FIG. 1



FIG.2

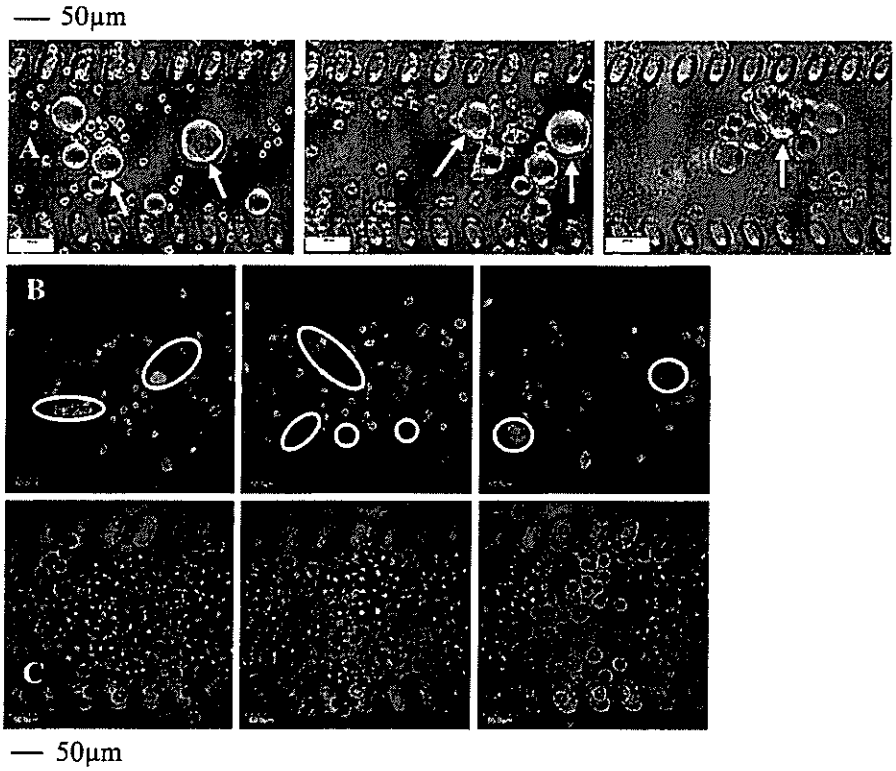


FIG.3

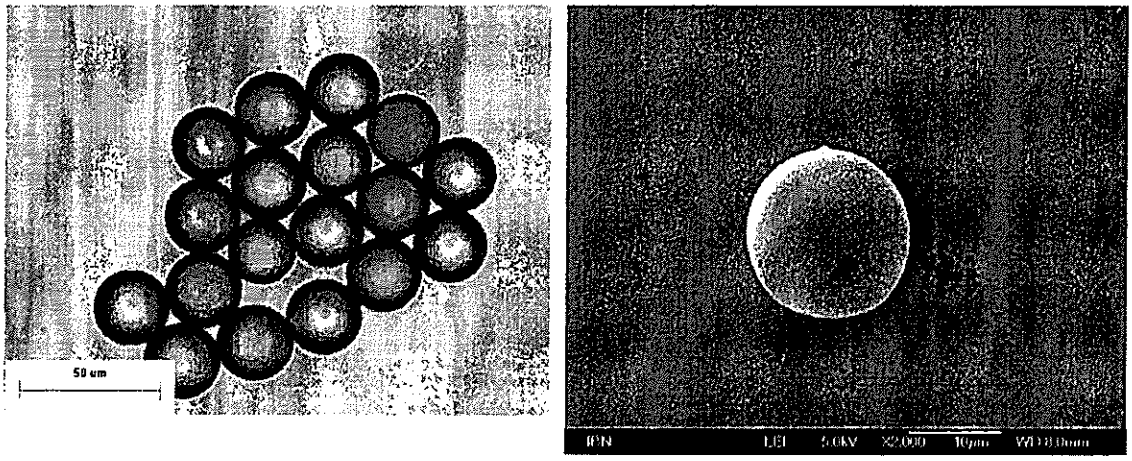


FIG.4

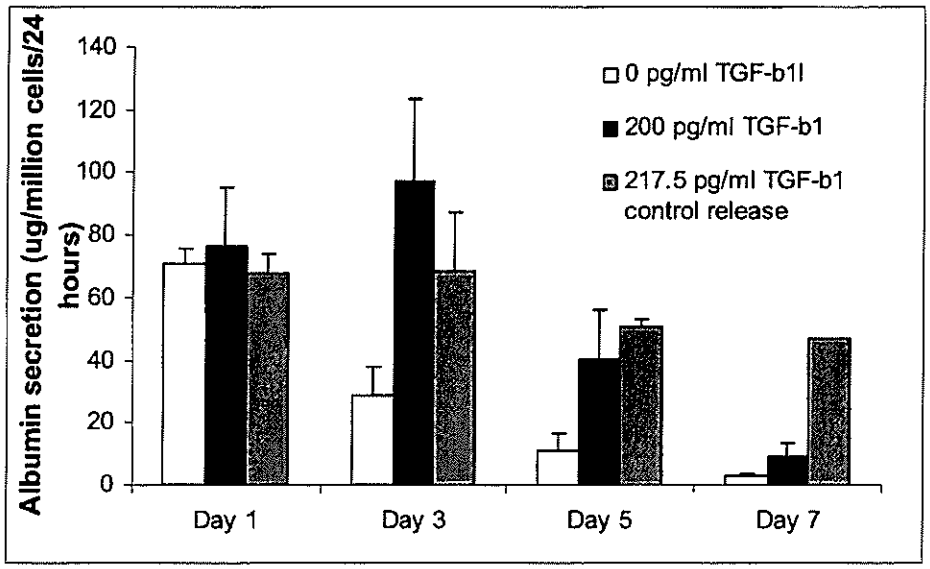

Albumin secretion (ug/million cells/24 hours)
140
120
100
80
60
40
20
0
Day 1
Day 3
Day 5
Day 7
0 pg/ml TGF-b1l
200 pg/ml TGF-b1
217.5 pg/ml TGF-b1 control release

FIG.5

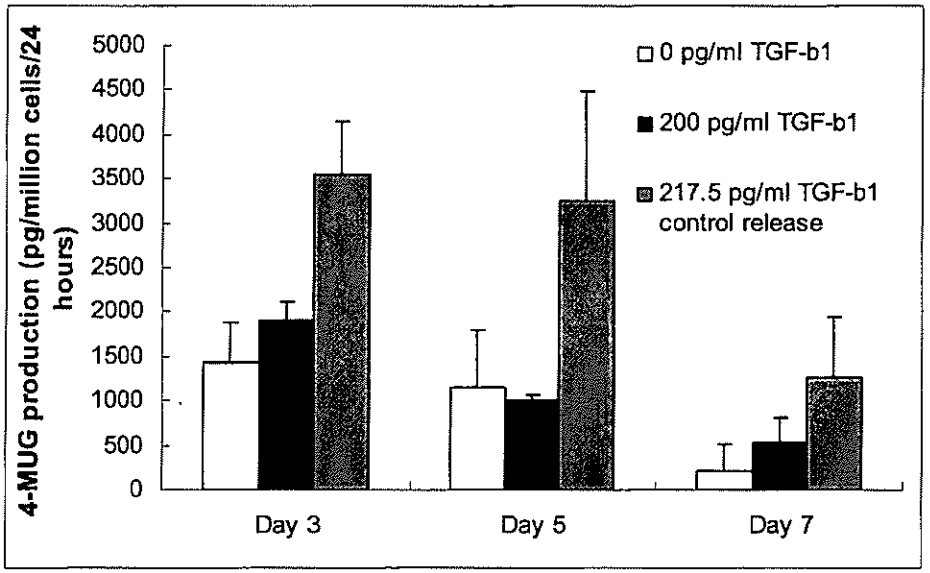

4-MUG production (pg/million cells/24 hours)
5000
4500
4000
3500
3000
2500
2000
1500
1000
500
0
Day 3
Day 5
Day 7
0 pg/ml TGF-b1
200 pg/ml TGF-b1
217.5 pg/ml TGF-b1 control release

FIG.6

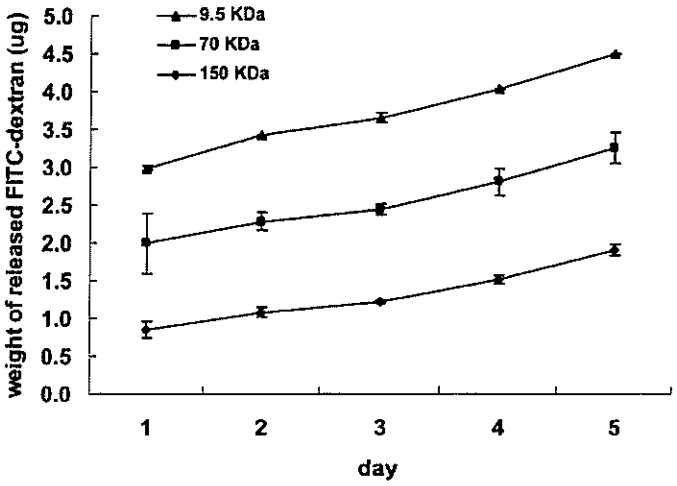

9.5 KDa
70 KDa
150 KDa
weight of released FITC-dextran (ug)
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
1
2
3
4
5
day

FIG.7

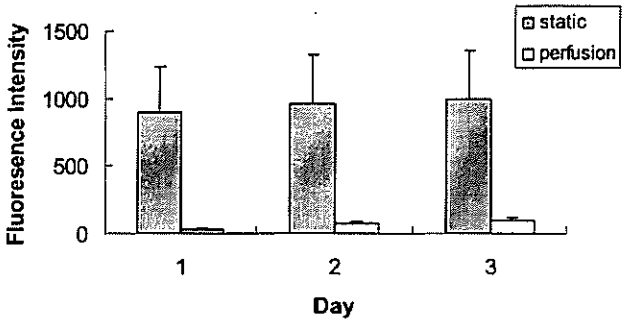

static
perfusion
Fluoresence Intensity
1500
1000
500
0
1
2
3
Day

FIG.8

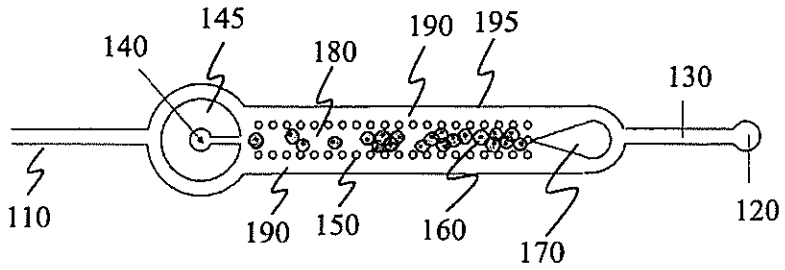


FIG.9

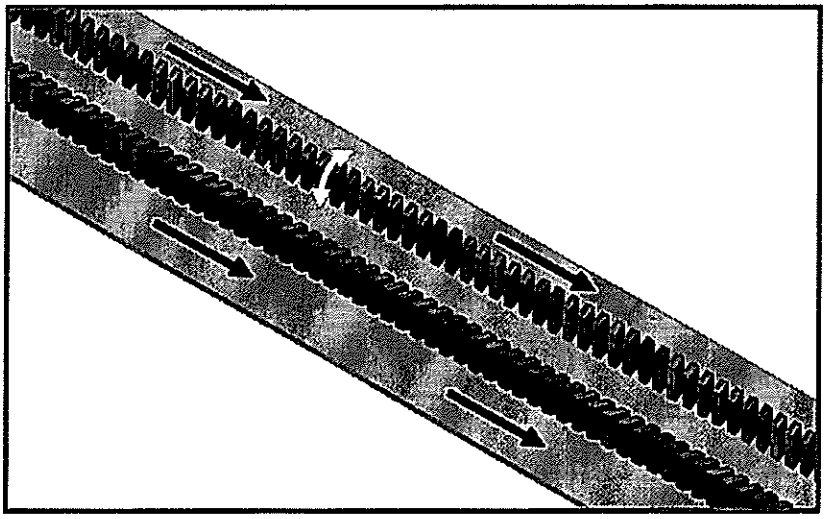


FIG.10A

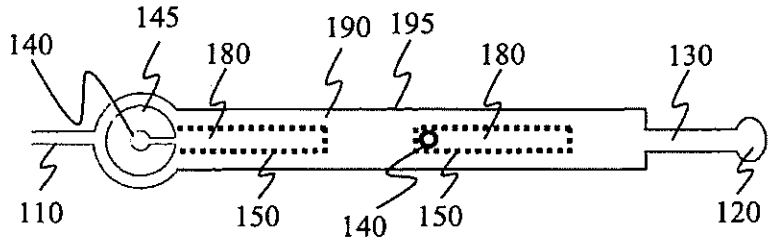


FIG.10B

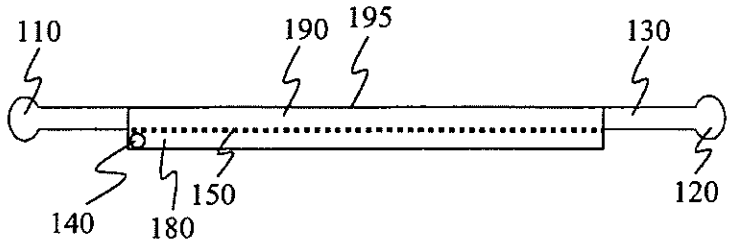


FIG.11

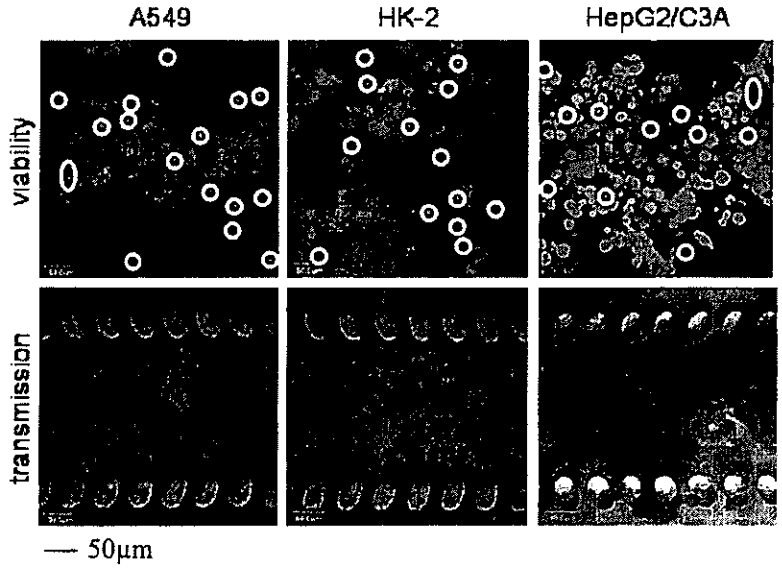


FIG.12

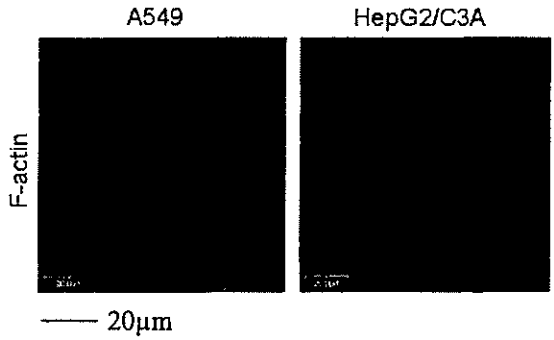


FIG. 13

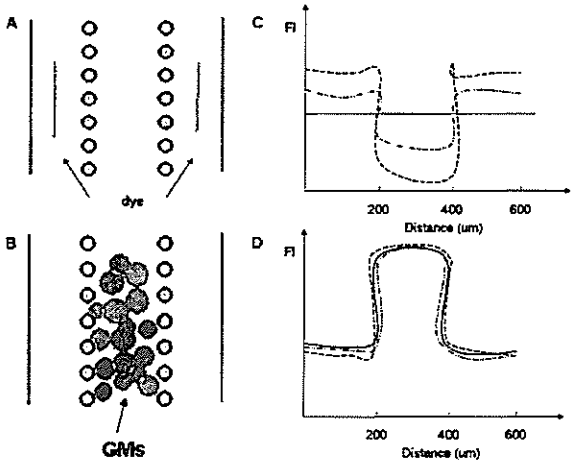


FIG.14

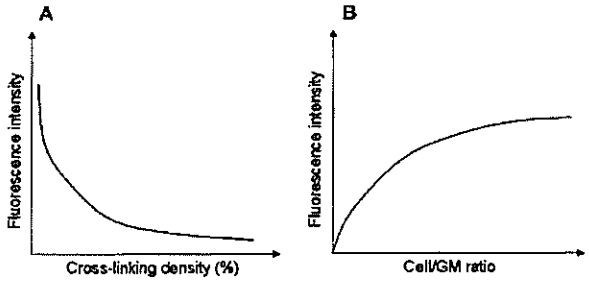


FIG.15

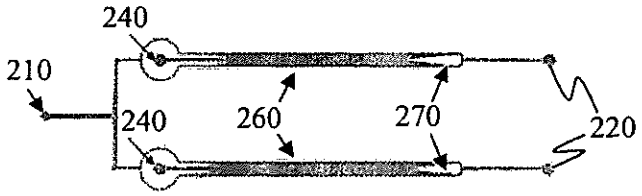


FIG.16

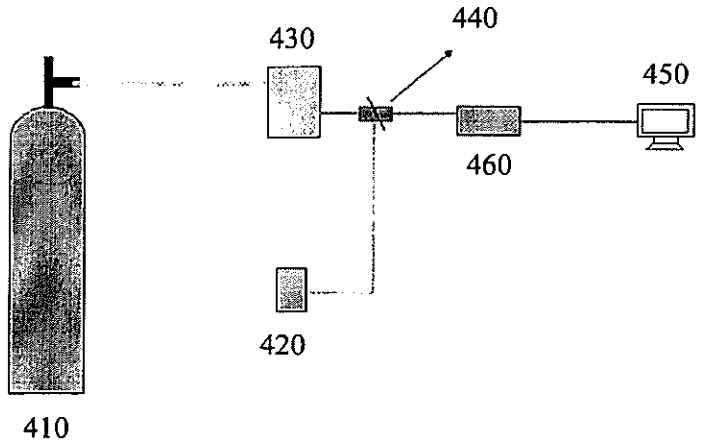


FIG.17

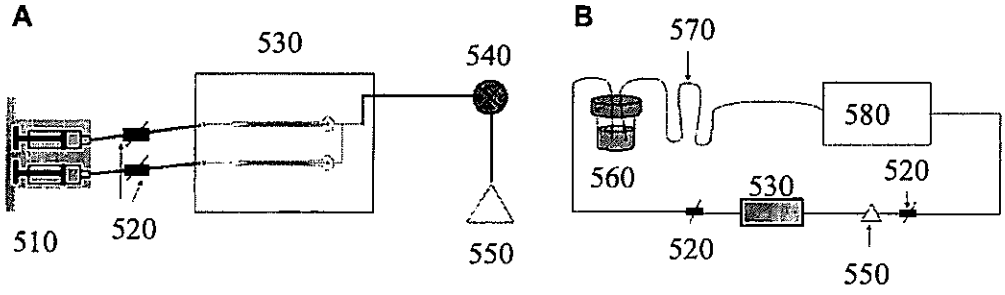


FIG.18

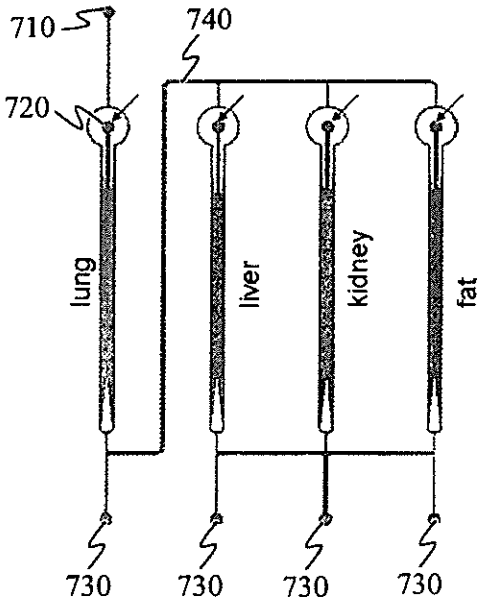

710
740
720
lung
liver
kidney
fat
730
730
730
730

FIG.19

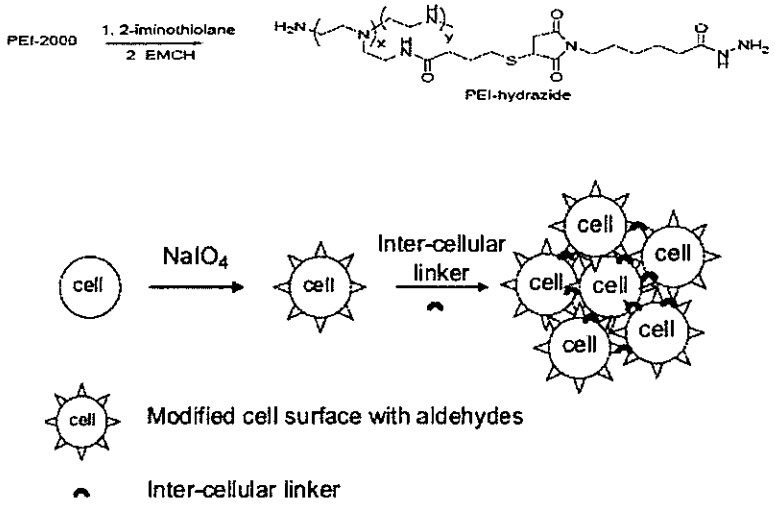

PEI-2000
1. 2-iminothiolane
2 EMCH
PEI-hydrazide
cell
NaIO4
cell
Inter-cellular linker
cell
cell
cell
cell
cell
cell
Modified cell surface with aldehydes
Inter-cellular linker

FIG.20

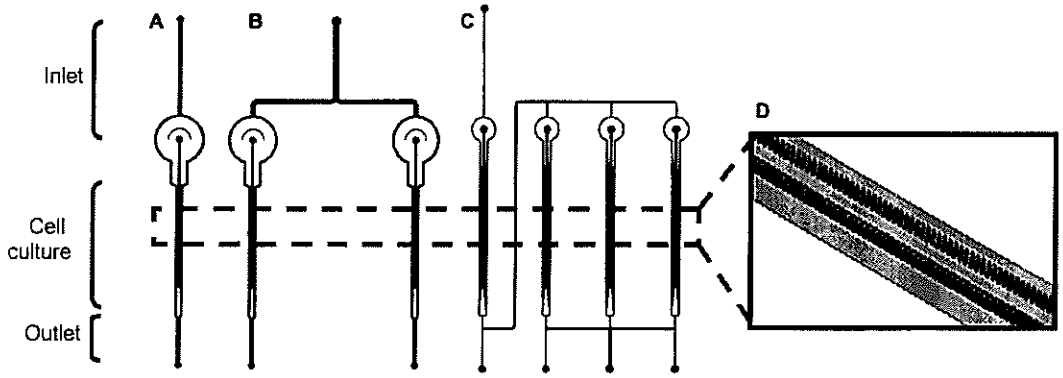


FIG.21

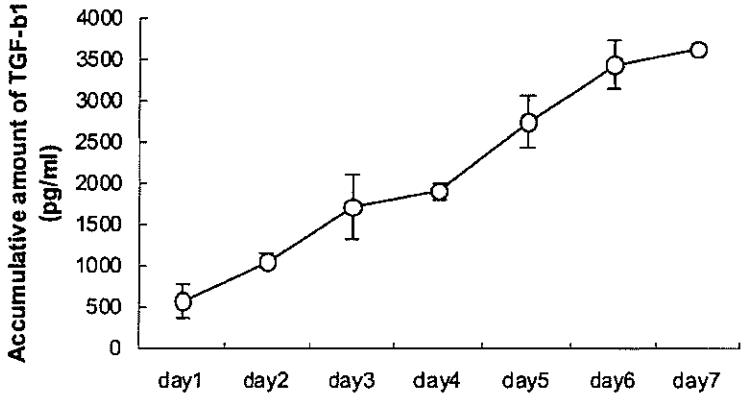


FIG.22

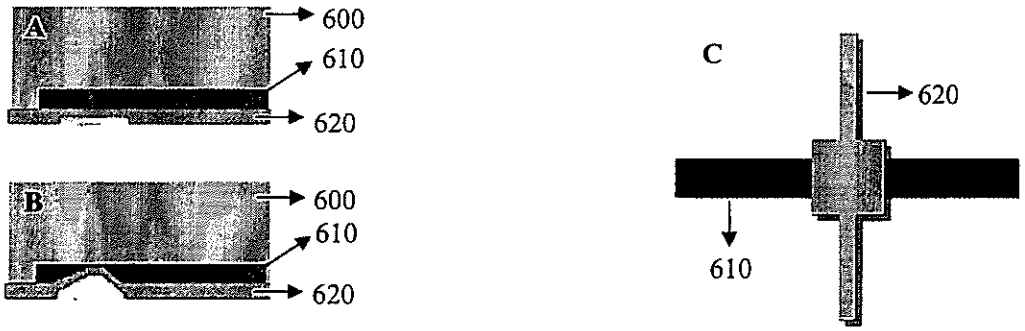


FIG.23

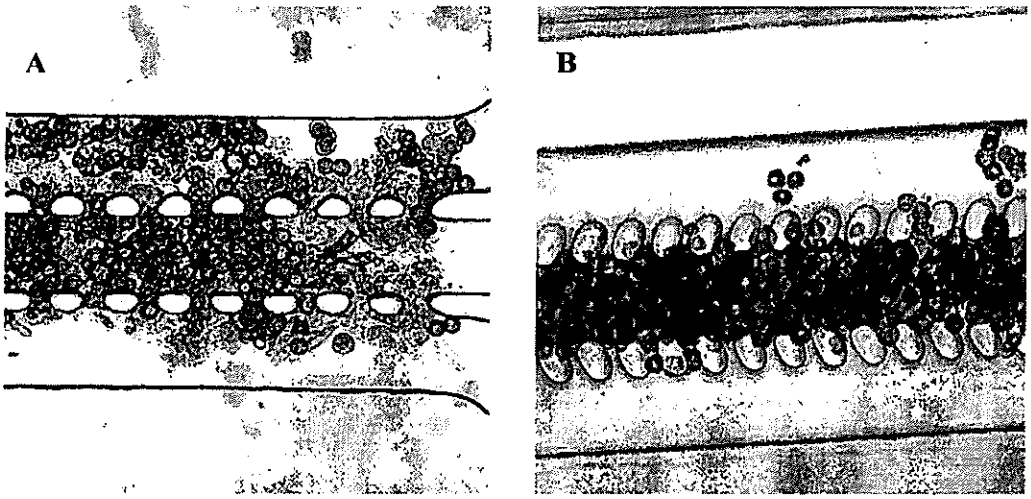

A
B

FIG.24

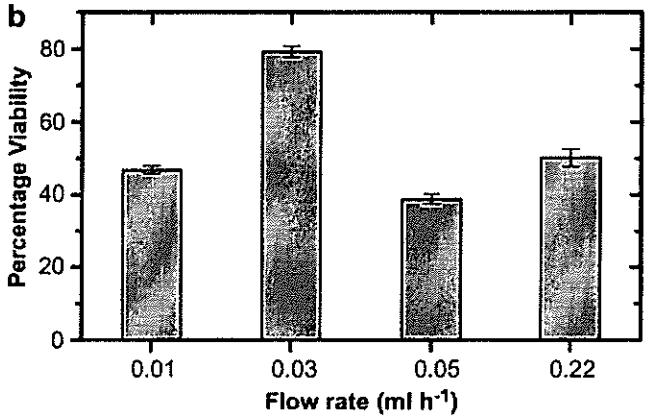

b
Percentage Viability
0
20
40
60
80
0.01
0.03
0.05
0.22
Flow rate (ml h-1)

FIG.25

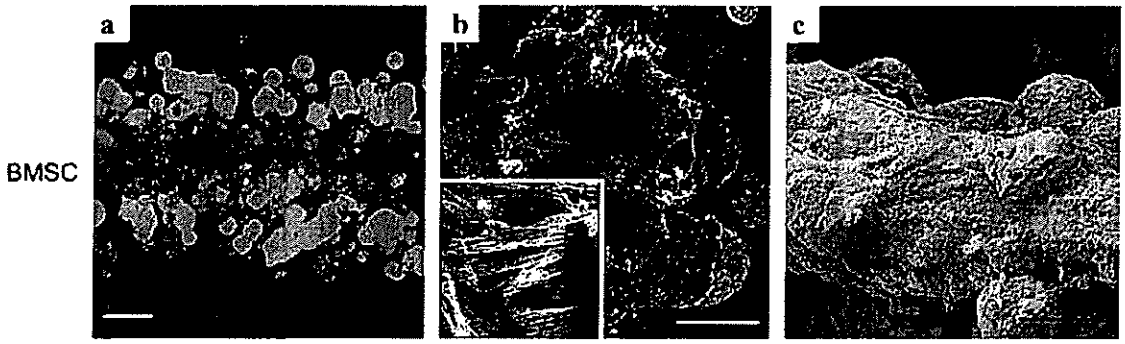


FIG.26

