

Supporting Information

On / off switchable physical stimuli regulate the future direction of adherent cells

Indong Jun, Hyung-Seop Han, Jae Won Lee, Kyungwoo Lee, Yu-Chan Kim, Myoung-Ryul Ok, Hyun-Kwang Seok, Young Jun Kim, In-Seok Song, Heungsoo Shin, James R Edwards, Kuen Yong Lee and Hojeong Jeon^{b}*

Supplementary Figures:

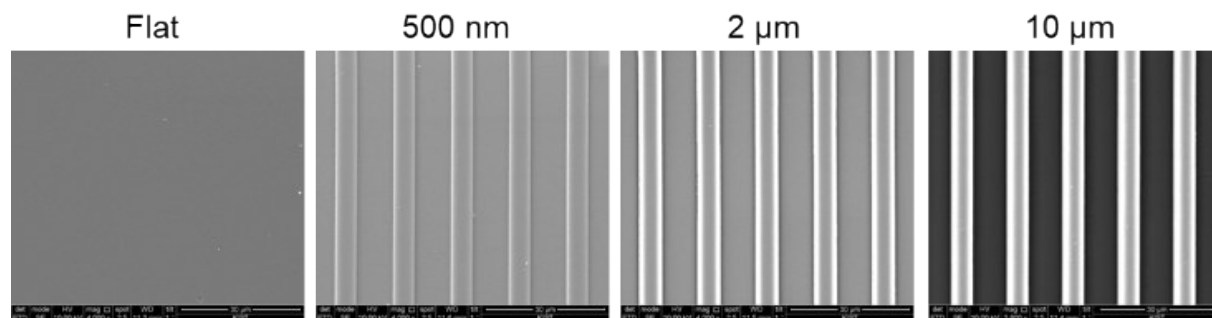


Figure S1. SEM images of micro-patterned PDMS masters and their associated groove depths (500 nm, 2 μm , and 10 μm).

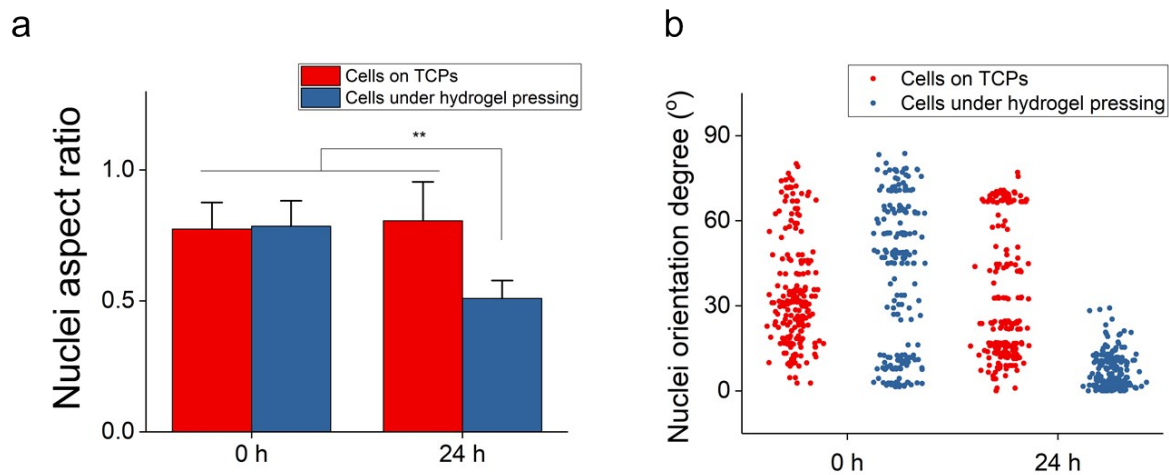


Figure S2. a) Quantification of the nuclei aspect ratio and b) distribution of the nuclei-orientation angle for C2C12 myoblasts cultured on TCP during on/off switchable stimuli treatment with cell-interactive alginate hydrogels for 24 h. ** $p < 0.05$.

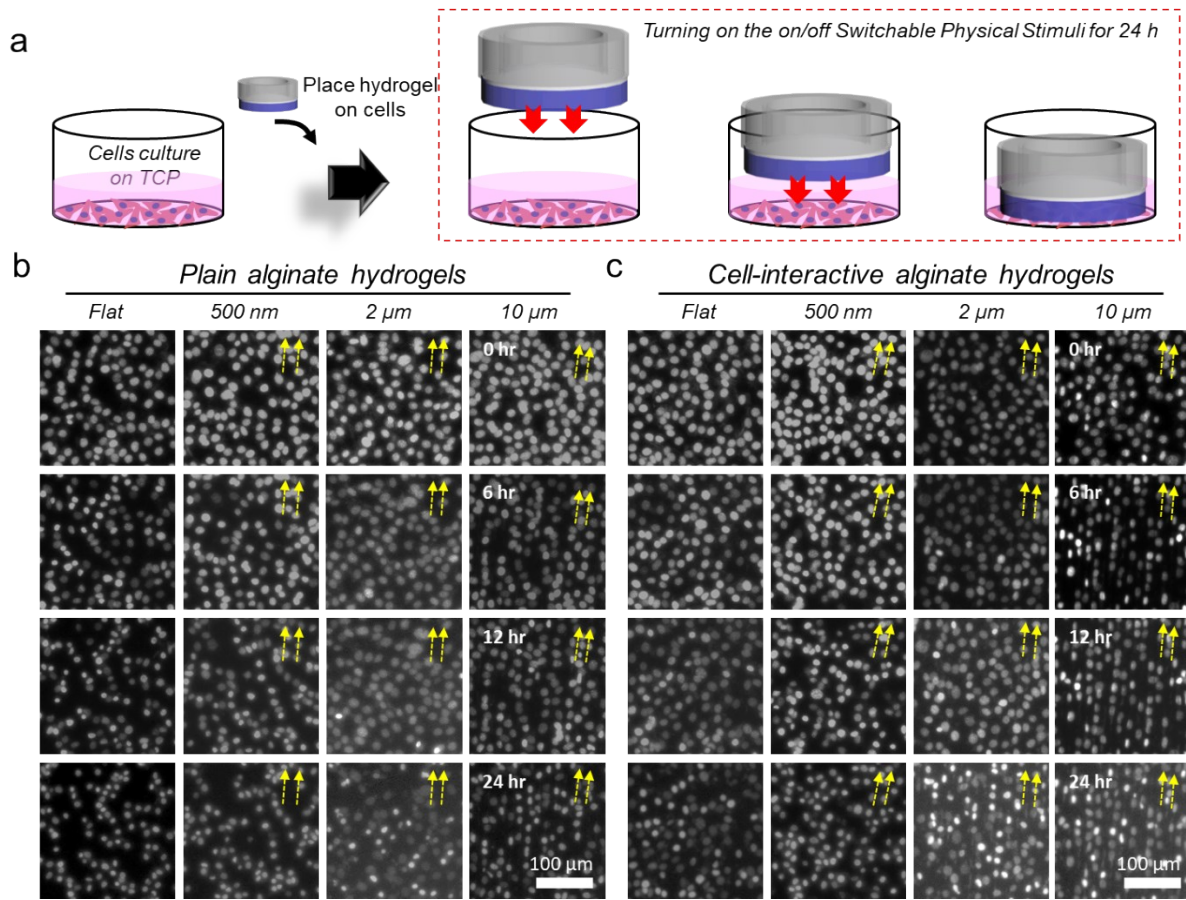


Figure S3. a) Schematic illustration of the on/off switchable stimuli technique, the relevance of the cell and nuclei shape, depends on the duration of the alginate hydrogels in contact with the adherent cell on TCP. Time-lapse microscopy of nuclei during on/off switchable stimuli treatment with b) plain alginate hydrogels and c) Cell-interactive alginate hydrogels for 24 h. The direction of the underlying patterns of hydrogels is indicated by yellow dashed arrows.

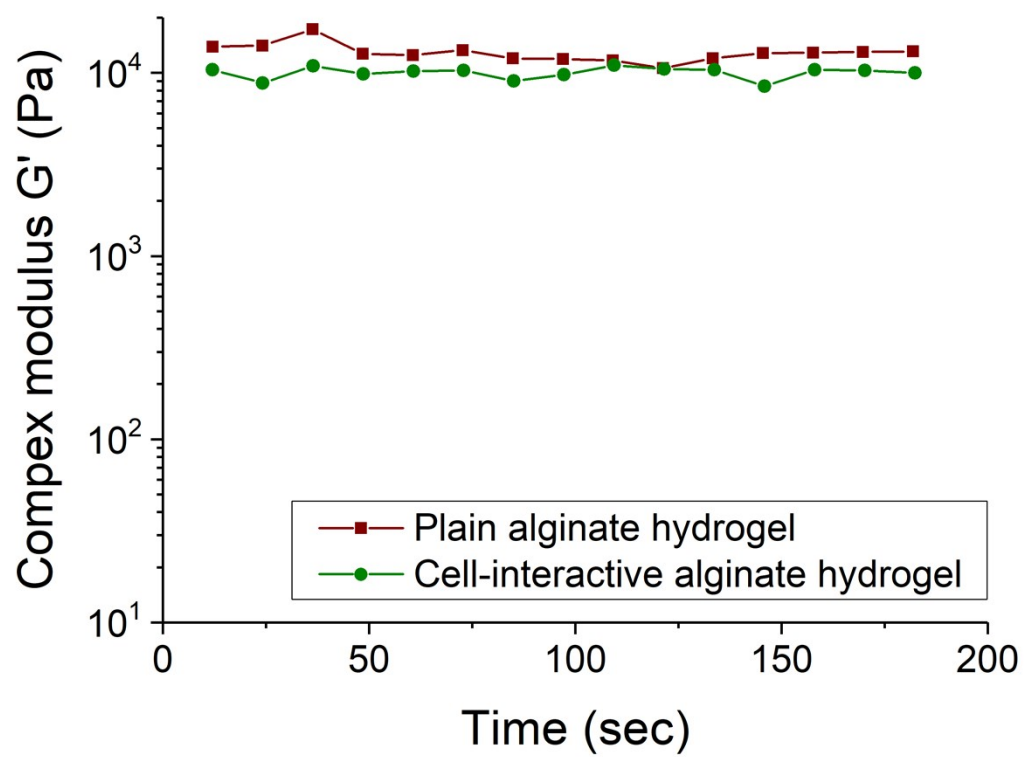


Figure S4. Complex modulus of alginate hydrogels using rheological measurements

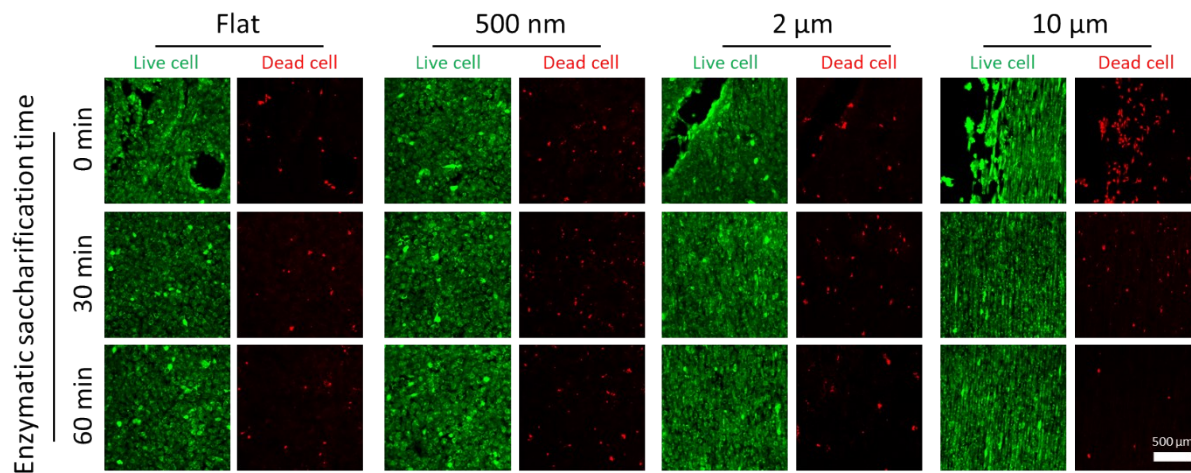


Figure S5. The survival rate of on/off switchable stimuli-mediated cells on TCP according to the removal treatment time of the plain alginate hydrogels used in the on/off switchable stimuli technique Live/Dead staining of on/off switchable stimuli-mediated adherent cells according to the different enzymatic saccharification time (0 – 60 min). The direction of the underlying patterns of hydrogels is indicated by yellow dashed arrows.

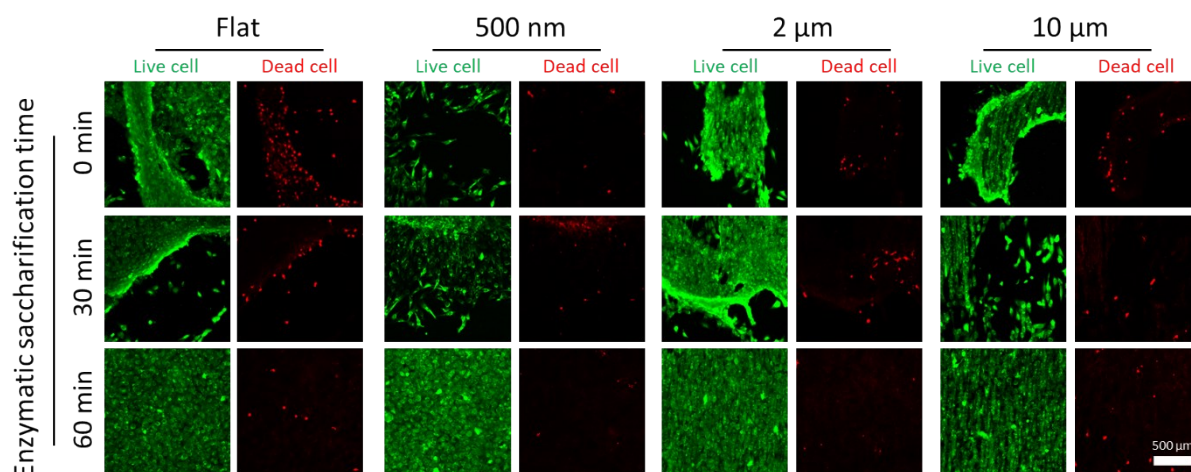


Figure S6. The survival rate of on/off switchable stimuli-mediated cells on TCP according to the removal treatment time of the cell-interactive alginate hydrogels used in the on/off switchable stimuli technique Live/Dead staining of on/off switchable stimuli-mediated adherent cells according to the different enzymatic saccharification time (0 – 60 min). The direction of the underlying patterns of hydrogels is indicated by yellow dashed arrows.

Supplementary movie

Movie S1 Real-time observation of cells cultured on TCP.

Movie S2 Real-time observation of cells cultured on TCP during on/off switchable stimuli treatment with cell-interactive alginate hydrogels for 24 h

Movie S3 Real-time observation of the nuclei of cells cultured on TCP.

Movie S4 Real-time observation of the nuclei of cells cultured on TCP during on/off switchable stimuli treatment with cell-interactive alginate hydrogels for 24 h