

## Appendix A. Supplementary data

# Regulating Stemness of Mesenchymal Stem Cells by Tuning Micropattern Features

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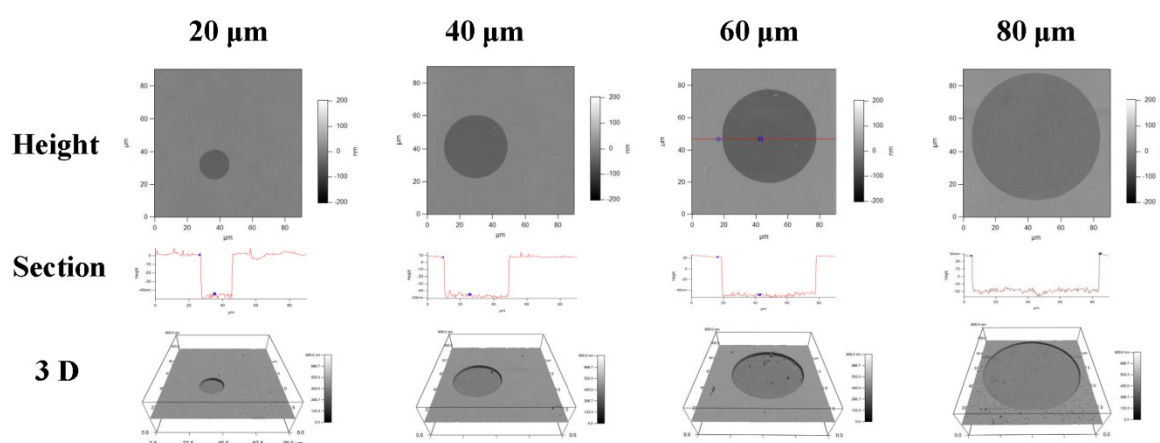
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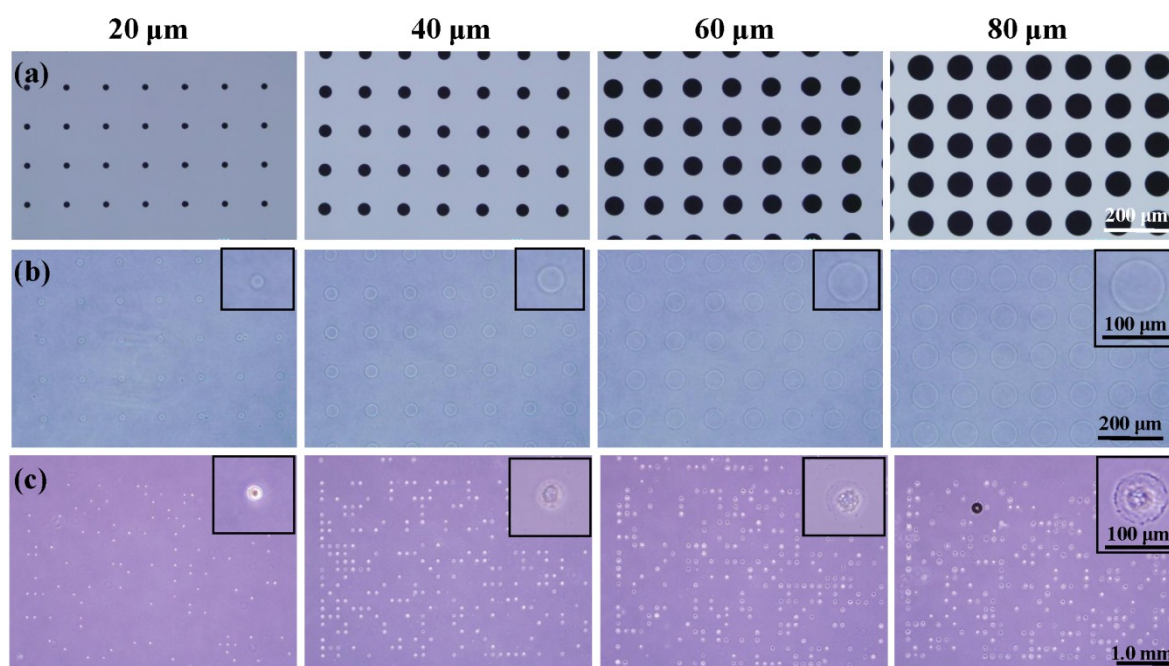
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**Supplementary table S1.** Designed and measured dimensions of the circular micropatterns with various spreading area. Data represents the mean  $\pm$  SD (n=3).

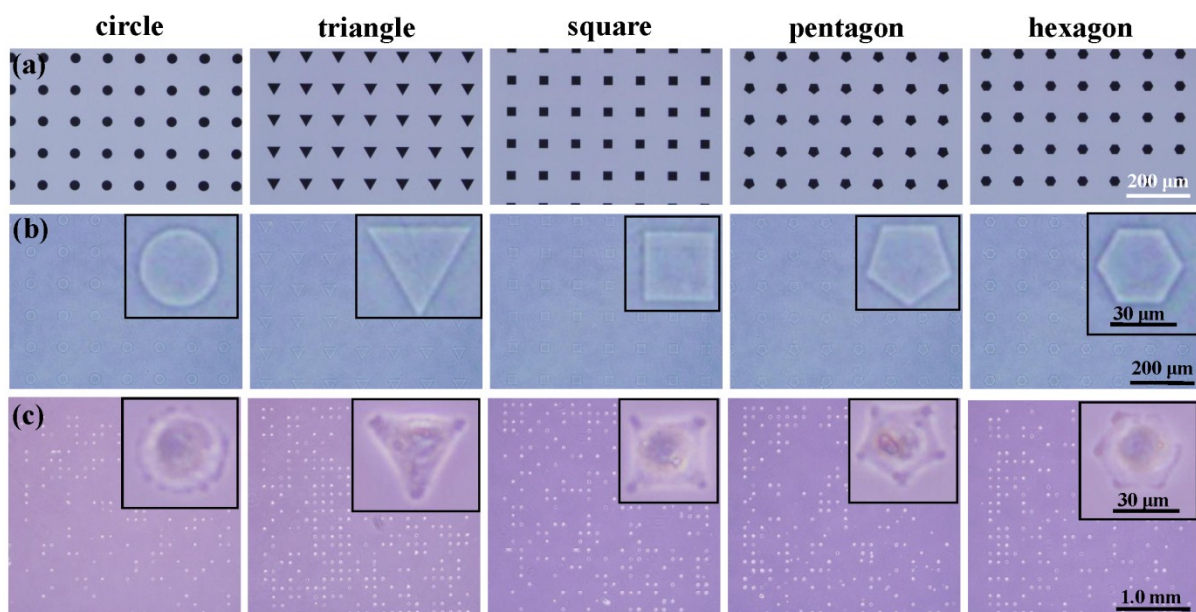
Designed diameter ( $\mu\text{m}$ )	Measured diameter ( $\mu\text{m}$ )	Measured thickness (nm)
20	$19.88 \pm 0.73$	$59.66 \pm 0.48$
40	$40.44 \pm 0.20$	$62.92 \pm 0.81$
60	$60.26 \pm 0.39$	$65.40 \pm 0.67$
80	$80.04 \pm 0.24$	$67.98 \pm 0.82$



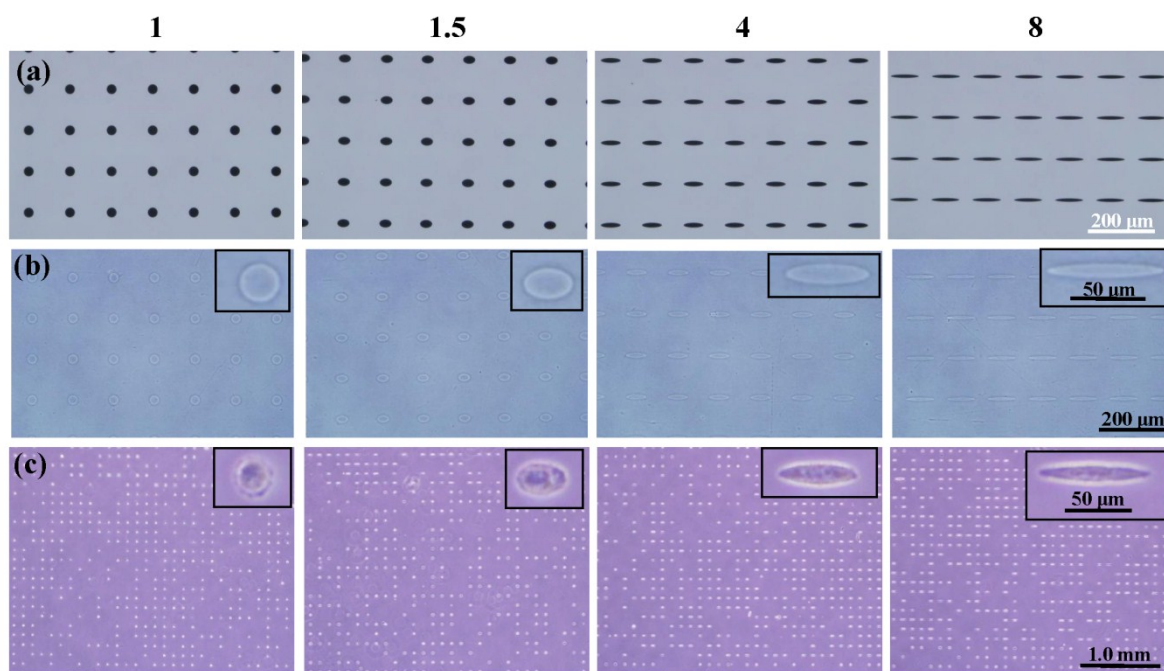
**Supplementary Fig. S1.** Height, section and 3D images of the circular micropatterns with a diameter of 20, 40, 60 and 80  $\mu\text{m}$  measured by AFM in MilliQ water with a contact mode.



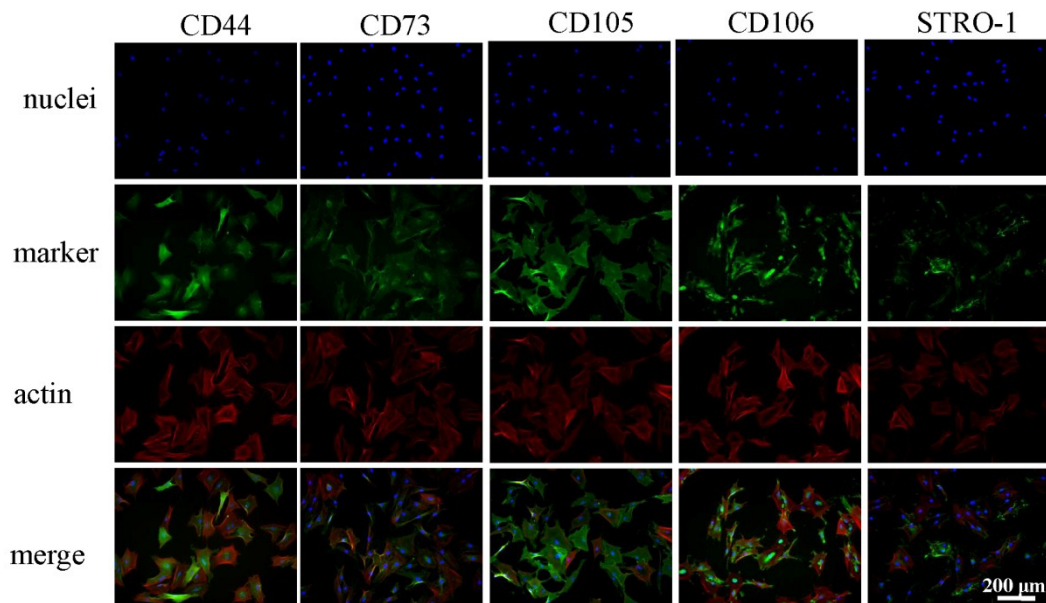
**Supplementary Fig. S2.** Phase-contrast micrographs of the photomasks (a) and micropatterns (b) with various spreading areas. The designed diameters of the circular micropatterns were 20, 40, 60 and 80  $\mu\text{m}$ . The cells were restricted within the micropatterns and exhibited same morphology as the underlying micropatterns with high attachment efficiency (c).



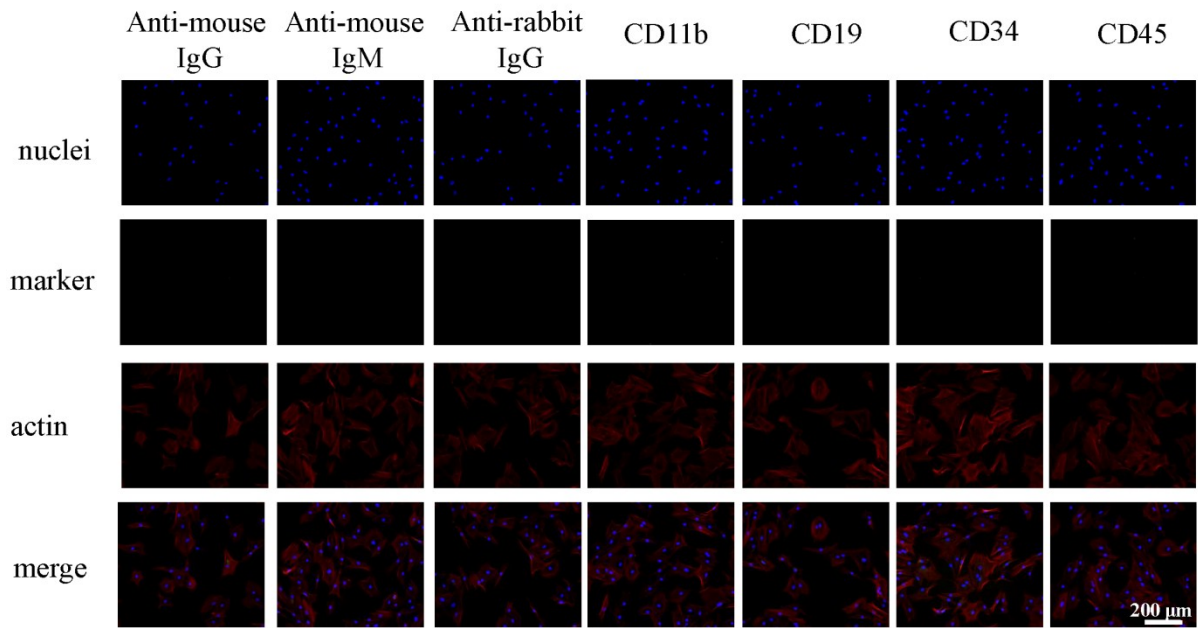
**Supplementary Fig. S3.** Phase-contrast micrographs of the photomasks (a) and micropatterns (b) with various geometries. Round, triangle, square, pentagon and hexagon with the same area of  $1134 \mu\text{m}^2$  were designed. Cells showed the same geometries as the micropatterns they attached (c).



**Supplementary Fig. S4.** Phase-contrast micrographs of the photomasks (a) and micropatterns (b) with the same area of  $706 \mu\text{m}^2$  of different aspect ratios of 1, 1.5, 4 and 8. Cells adhered following the micropatterns (c).



**Supplementary Fig. S5.** Immunofluorescence staining of the positive markers on the purified MSCs after 6 h culture in culture dish. Nuclei (blue), surface markers (green) and F-actin (red) were stained. The purified MSCs were positive for CD44, CD73, CD105, CD106 and STRO-1.



**Supplementary Fig. S6.** Immunofluorescence staining of the negative markers on the purified MSCs after 6 h culture in culture dish. Staining with only second antibodies without primary antibodies were conducted as controls. Nuclei (blue), surface markers (green) and F-actin (red) were stained. The purified MSCs were negative for CD11b, CD19, CD34 and CD45 in accordance with the criteria.