

Supporting Information

SI Figure Legends

Figure S1

Clone SP3 on the microgrooved substrate. (A) Actin cytoskeleton (Phalloidin, green), and nuclear (DAPI, blue) staining of SP3 cells cultured for 3 days on flat and patterned substrates (scale bar: 200 μ m). (B) Scatter plot showing the nuclear elongation (aspect ratio of nuclei elliptical fitting) as a function of each cell's alignment along the grooves (angle between long axis and grooves). Cells on patterned substrates align within 10° parallel to the grooves and are significantly more elongated: 0.52 ± 0.14 on the microgrooved surface versus 0.72 ± 0.13 ($p < 10^{-5}$). (C) EdU incorporation analysis showing decreased clone SP3 proliferation on grooves (* $p < 0.05$ for Student's t-test, error bars indicate standard deviation, $n=3$).

Figure S2

Nuclear volume of clone SP16 as evaluated through confocal imaging (20 slices per nucleus) is significantly reduced on the grooved substrates. (***) $p < 0.001$; Student's t-test, $n=3$, error bars indicate standard deviation).

Figure S3

Correlation analysis between nuclear elongation and histone 3 acetylation levels. (A) Scatter plots showing nuclear elongation (y-axis) along histone 3 acetylation (x-axis) and a linear fit (mean-square regression). (B) Average slopes and correlation coefficients between flat and patterned substrates (** $p < 0.01$; Student's t-test, $n=3$, error bars indicate standard deviation). (C) Density plot representing the distribution of histone 3 acetylation levels showing a clear shift toward the right on patterned surfaces.

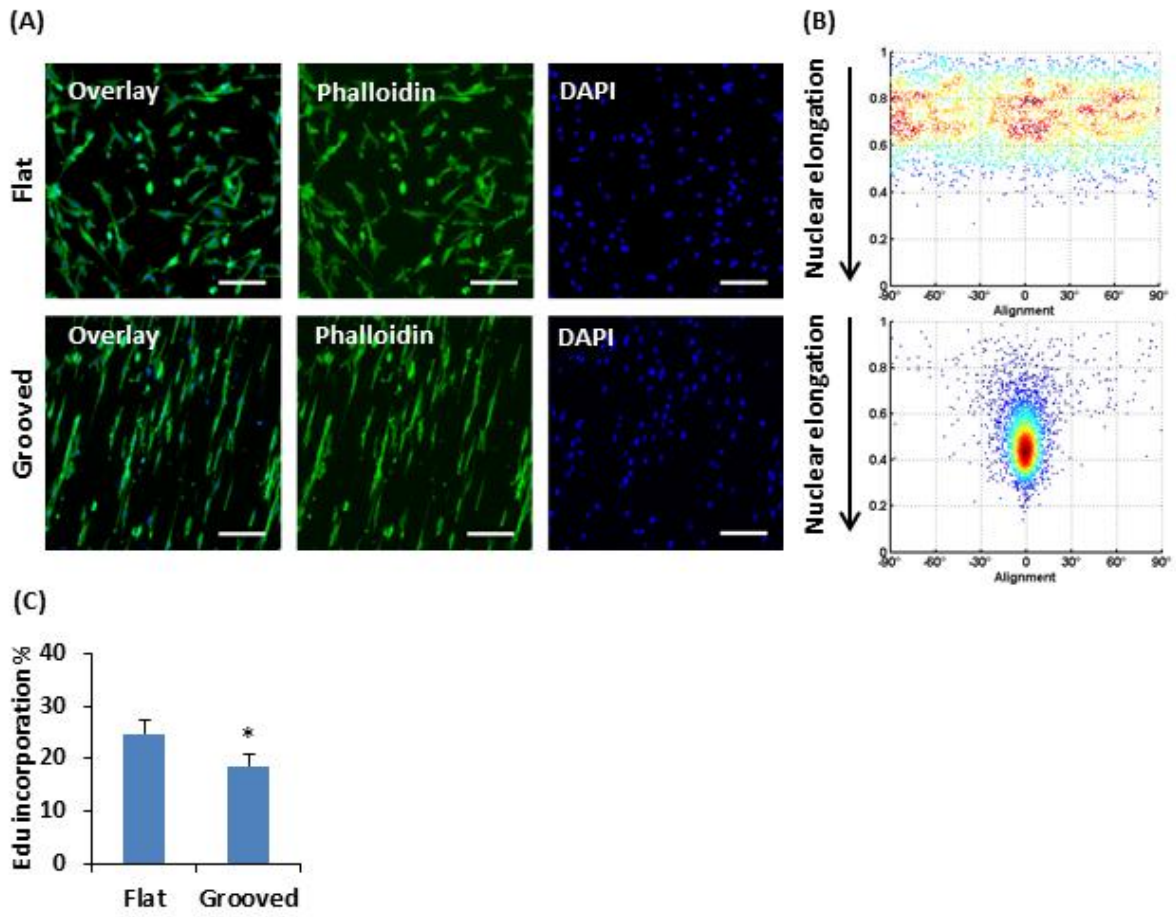


Figure S1

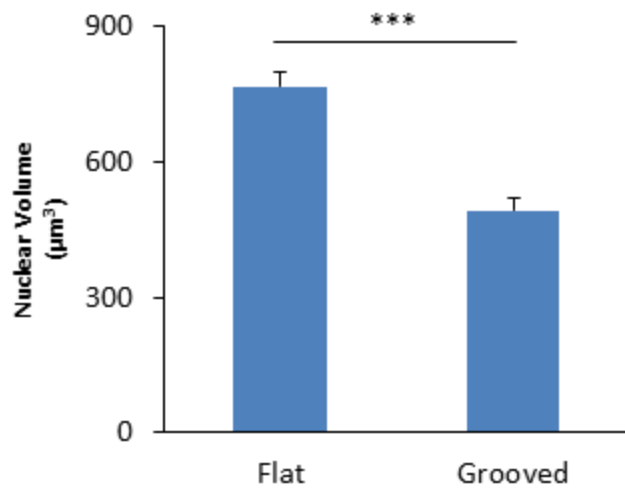


Figure S2

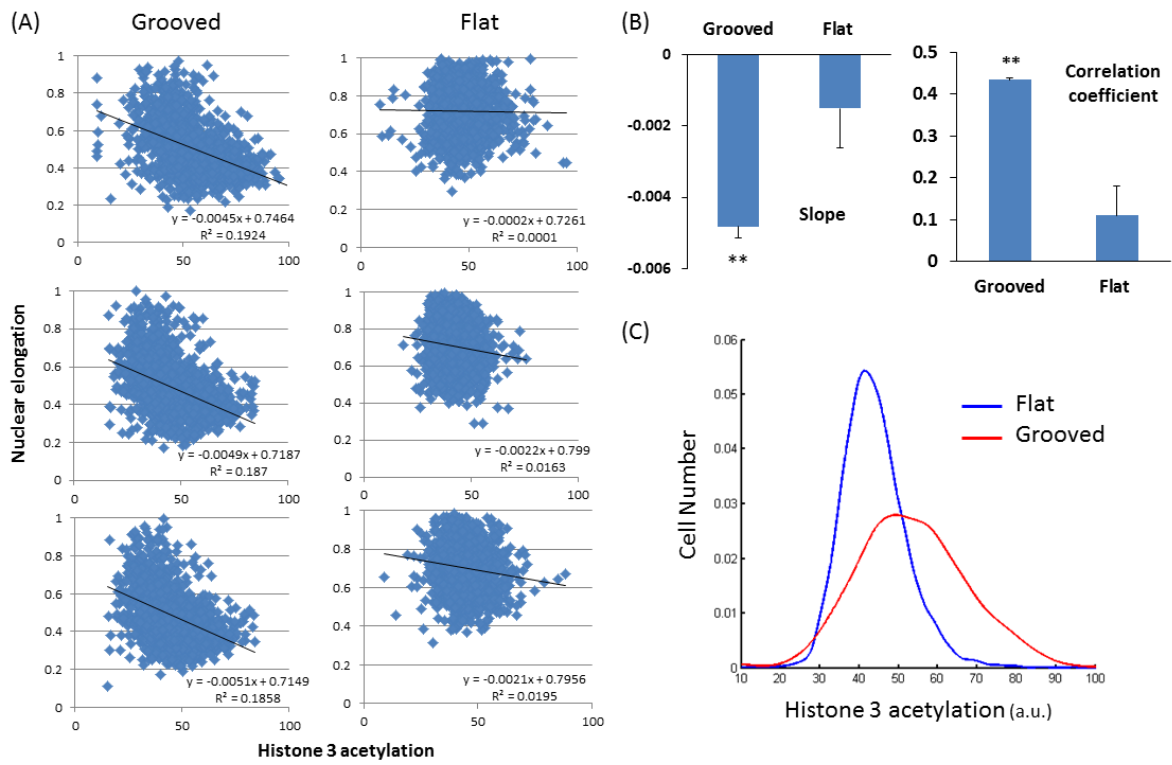


Figure S3