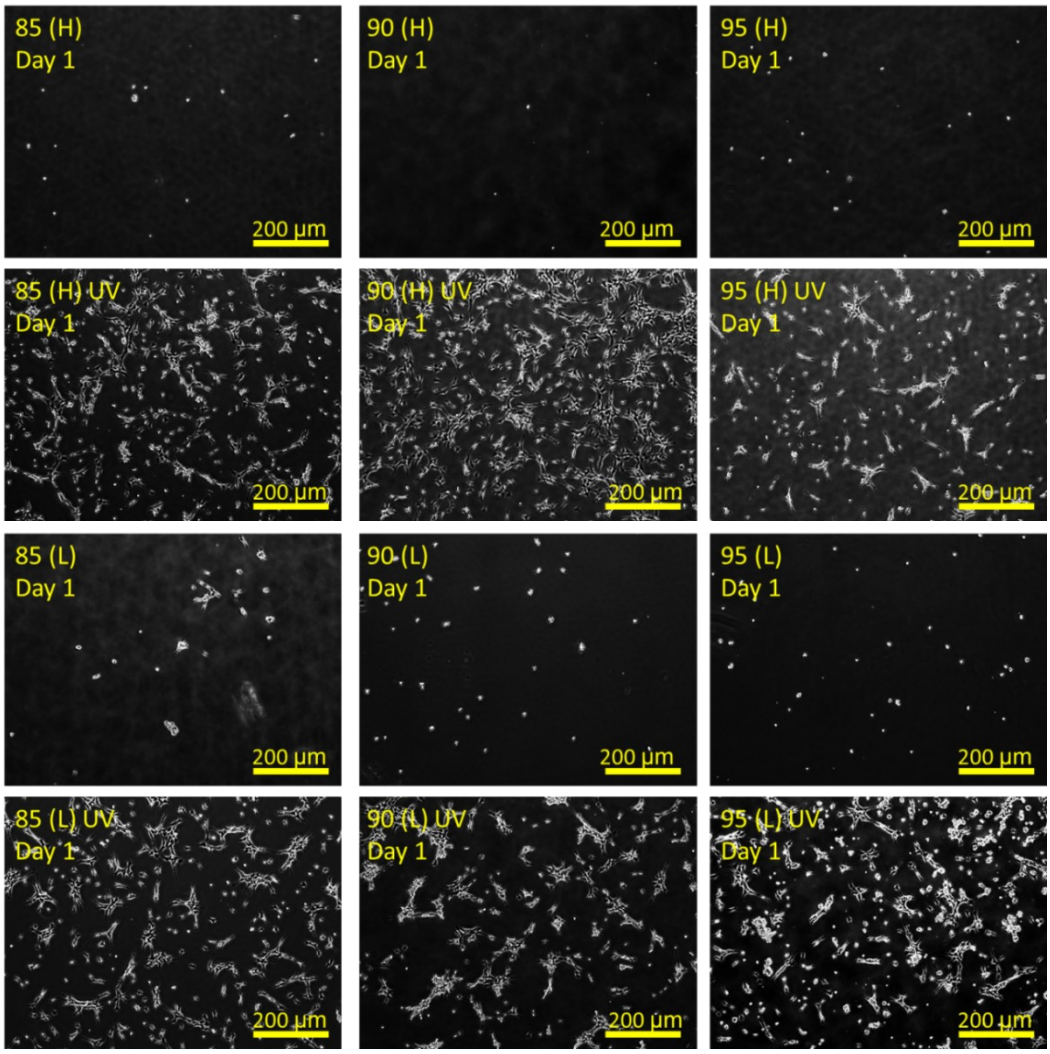

Figure S2. The phase contrast images (scale bar: 200 μm) of adhered cells cultured for a day on substrates modified with the copolymers before and after UV irradiation.

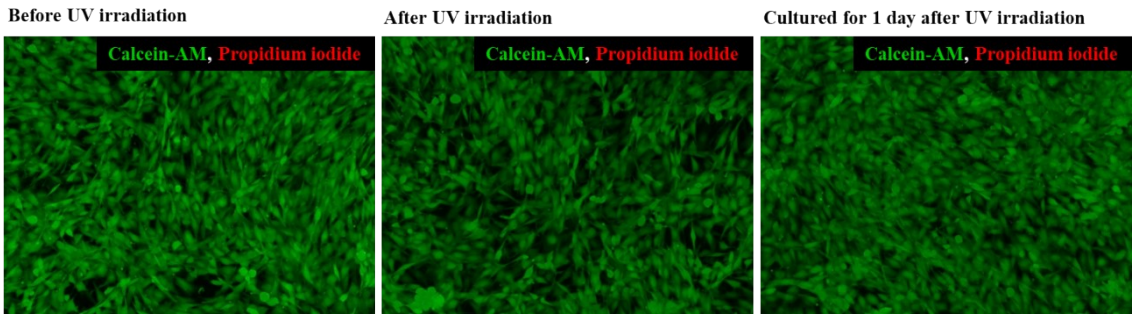

Figure S3. Fluorescent photographs of NIH3T3 cells stained with calcein-AM and propidium iodide before (left) and after (center) UV irradiation taken under a fluorescence microscope. Right fluorescent photograph shows calcein-AM and propidium iodide staining of the cells cultured for 1 day after UV irradiation.

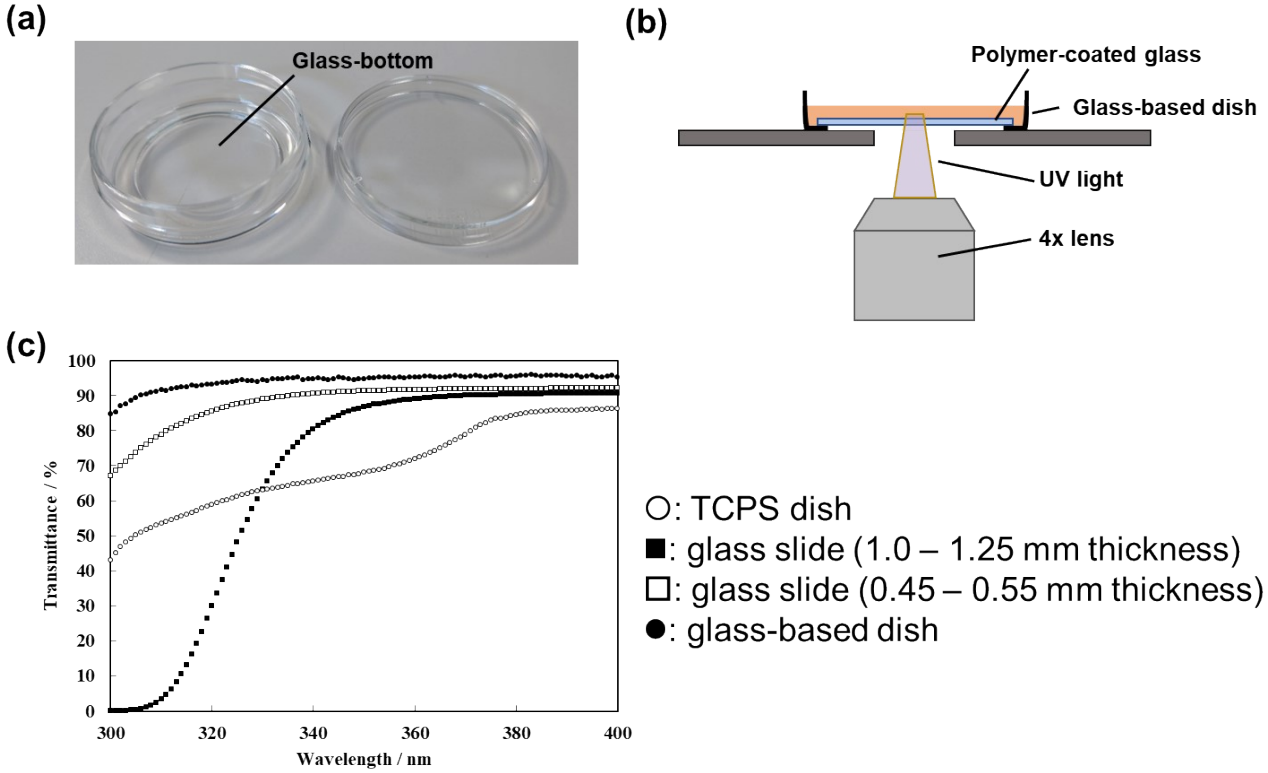

Figure S4. (a) Glass-based dish used in the cell-patterning experiment. The copolymer (solvent: ethanol) was added to a dish treated with O_2 plasma and coated on the glass area. (b) Illustration of UV irradiation using fluorescence microscope. (c) Transmission of 300–400 nm UV light through the TCPS dish, thick glass slide (1.0–1.25 mm), thin glass slide (0.45–0.55 mm), and glass-based dish (glass thickness: 0.15–0.18 mm).