Supplementary information:

A nanostructure platform for live cell manipulation of membrane curvature

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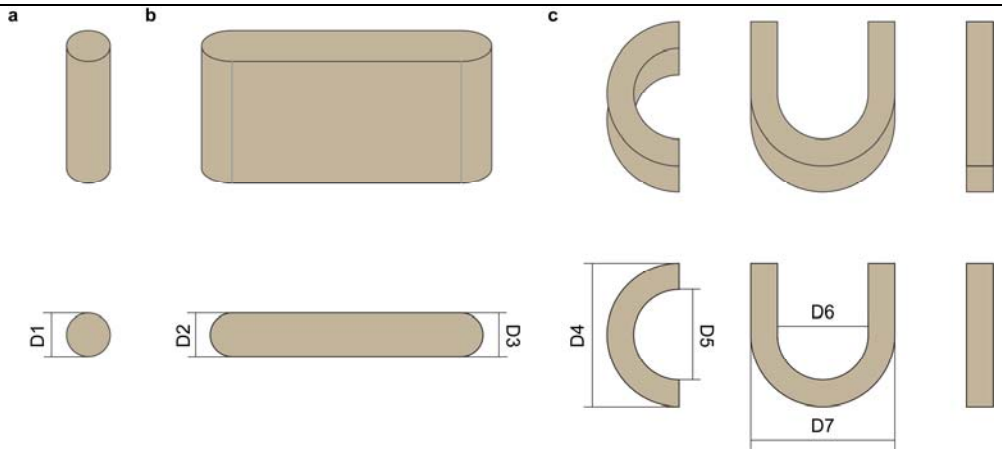
Curvature label	Curvature value in the design	Curvature orientation
D1	200, 500 and 1000 nm	Positive
D2	100, 200, 300, 400, 500, 600, 700, 800, and 1000 nm	Positive
D3	100, 200, 300, 400, 500, 600, 700, 800, and 1000 nm (the same as D2)	Positive
D4	1000 nm	Positive
D5	600 nm	Negative
D6	600 nm	Negative
D7	1000 nm	Positive

Supplementary Table 1

Curvature values in the design.

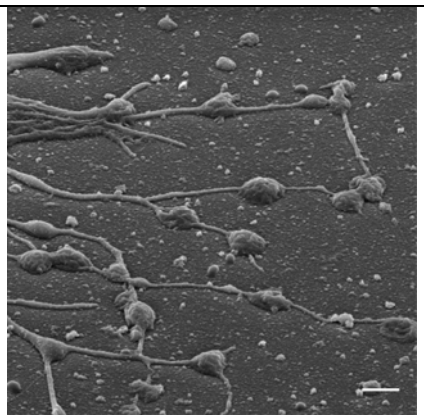
The curvatures are labeled in Supplementary Fig. 1.



Supplementary Figure 1

Curvature measurements on the nanostructures.

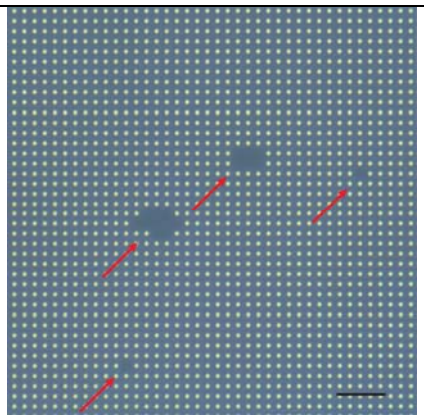
The measurements of the curvatures designed in the nanostructures are labelled in the top view. “D” denotes diameter.The values of the curvatures are listed in Supplementary Table 1. There are also flat surfaces as a control in the design, such as the side walls of the nanobar (b) and the I in CUI (c).



Supplementary Figure 2

Microbubbles in FIB–SEM.

Air trapped in resin deforms cellular structure. Scale, 1 μm.



Supplementary Figure 3

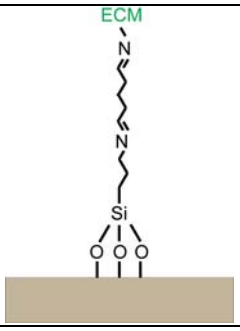
Optical micrograph of defects after lift-off.

The regions of missing Cr masks are indicated by the red arrows. Scale bar, 5 μm.

Supplementary Figure 4

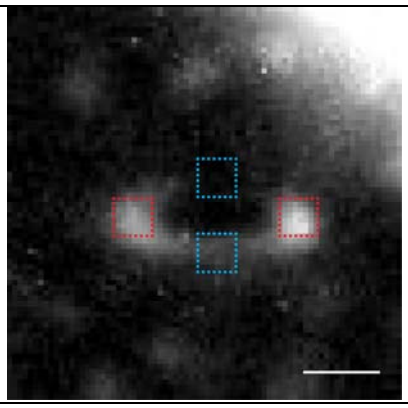
Substrate piece placed on a carrier wafer for dry etching.

The substrate piece is cut into four pieces. Vacuum pump oil is applied between the substrate piece and dummy wafer.



Supplementary Figure 5

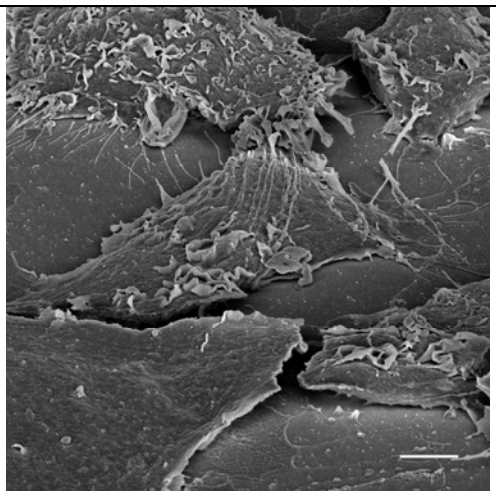
Surface chemistry for immobilizing ECM proteins.



Supplementary Figure 6

Selection of ends and centres on a nanobar.

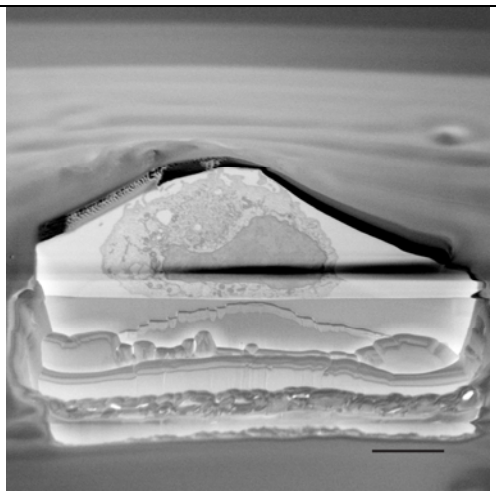
This is a crop from U2-OS DNM2-GFP fluorescence image (5 μm by 5 μm), generated. The small blue masks select the centres on both sides of the nanobar. The small red masks select the ends of the nanobar. The intensity values are read in a customized MATLAB program. The total intensity of the ends is divided by the total intensity of the centres to obtain a ratio for a given nanobar. Scale bar, 1 μm.



Supplementary Figure 7

Cracks of samples in FIB–SEM.

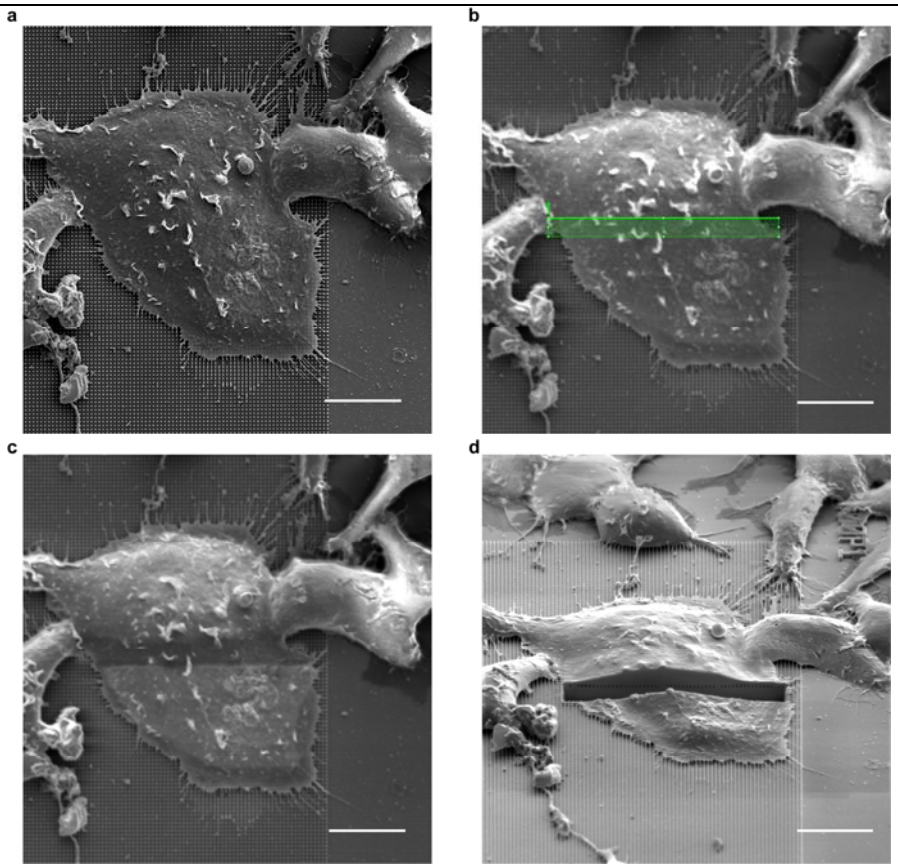
Scale bar, 5 μm.



Supplementary Figure 8

Charging effect in FIB–SEM imaging.

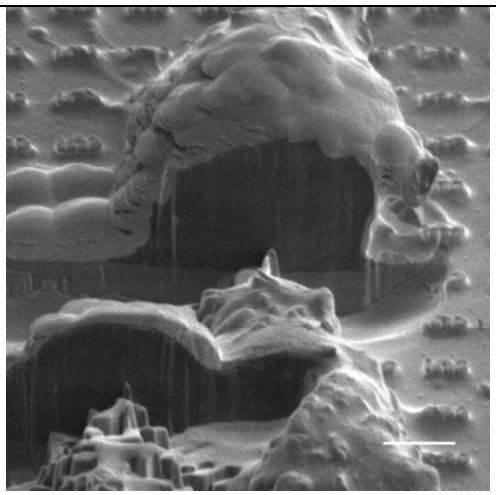
Scale bar, 5 μm.



Supplementary Figure 9

Cross-sectioning in FIB–SEM.

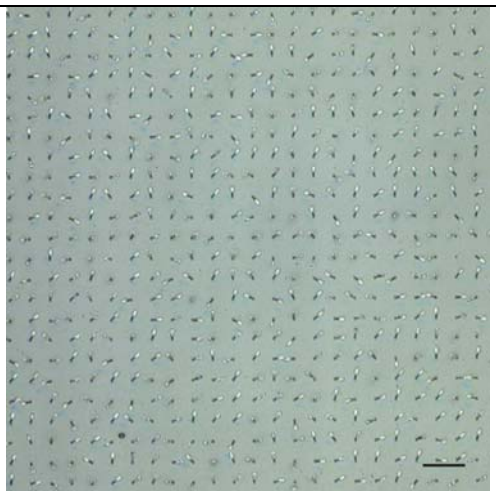
a, Secondary electron imaging. **b**, Location of a region of interest. **d**, Pt deposition. **d**, Trenching. Scale bars, 1 μm.



Supplementary Figure 10

Curtaining effect.

Sample is tilted to 52°.



Supplementary Figure 11

Collapsed nanopillars after dry-etching.

Nanopillars are 200 nm in diameter and 1 μm in height. Scale bar, 5 μm.