

SUPPLEMENTARY INFORMATIONS

cells on glass slide

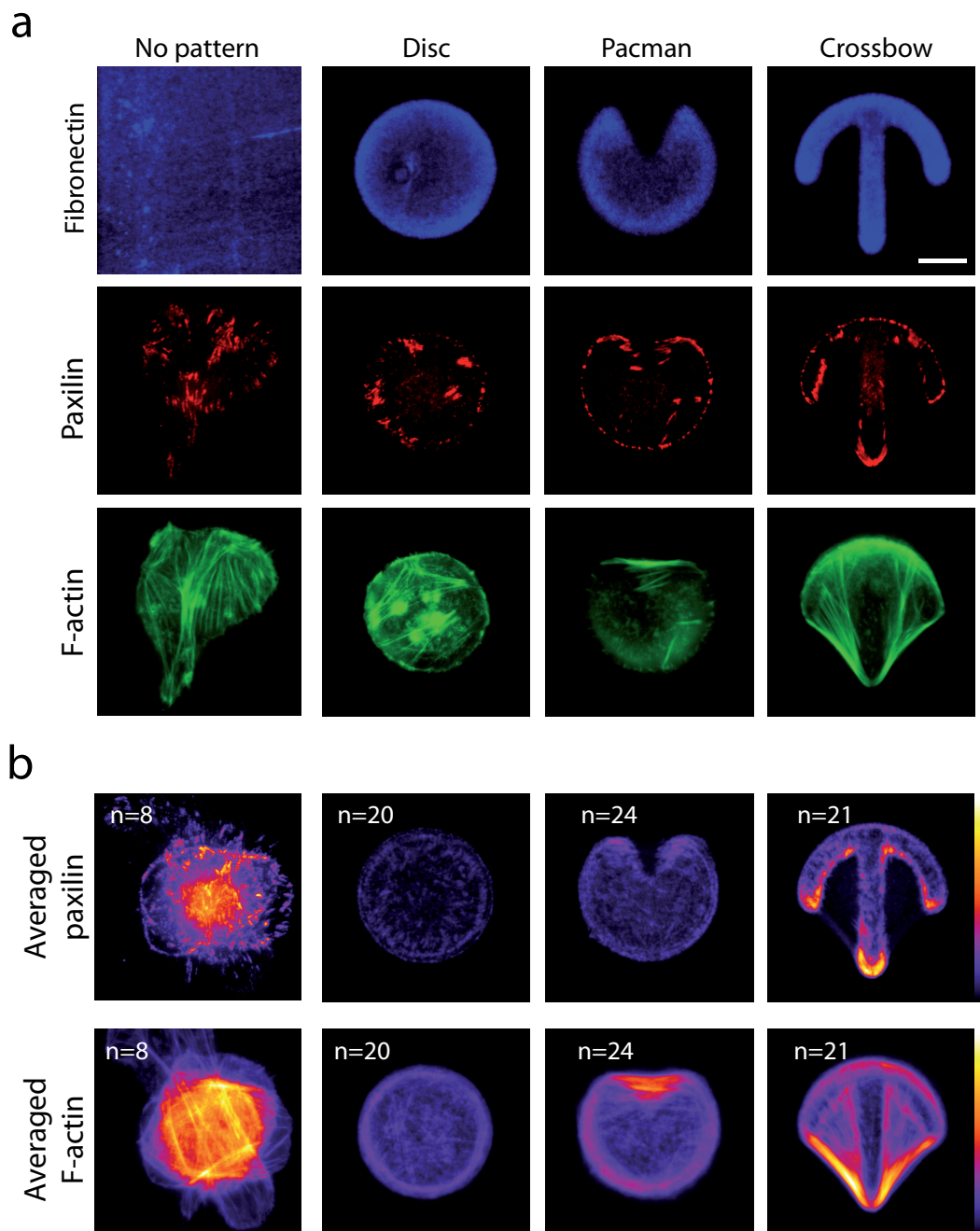


Figure S1 – Micropattern geometry orient cell actin architecture.

(a) Individual MCF10A cells plated either on non-patterned, fibronectin coated, glass slide, or on disc, or pacman or crossbow shaped fibronectin micropatterns (blue). Cells were fixed and immuno-stained for paxillin (red)

to reveal focal adhesions and phalloidin to reveal F-actin filaments (green).
Scale bar is 10 μm .

(b) Paxillin and F-actin stainings were overlaid and averaged in each adhesive condition. Averaged images were color-coded with the FIRE LUT to highlight the more intense and reproducible stainings. Crossbow shapes promote the formation of reproducible stress fibers above the two non-adhesive regions. Stress fibers anchoring on focal adhesions were concentrated in the bottom of the crossbow vertical bar.

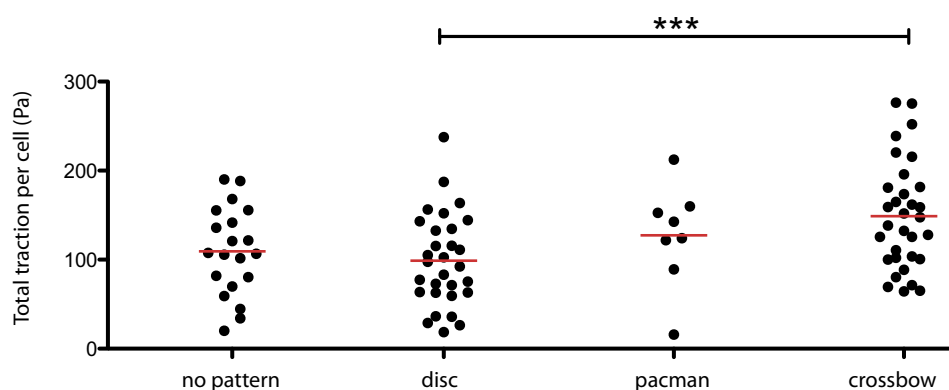


Figure S2 – Crossbow micropatterns stimulate cell contraction.

Classical traction force microscopy was used to quantify the total traction force exerted by each cell. Cells appeared to exert higher traction on crossbow shaped micropatterns. Comparison between two sets of measures were performed using a Student T test: two tailed, 95% interval confidence: $\ast=P<0.05$ $\ast\ast=P<0.01$ $\ast\ast\ast=P<0.001$.

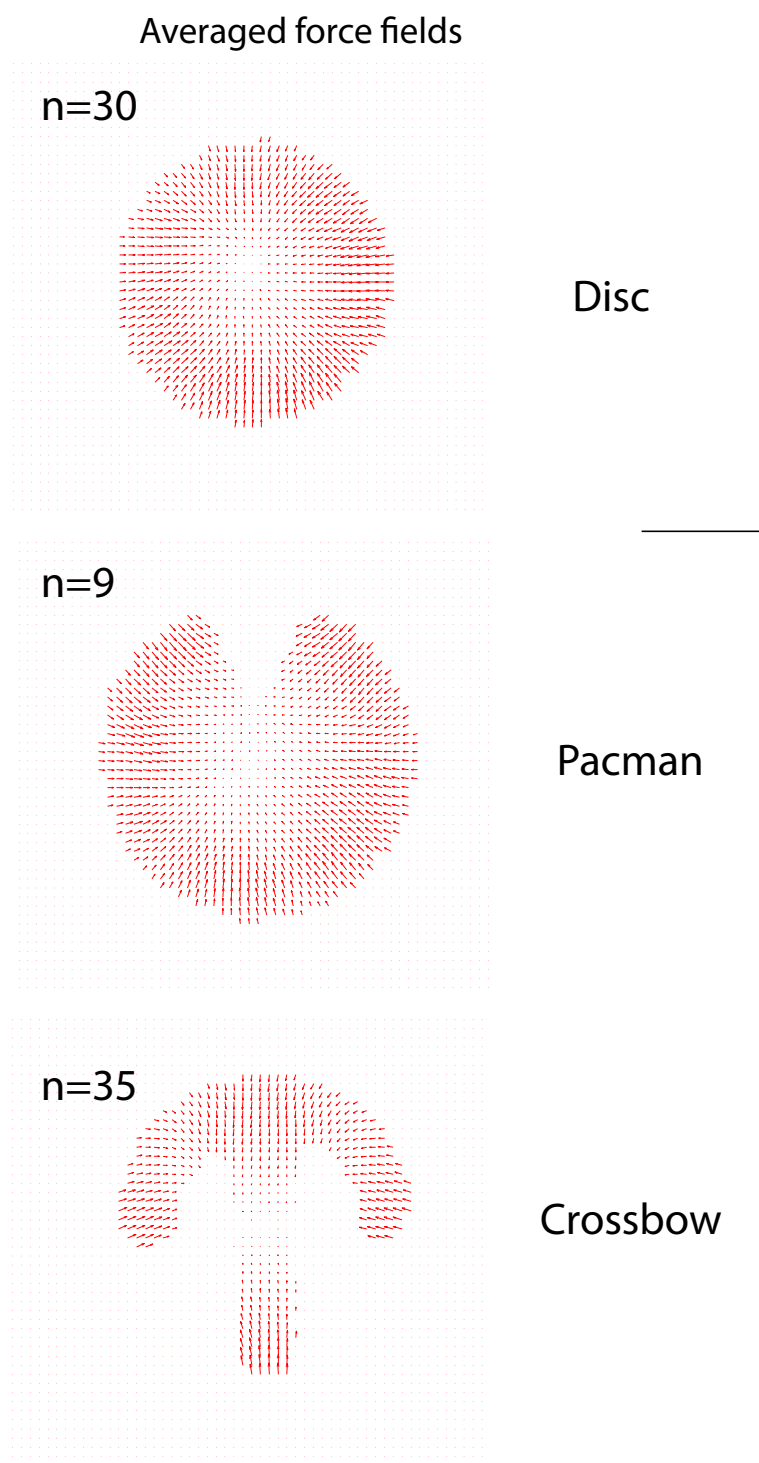


Figure S3 – Micropattern geometry orient cell traction forces.

Cells were plated on PA gels with disc, pacman or crossbow micropatterns. Classical traction force microscopy was used to reconstruct the traction vector field exerted by cells for each type of pattern. Traction fields were overlaid and averaged in each condition. Forces appeared randomly orientated in the absence of micropatterns. No preferential orientation appeared in cells plated on disc micropatterns. Forces on

crossbow shaped micropatterns were reproducibly oriented upward at the bottom of the micropattern vertical bar.

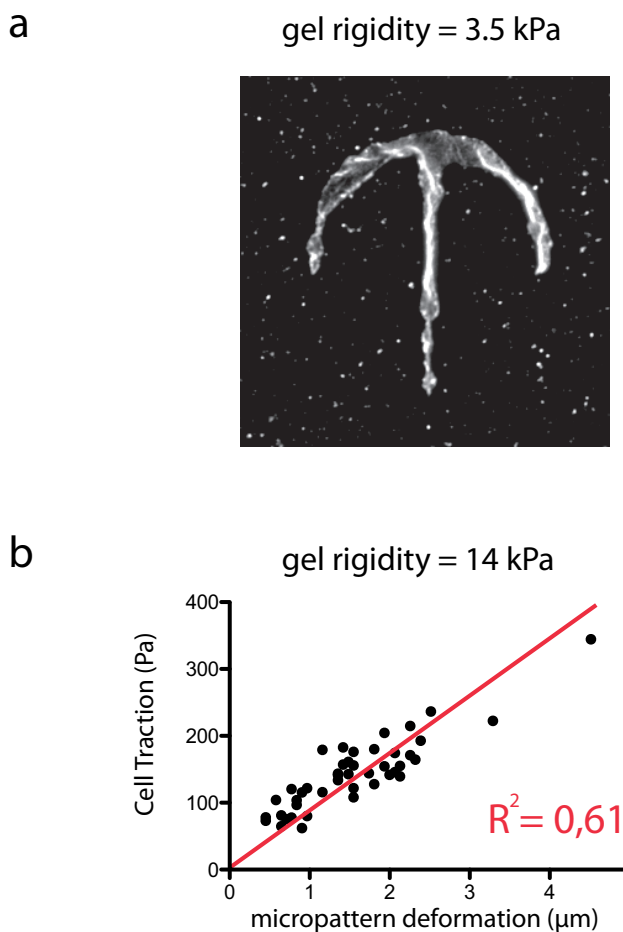


Figure S4 – Micropattern fabrication and force measurement at different rigidities

- (a) Micropattern fabrication on PA gels whose rigidity is about 3 kPa. Example of a fluorescent-fibrinogen coated micropattern damaged during PA layer detachment from the optical mask.
- (b) Force measurement on PA gels whose rigidity is about 14 kPa. Local micropattern deformation, measured as in figure 3e, was linearly correlated to total traction force exerted by the cells on the entire micropattern.

Movie S1

Increasing dose of Blebbistatin were added progressively on MCF10A cells plated on a crossbow shaped micropattern on PA. Pictures were taken 15 minutes after each addition of Blebbistatin. Finally the cell was detached with trypsin.