FIG. 1

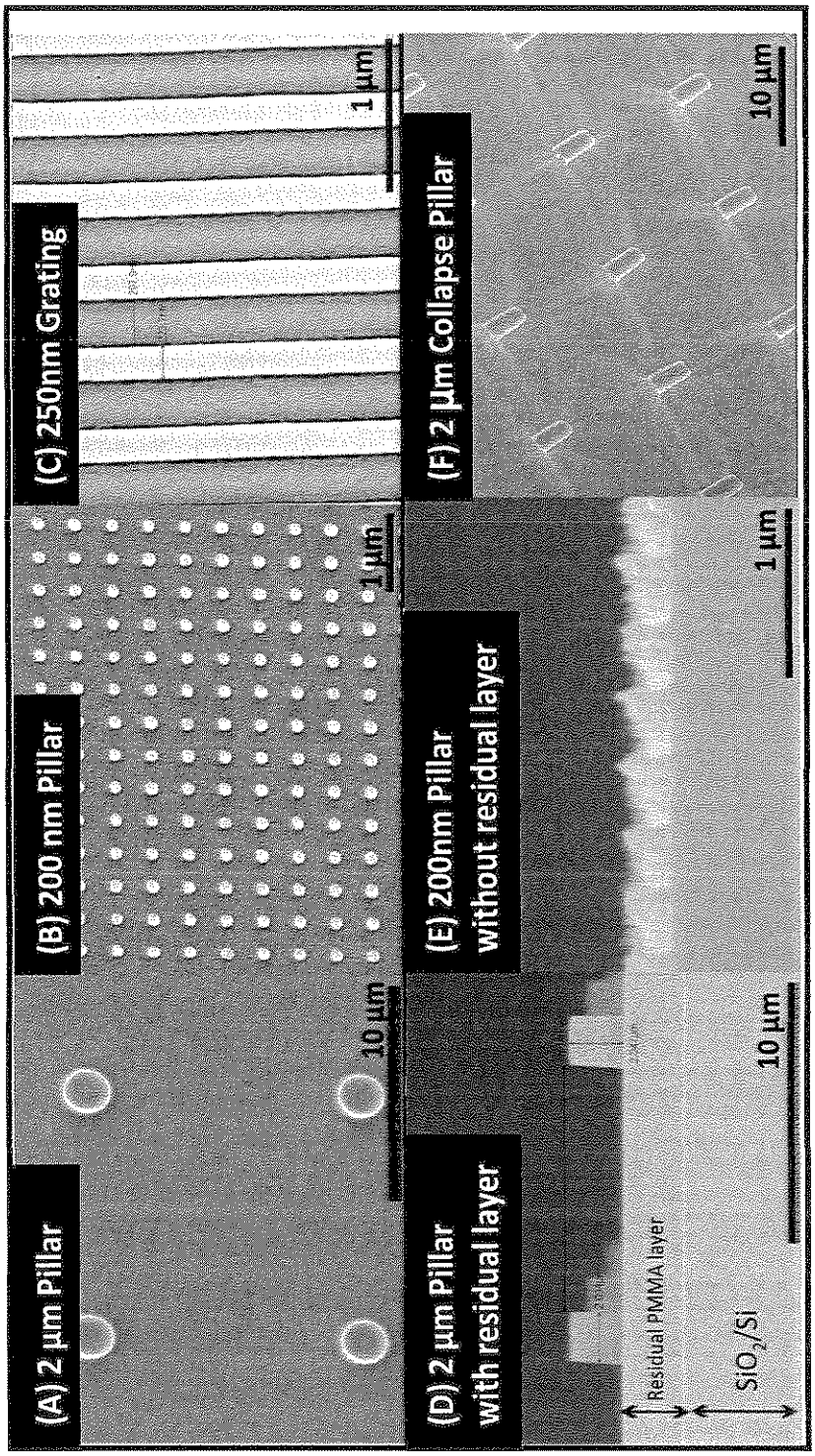

(A) 2 μm Pillar
(B) 200 nm Pillar
(C) 250nm Grating
(D) 2 μm Pillar with residual layer
(E) 200nm Pillar without residual layer
(F) 2 μm Collapse Pillar
10 μm
1 μm
Residual PMMA layer
$SiO_2$/Si

FIG. 2

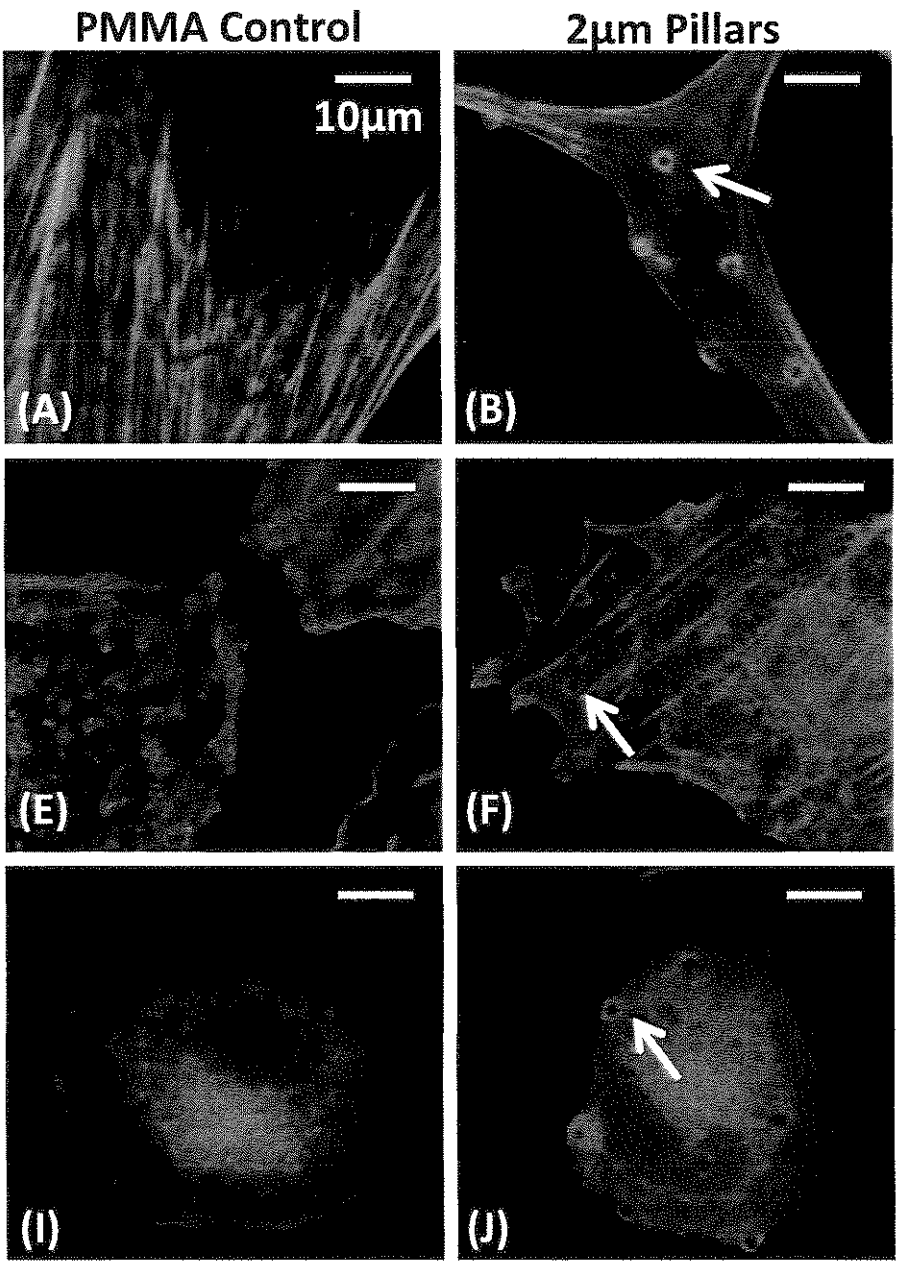


**Fig. 2 (continued)**

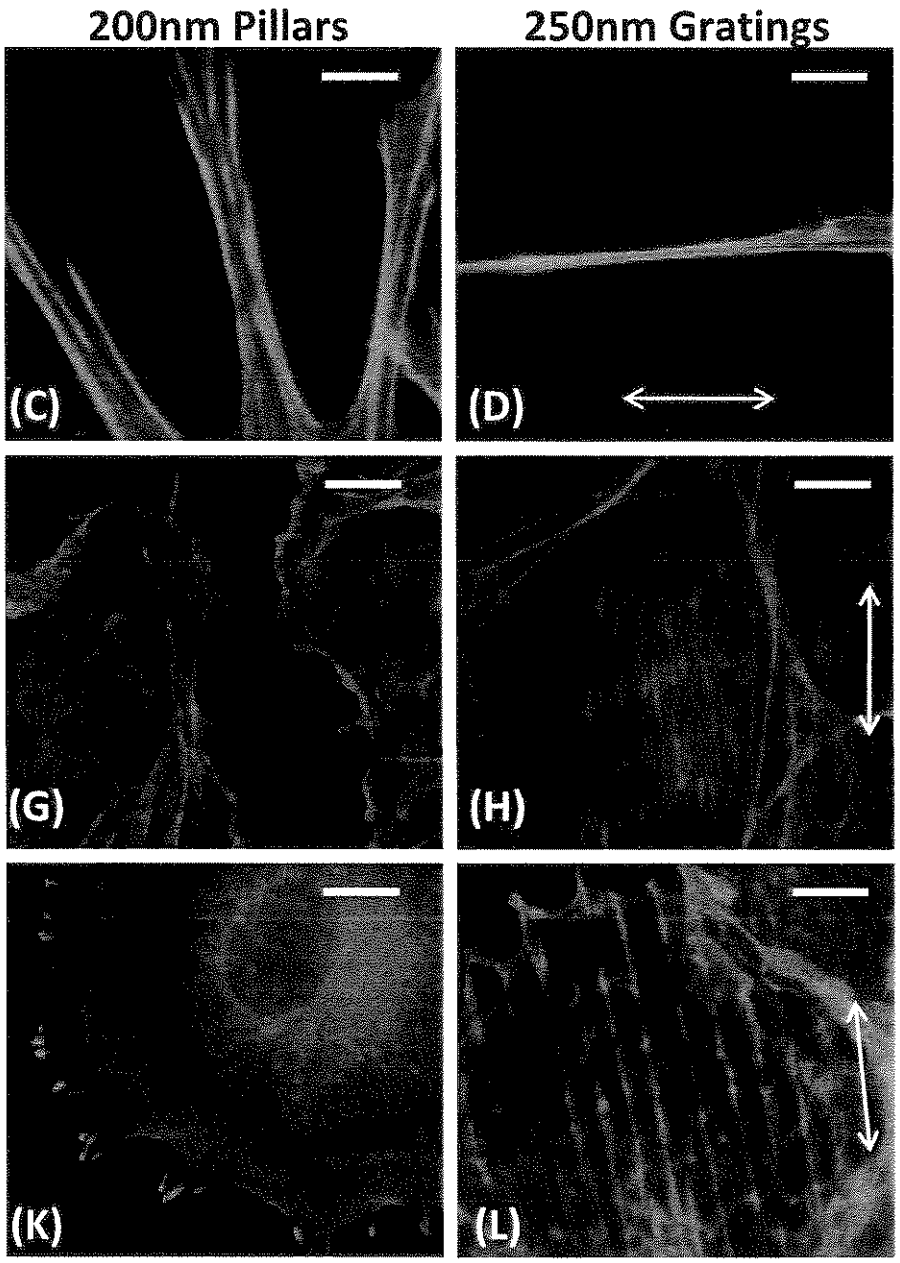


FIG. 3A

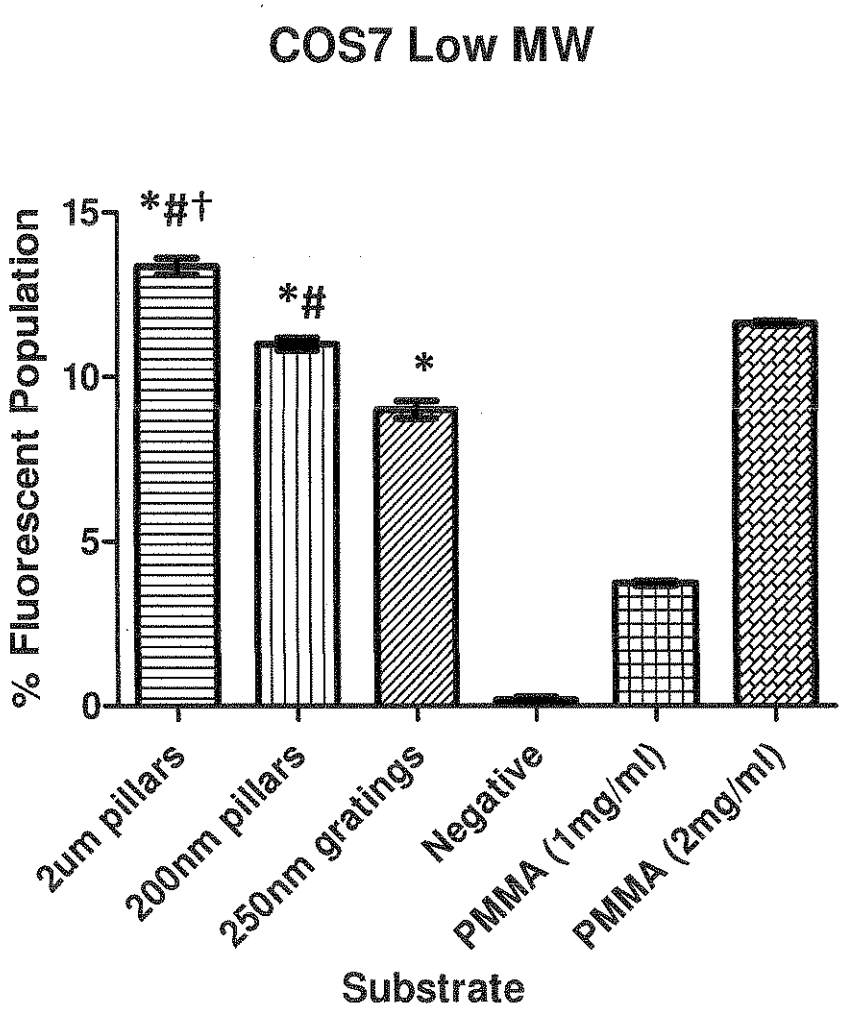

COS7 Low MW
% Fluorescent Population
15
10
5
0
*#†
*#
*
2um pillars
200nm pillars
250nm gratings
Negative
PMMA (1mg/ml)
PMMA (2mg/ml)
Substrate

FIG. 3B

0

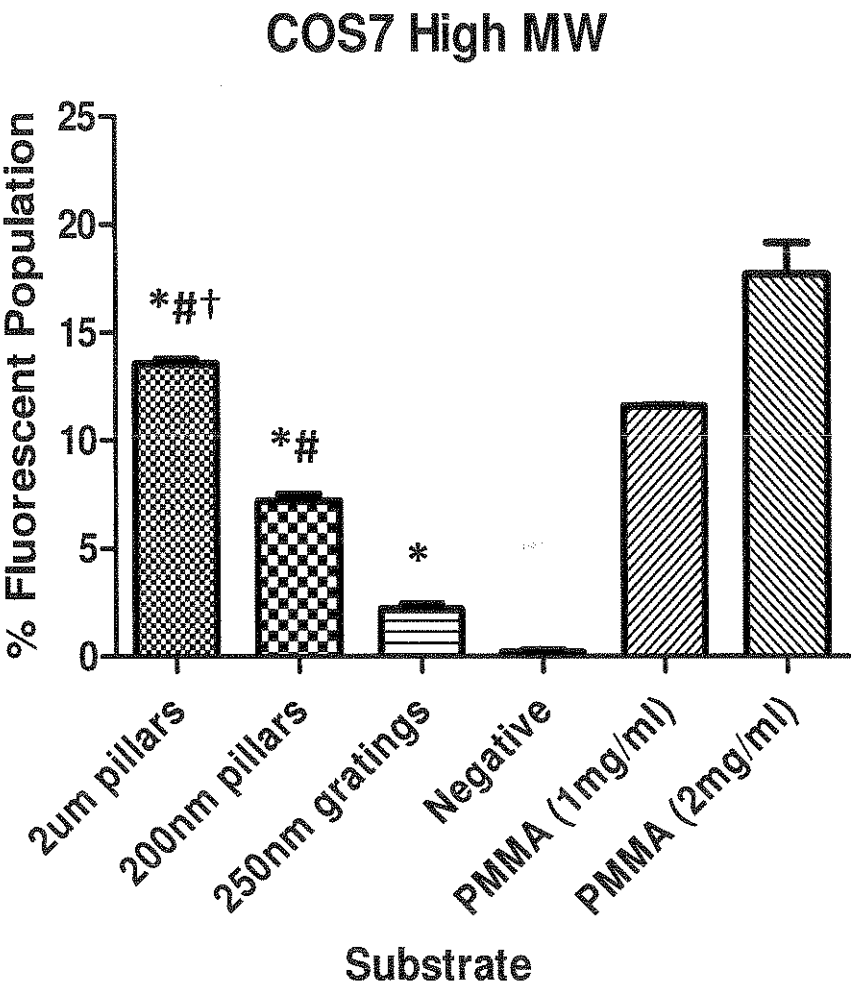

COS7 High MW
% Fluorescent Population
25
20
15
10
5
0
*#†
*#
*
2um pillars
200nm pillars
250nm gratings
Negative
PMMA (1mg/ml)
PMMA (2mg/ml)
Substrate

Fig. 4

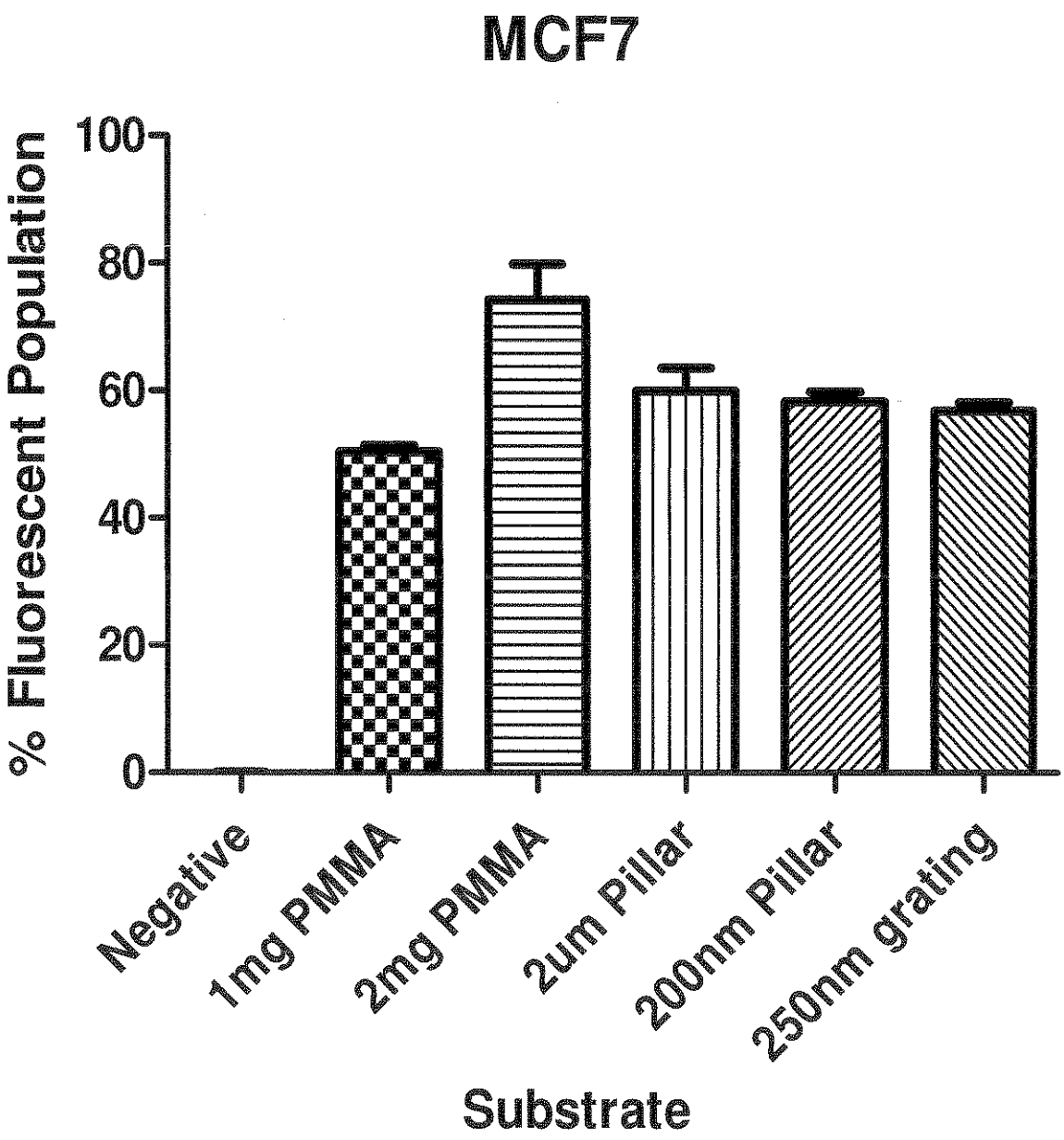

MCF7
% Fluorescent Population
100
80
60
40
20
0
Negative
1mg PMMA
2mg PMMA
2um Pillar
200nm Pillar
250nm grating
Substrate

Fig. 5A

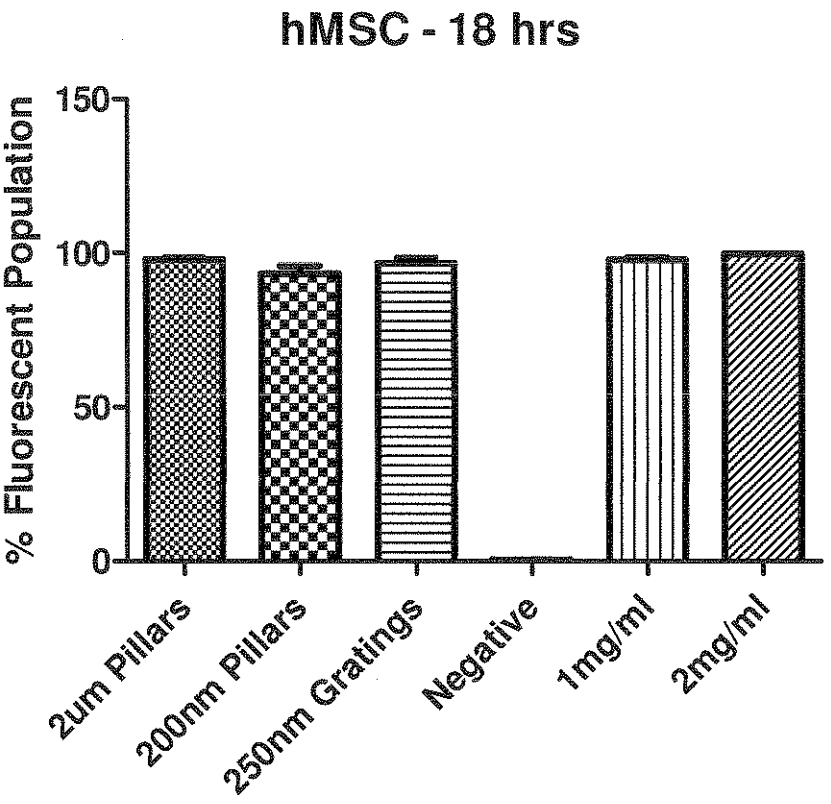

hMSC - 18 hrs
% Fluorescent Population
150
100
50
0
2um Pillars
200nm Pillars
250nm Gratings
Negative
1mg/ml
2mg/ml

Fig. 5B

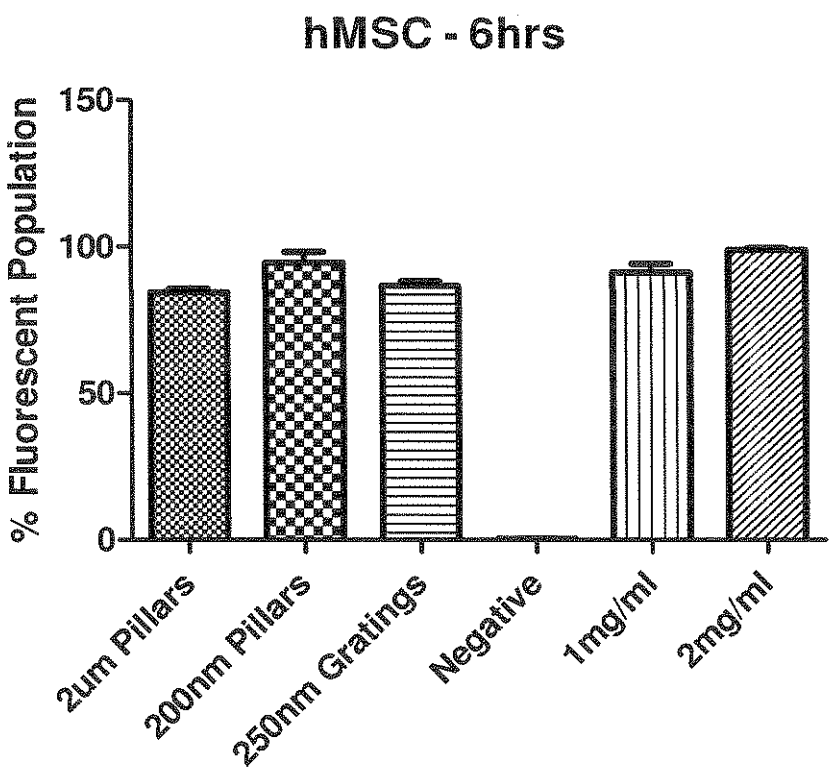

hMSC - 6hrs
% Fluorescent Population
150
100
50
0
2um Pillars
200nm Pillars
250nm Gratings
Negative
1mg/ml
2mg/ml

FIG.5C

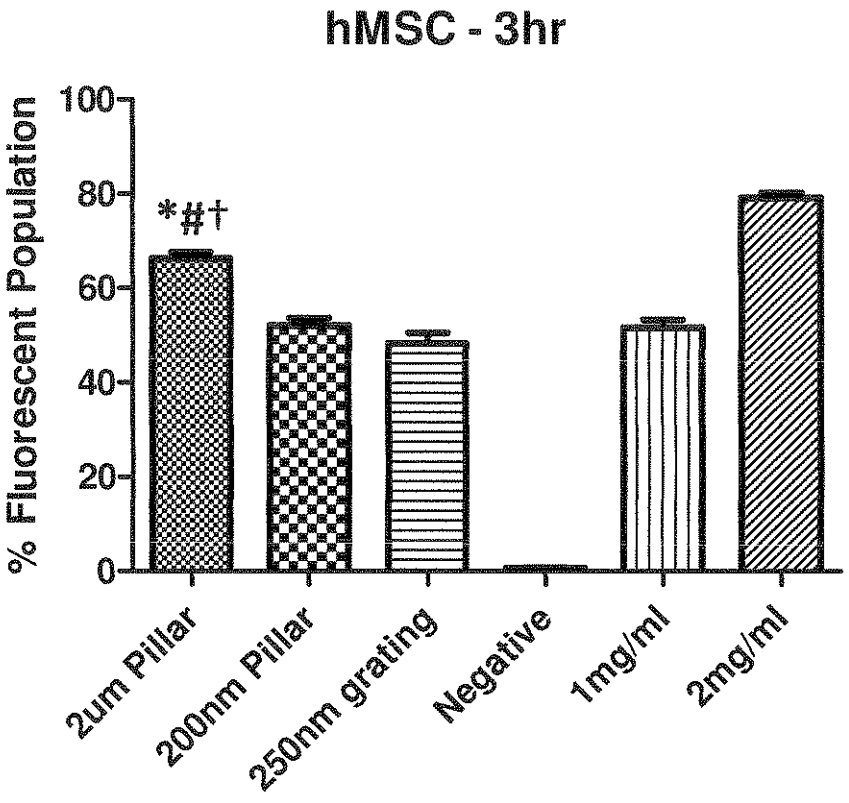

hMSC - 3hr
% Fluorescent Population
100
80
60
40
20
0
*#†
2um Pillar
200nm Pillar
250nm grating
Negative
1mg/ml
2mg/ml

Fig. 5D

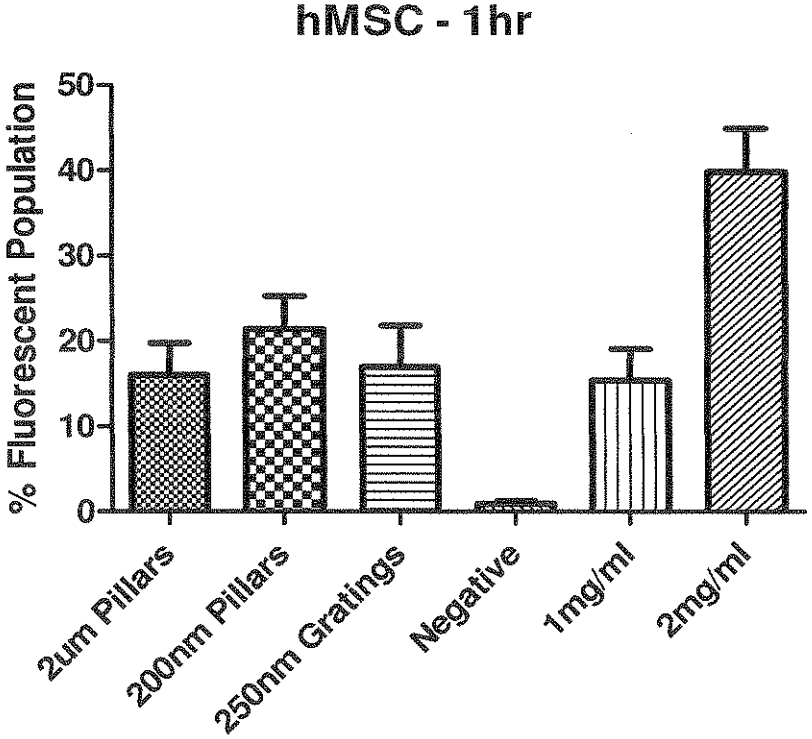

hMSC - 1hr
% Fluorescent Population
50
40
30
20
10
0
2um Pillars
200nm Pillars
250nm Gratings
Negative
1mg/ml
2mg/ml

FIG. 6

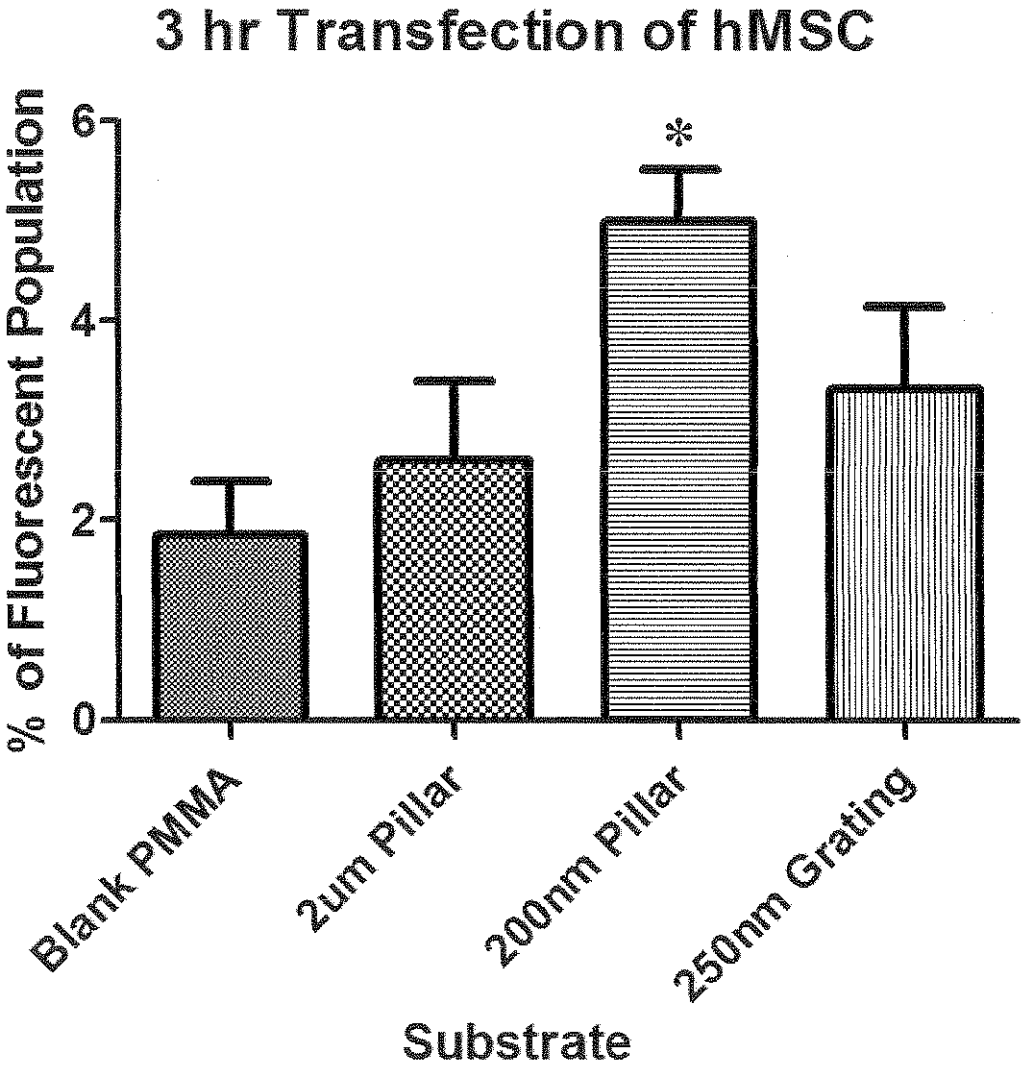

3 hr Transfection of hMSC
% of Fluorescent Population
0
2
4
6
*
Blank PMMA
2um Pillar
200nm Pillar
250nm Grating
Substrate

Fig. 7

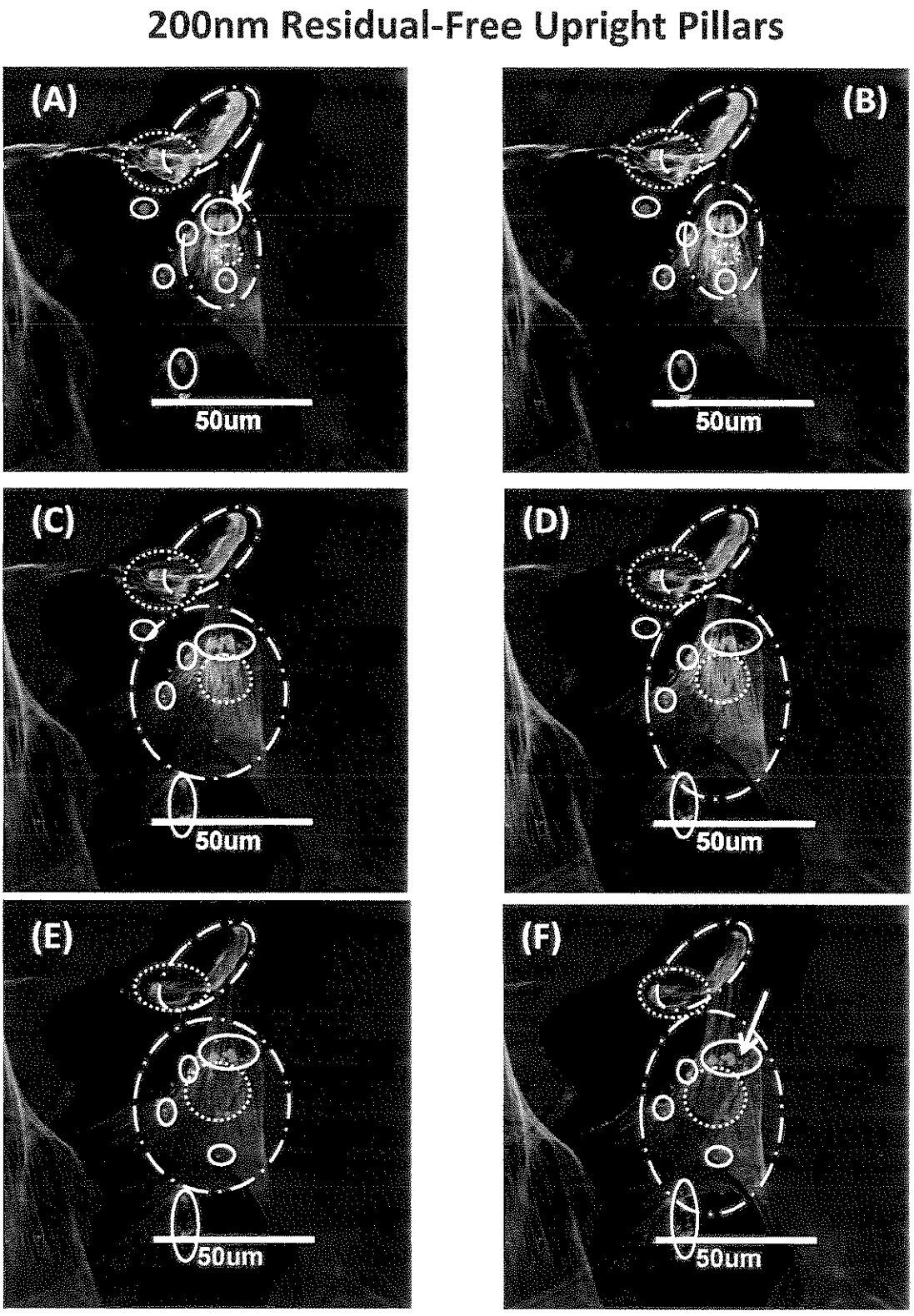

200nm Residual-Free Upright Pillars
(A)
50um
(B)
50um
(C)
50um
(D)
50um
(E)
50um
(F)
50um

**Fig. 8**

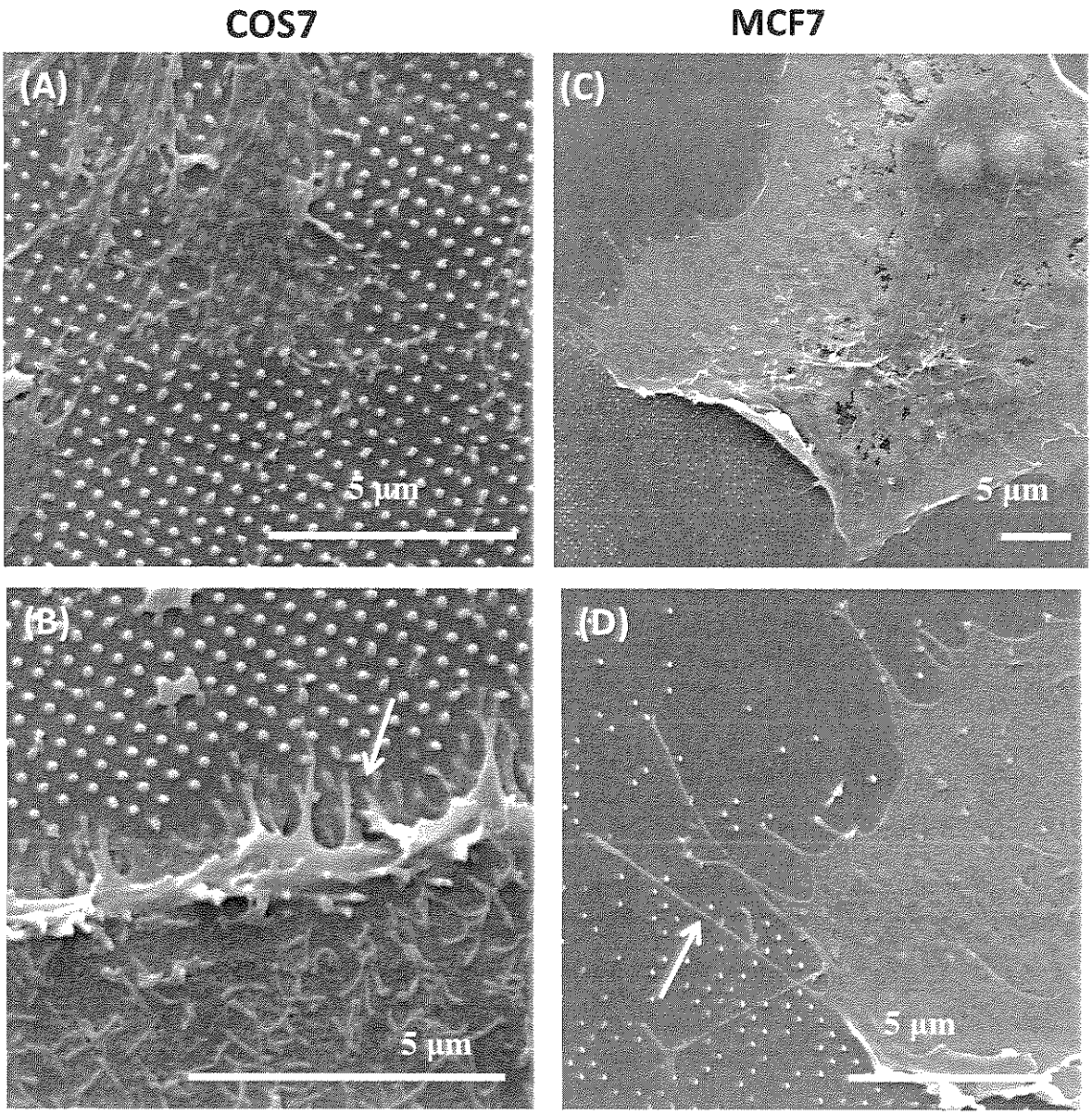


**Fig. 8 (continued)**

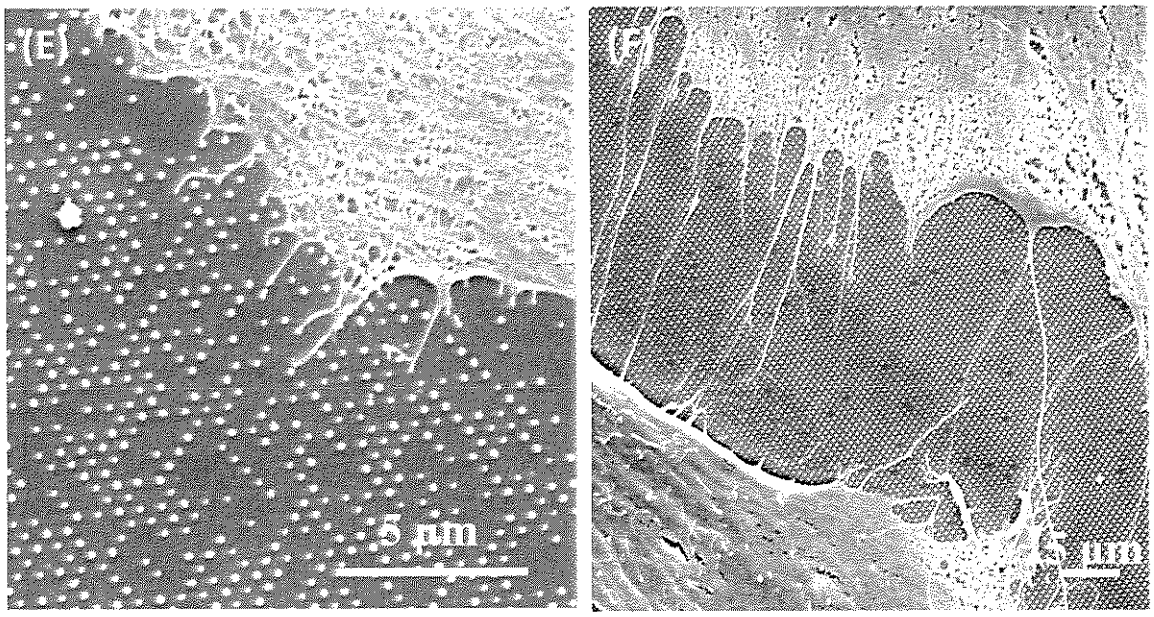


Fig. 9

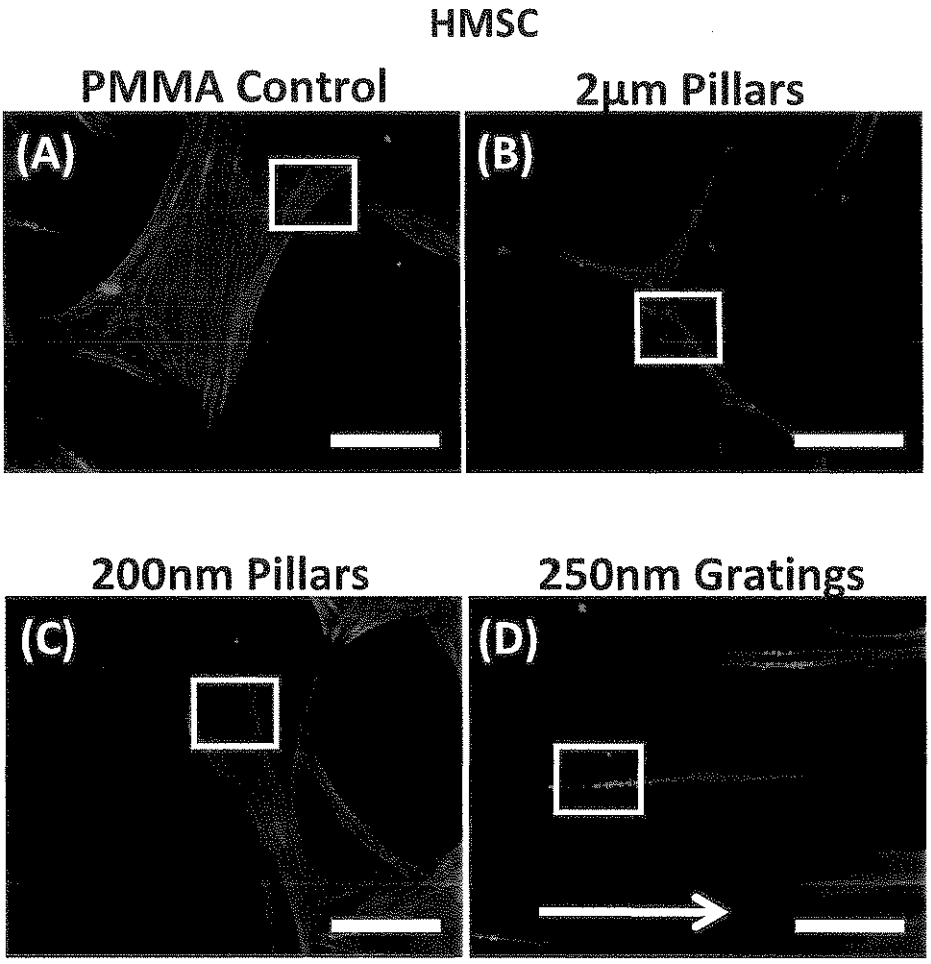

HMSC
PMMA Control
2µm Pillars
(A)
(B)
200nm Pillars
250nm Gratings
(C)
(D)

**Fig. 9 (continued)**

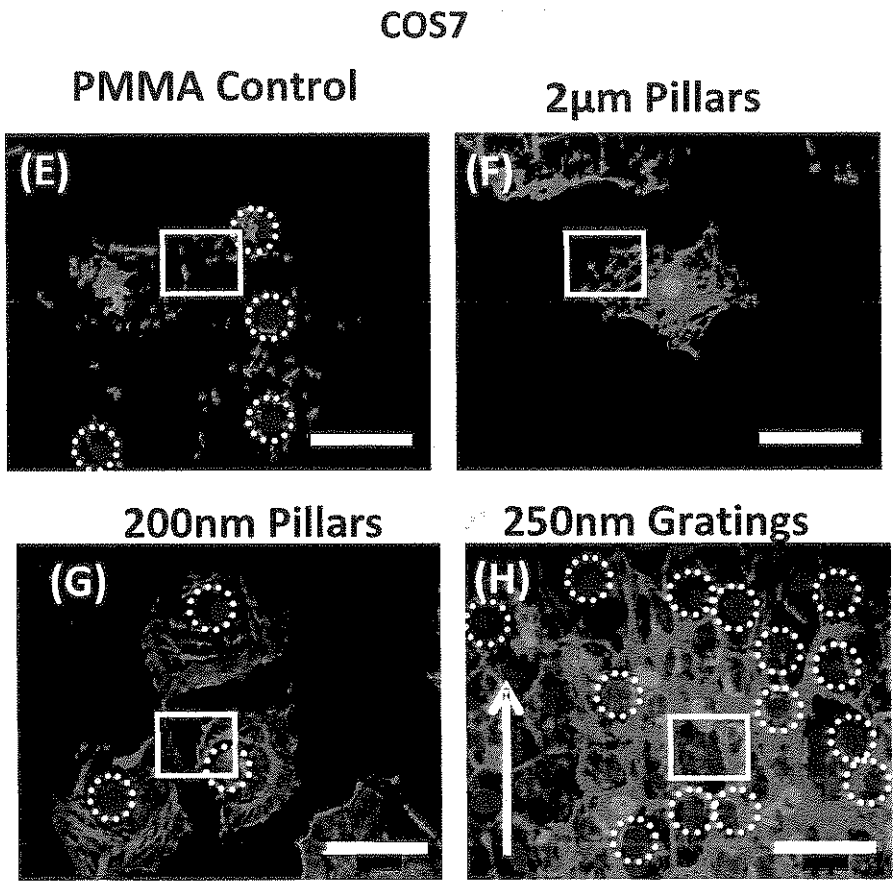


Fig. 9 (continued)

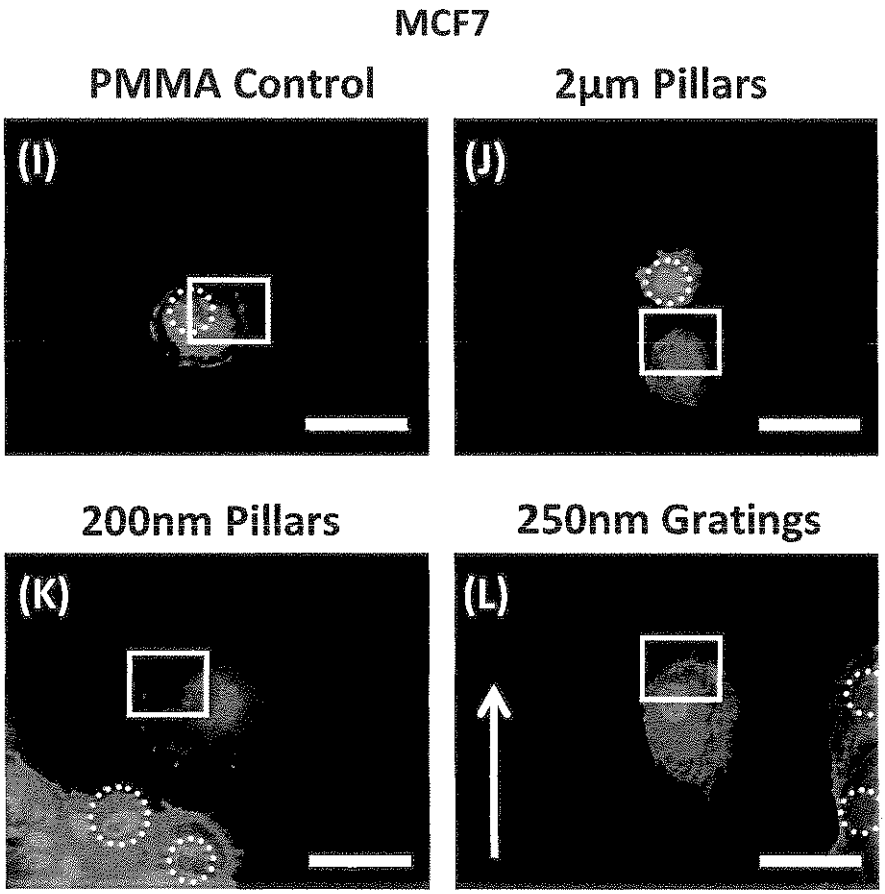


**Fig. 10**

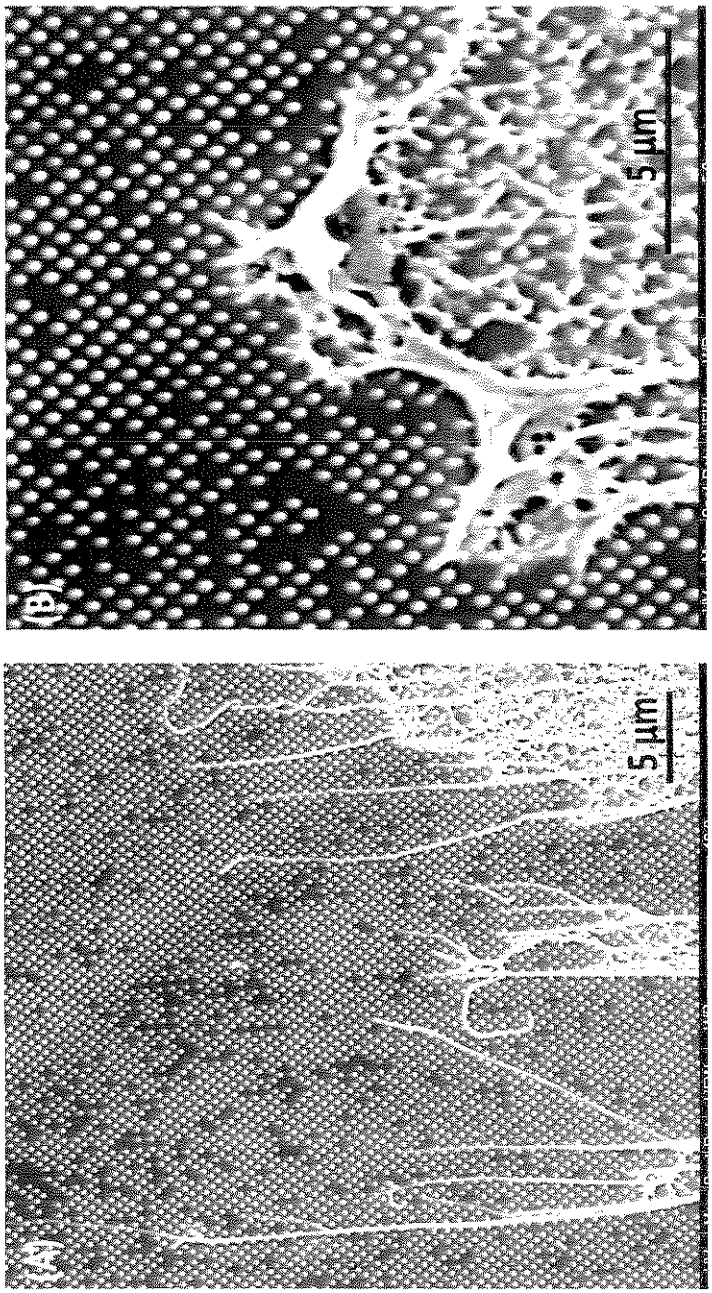


Fig. 11

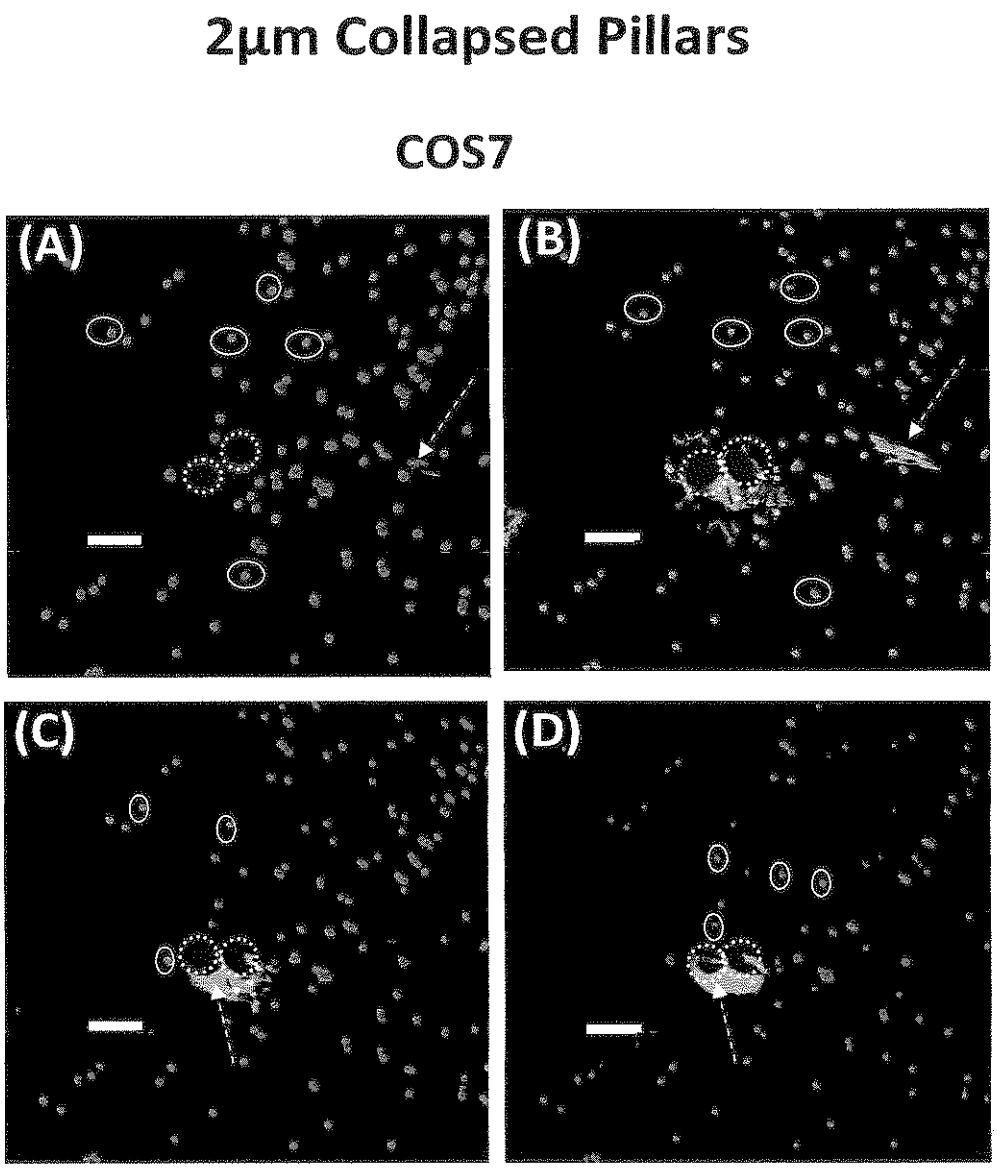


Fig. 11 (continued)

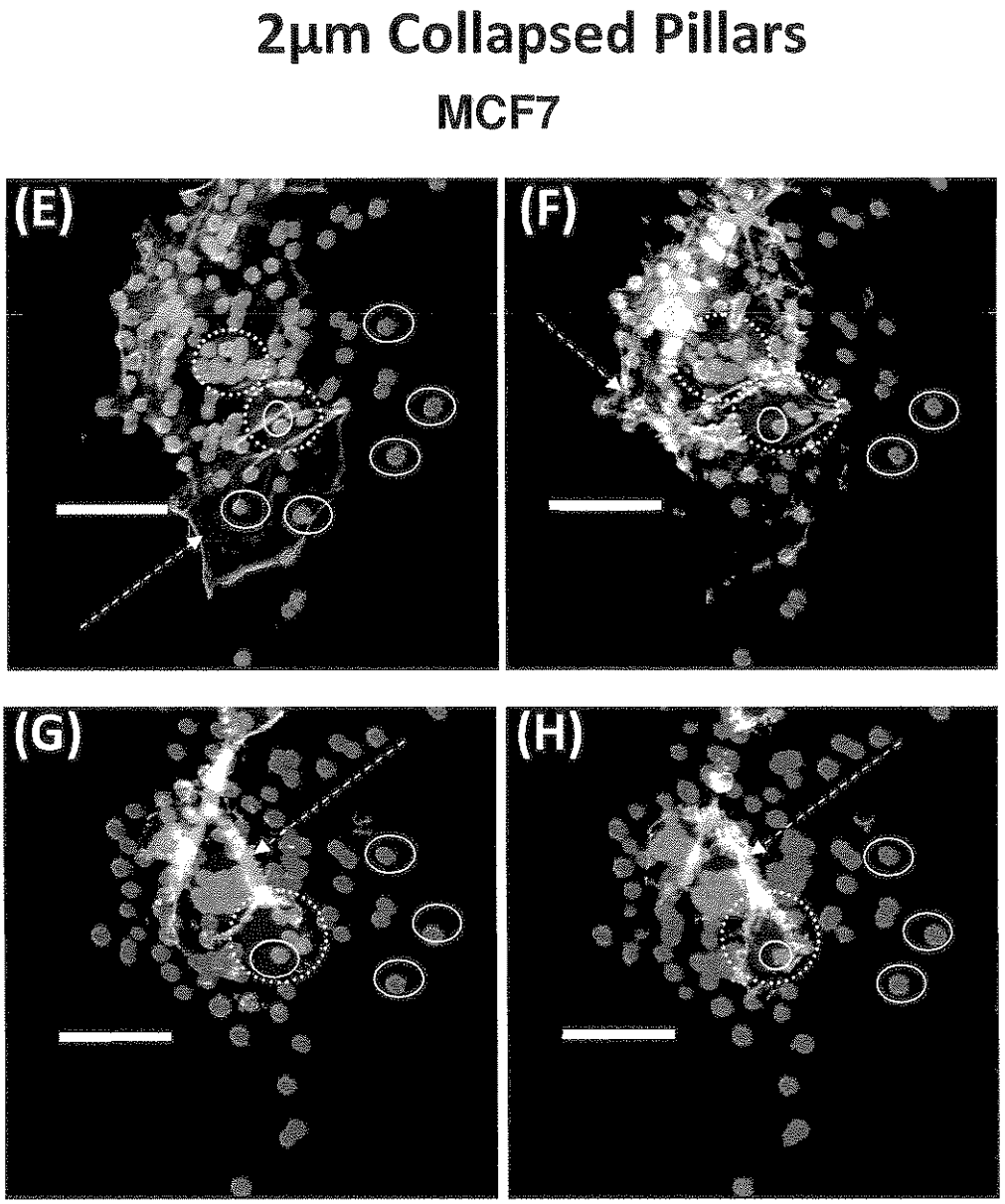


**Fig. 11 (continued)**

## 2µm Collapsed Pillars

## hMSC

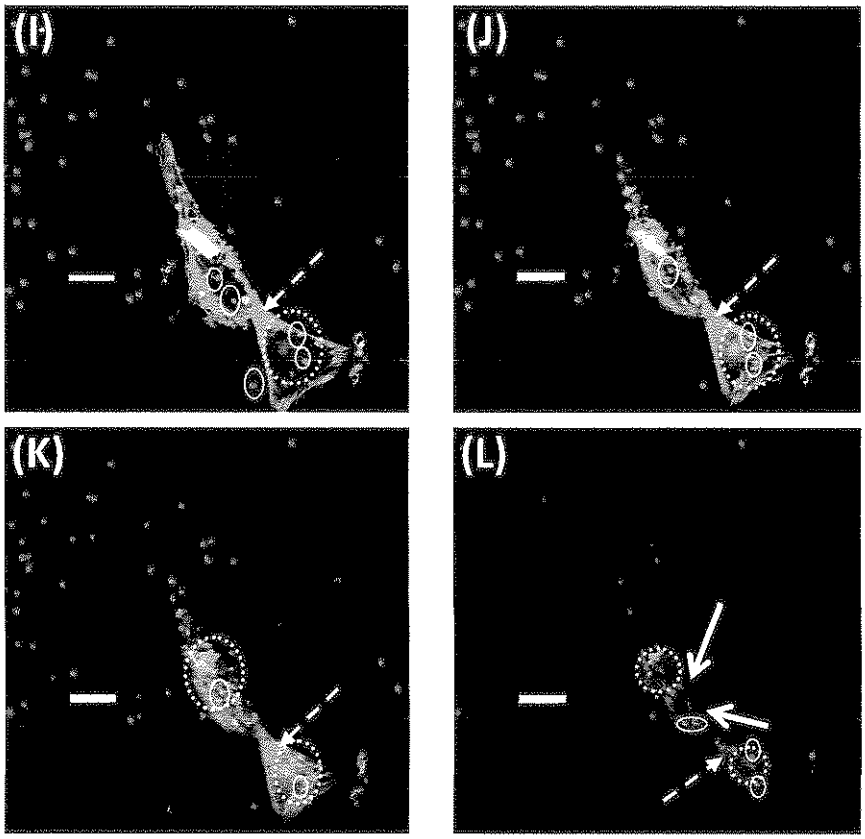


**Fig. 12**

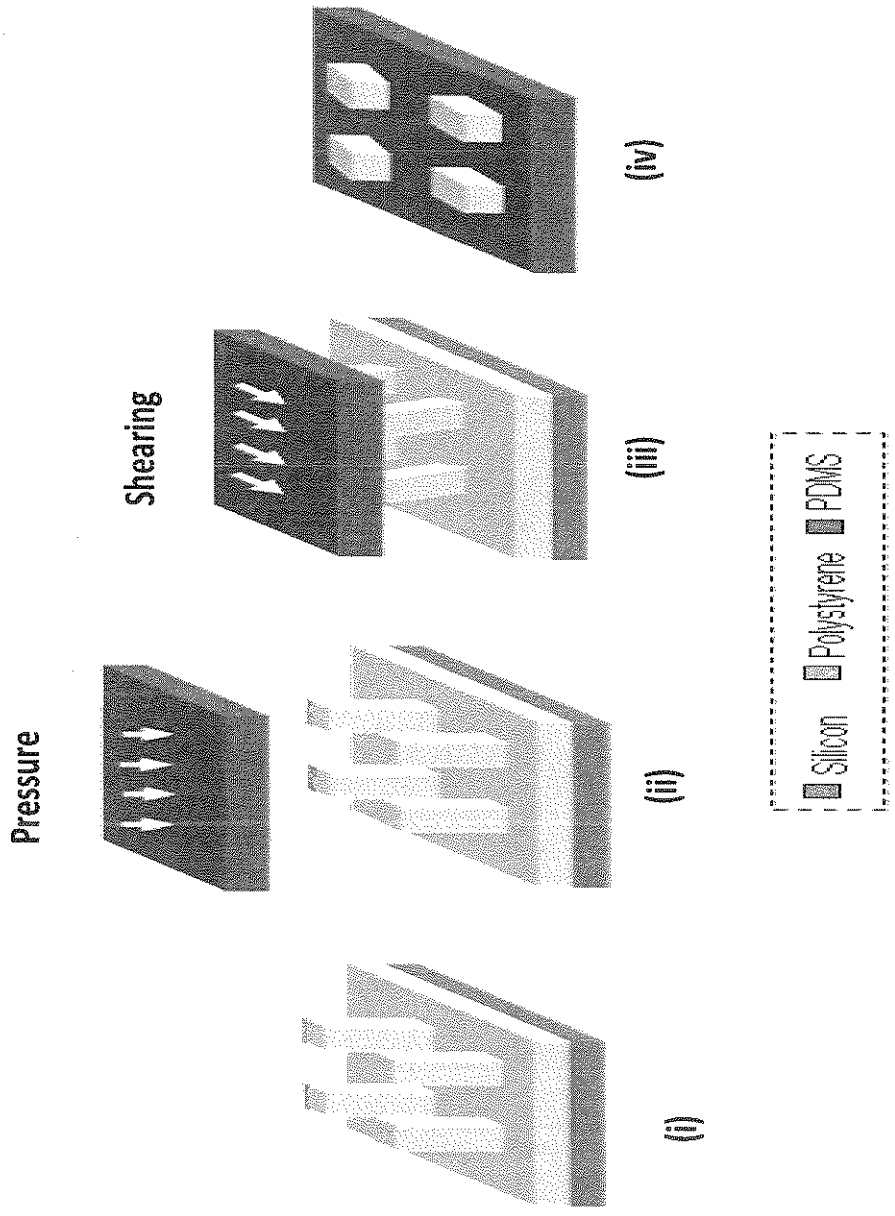


**Fig. 13**

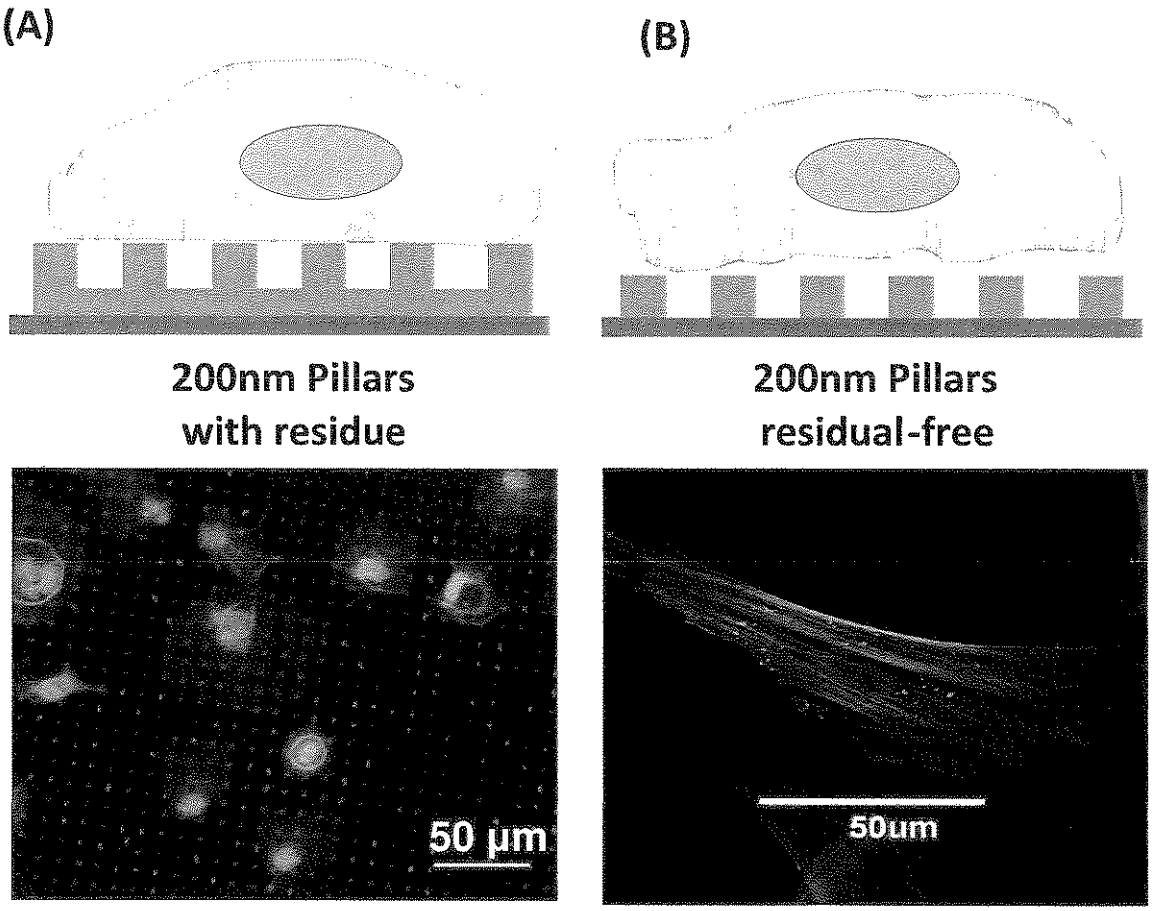

(A)
(B)
200nm Pillars
with residue
200nm Pillars
residual-free
50 µm
50um

**Fig. 13 (continued)**

