FIG. 1A

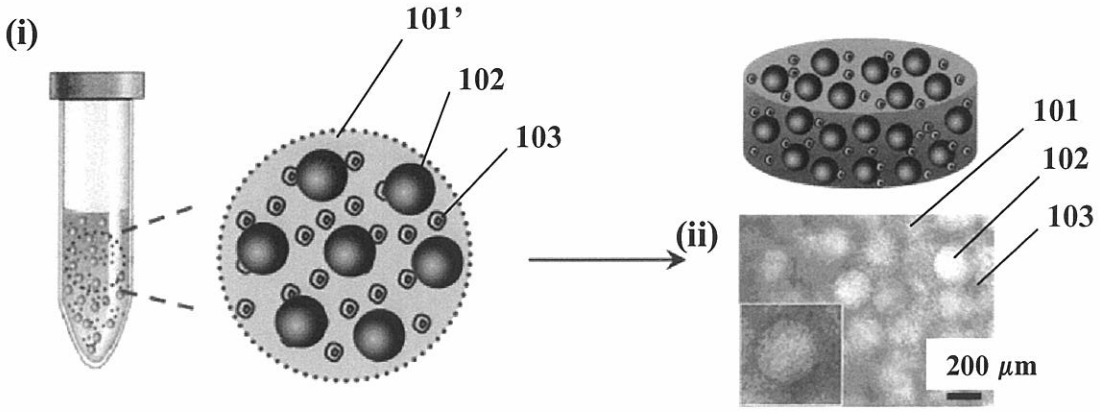


FIG. 1B

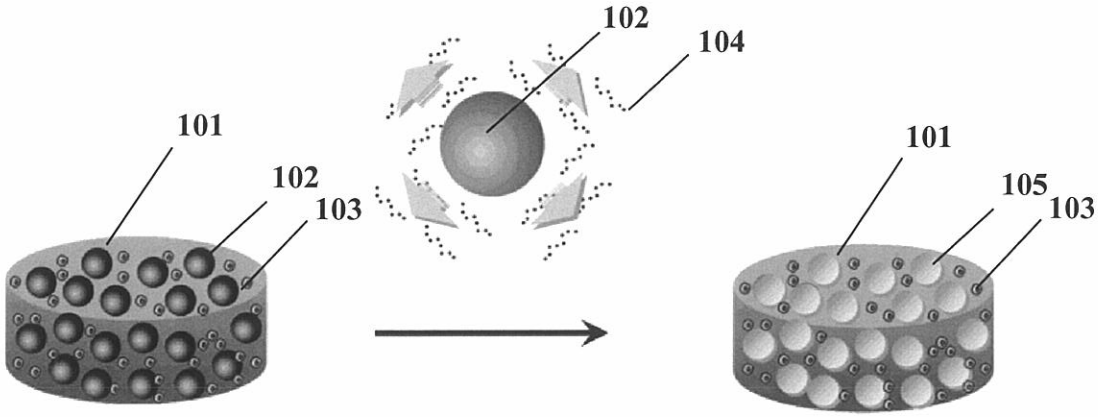


FIG. 1C

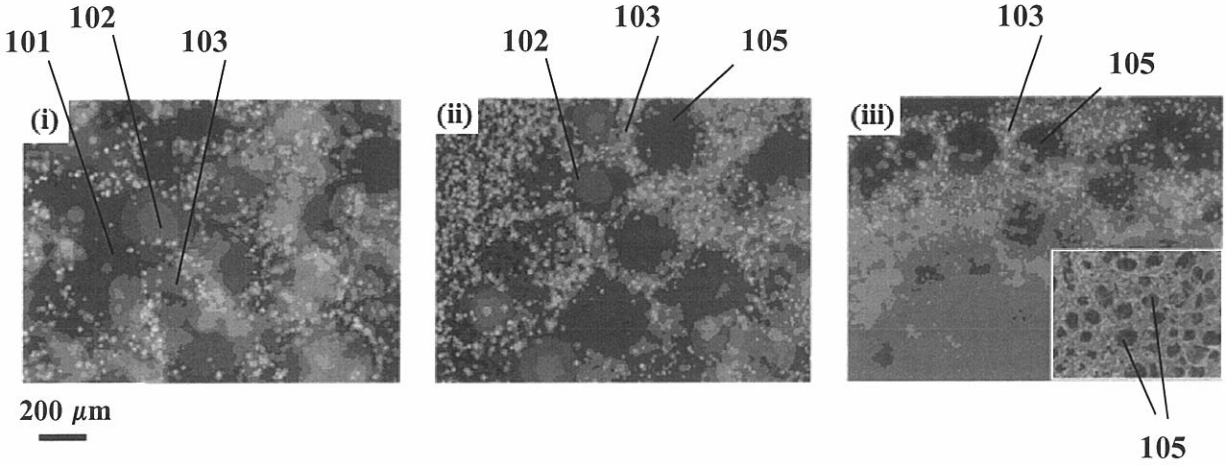


FIG. 1D

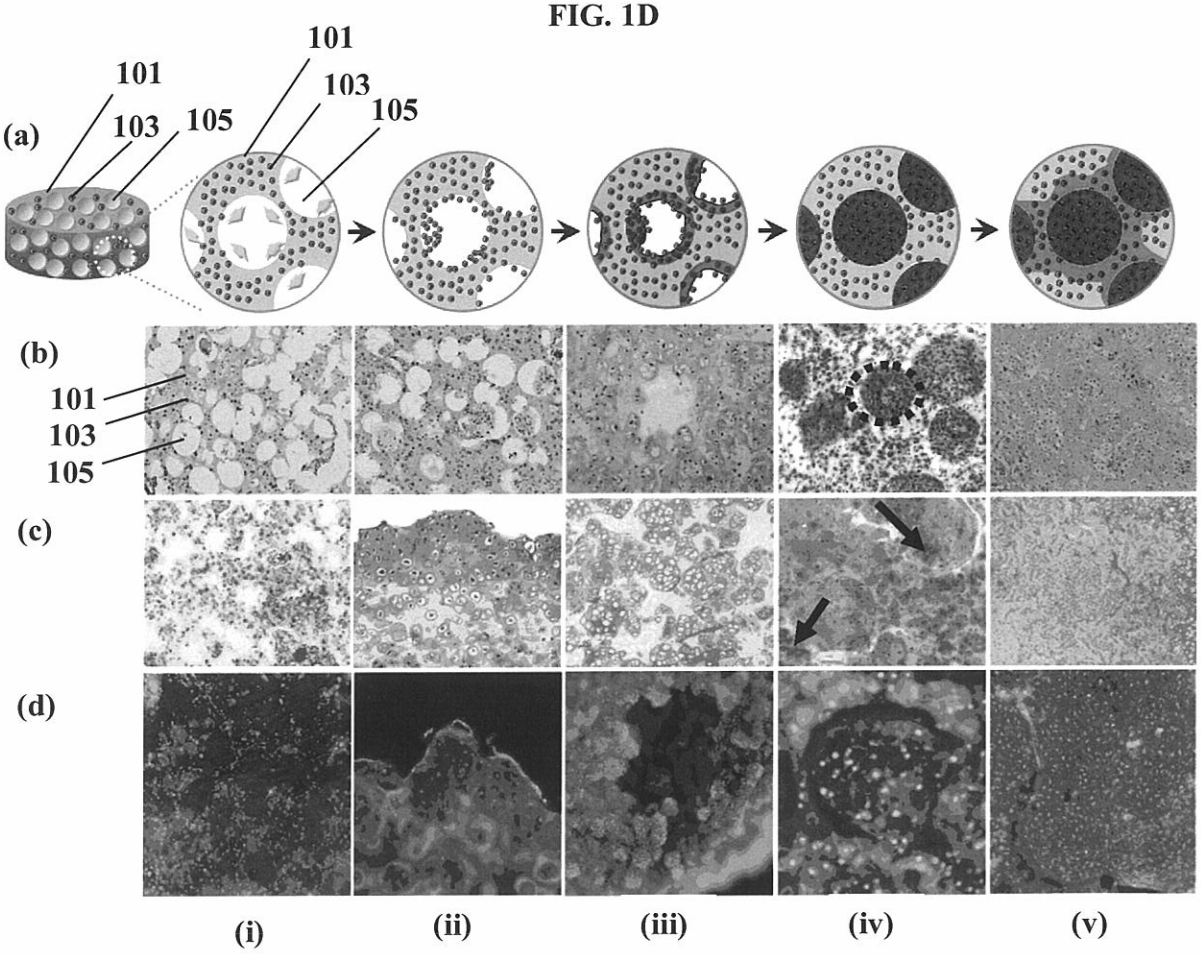

(a)
101
103
105
101
103
105
(b)
101
103
105
(c)
(d)
(i)
(ii)
(iii)
(iv)
(v)

FIG. 2A

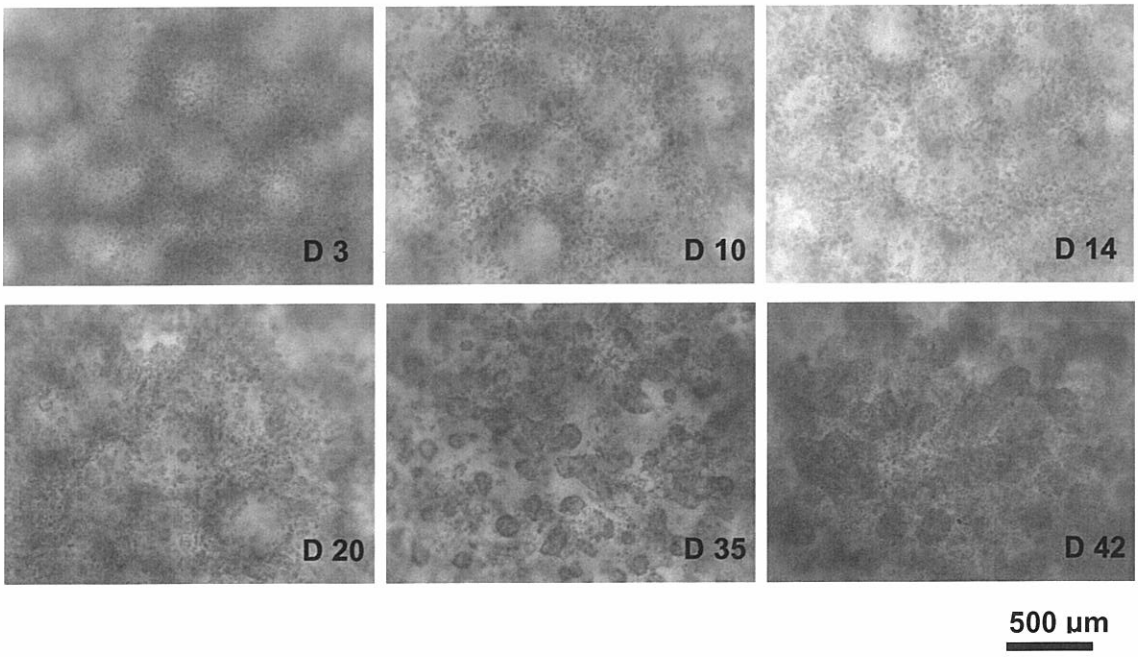

D 3
D 10
D 14
D 20
D 35
D 42
500 μm

FIG. 2B

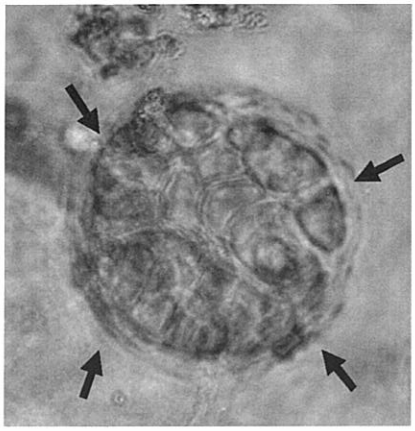


FIG. 3

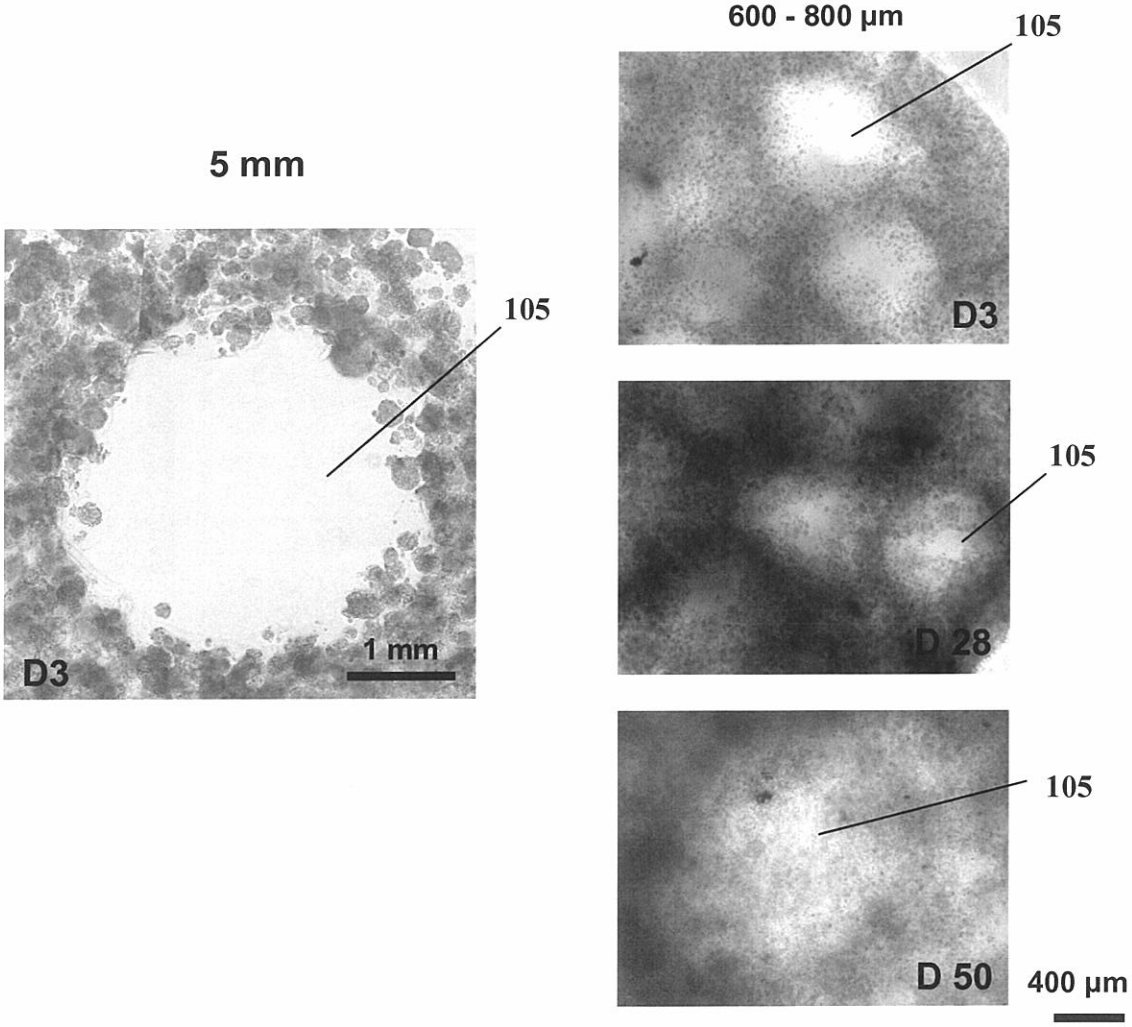


FIG. 4

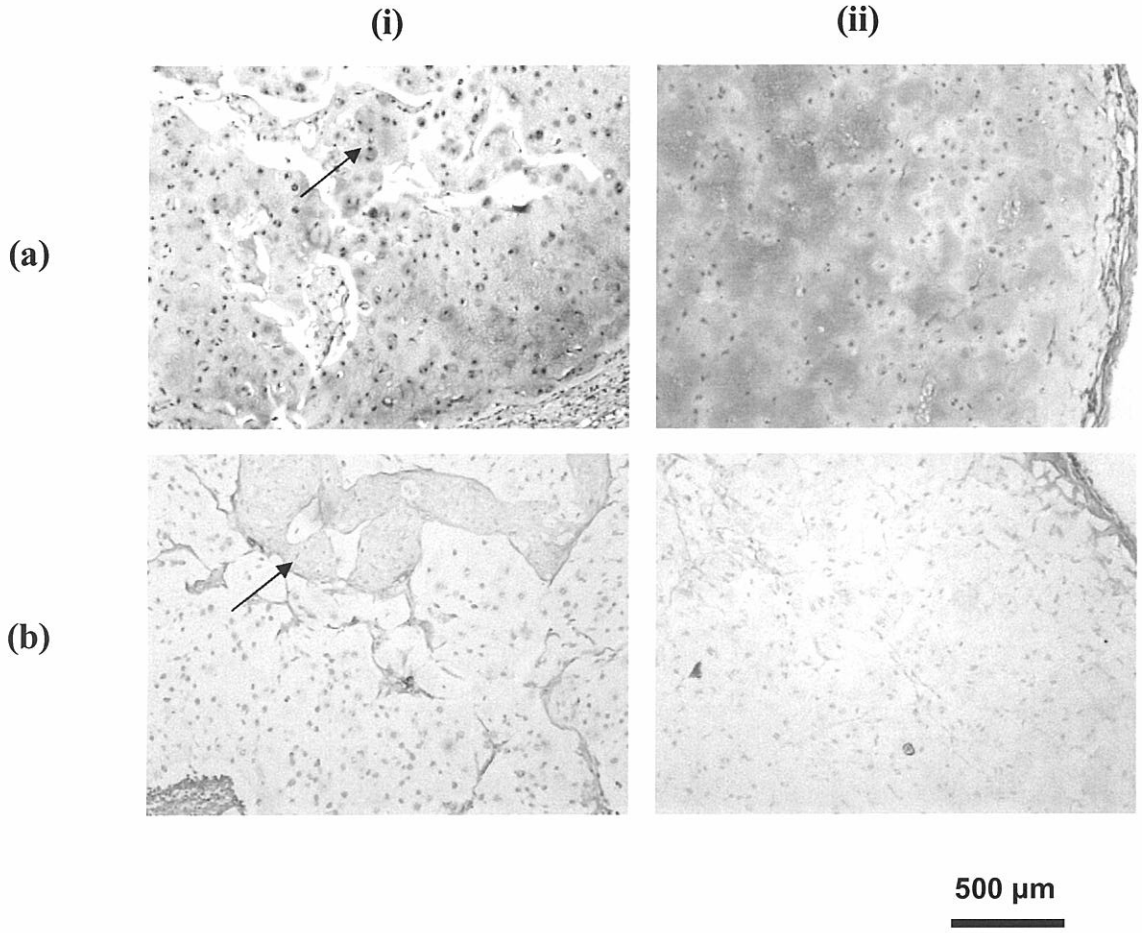


FIG. 5A

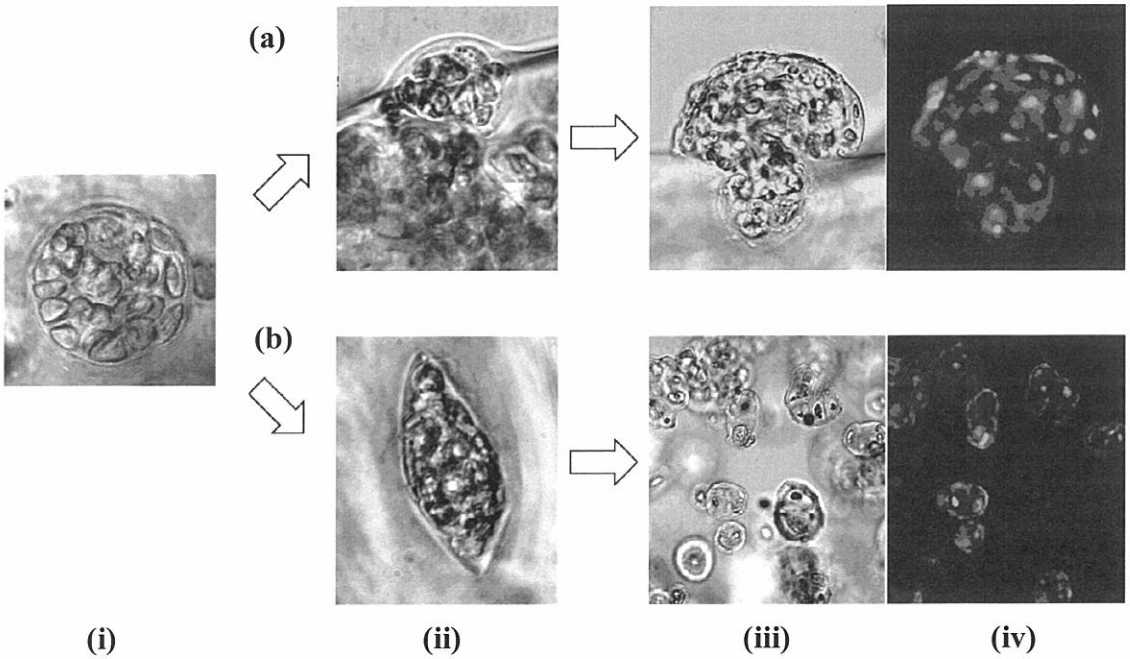


FIG. 5B

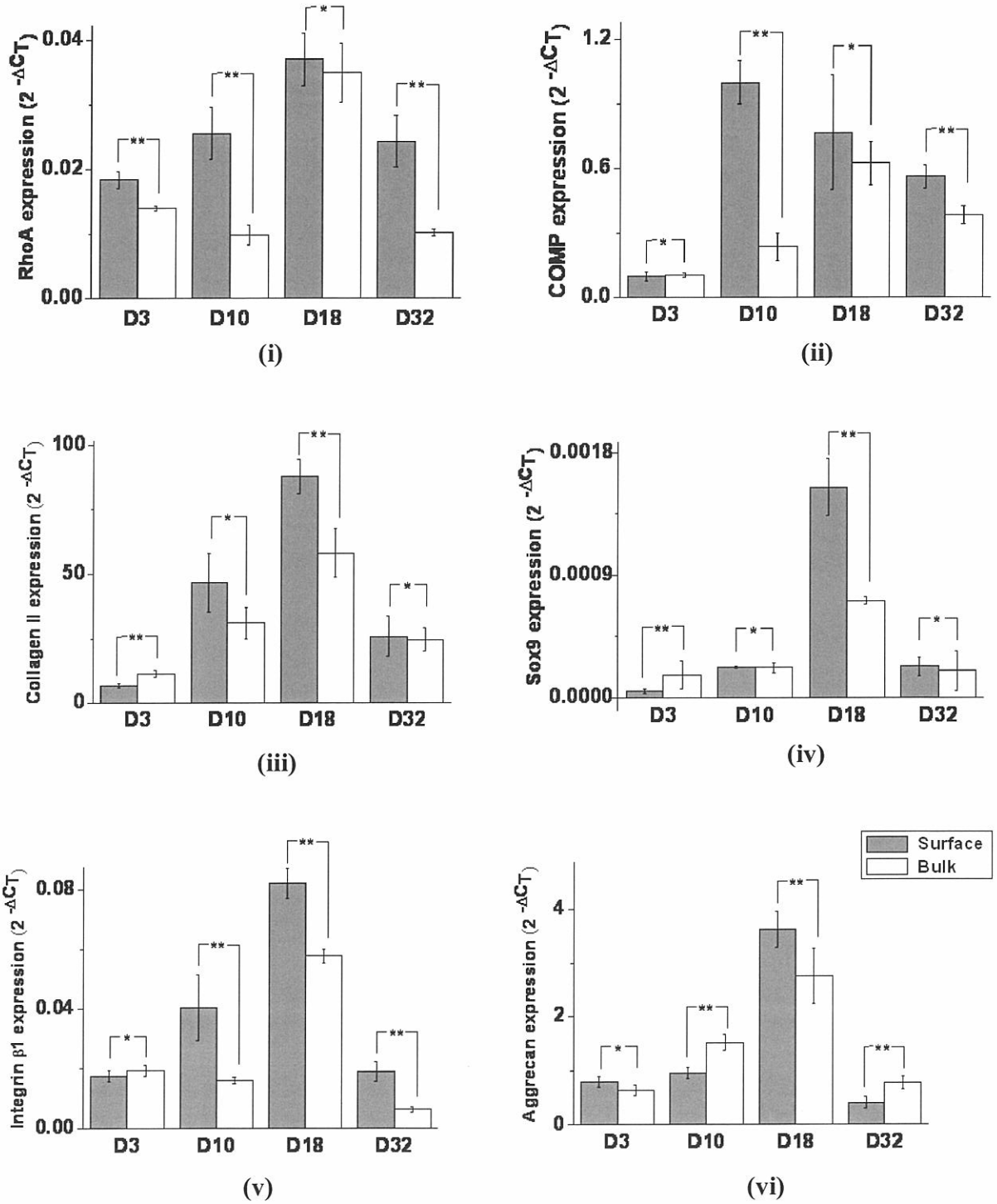

RhoA expression (2 -ΔCT)
0.04
0.02
0.00
D3
D10
D18
D32
(i)
COMP expression (2 -ΔCT)
1.2
0.6
0.0
D3
D10
D18
D32
(ii)
Collagen II expression (2 -ΔCT)
100
50
0
D3
D10
D18
D32
(iii)
Sox9 expression (2 -ΔCT)
0.0018
0.0009
0.0000
D3
D10
D18
D32
(iv)
Integrin β1 expression (2 -ΔCT)
0.08
0.04
0.00
D3
D10
D18
D32
(v)
Surface
Bulk
Aggrecan expression (2 -ΔCT)
4
2
0
D3
D10
D18
D32
(vi)

FIG. 5C

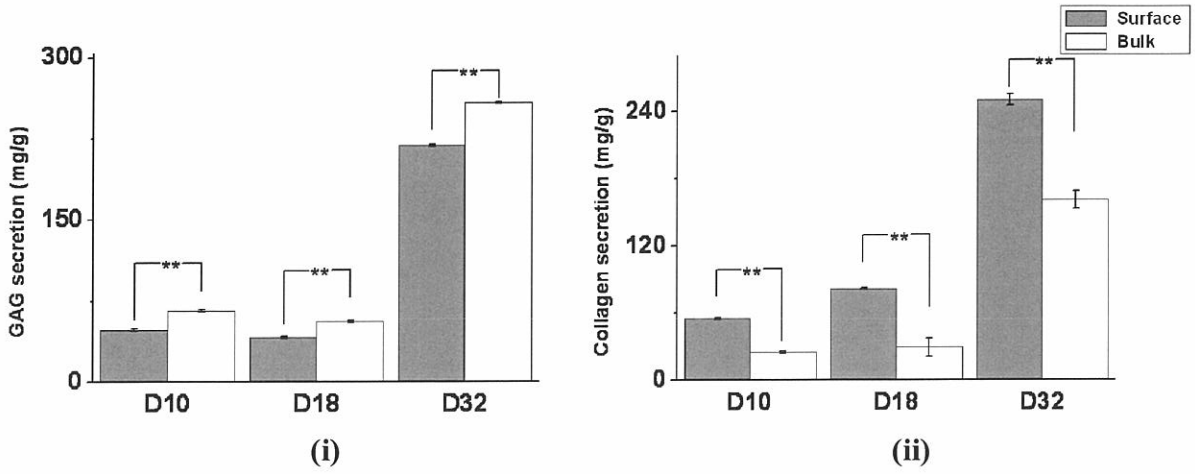

GAG secretion (mg/g)
300
150
0
D10
D18
D32
**
(i)
Collagen secretion (mg/g)
240
120
0
Surface
Bulk
(ii)

FIG. 6A

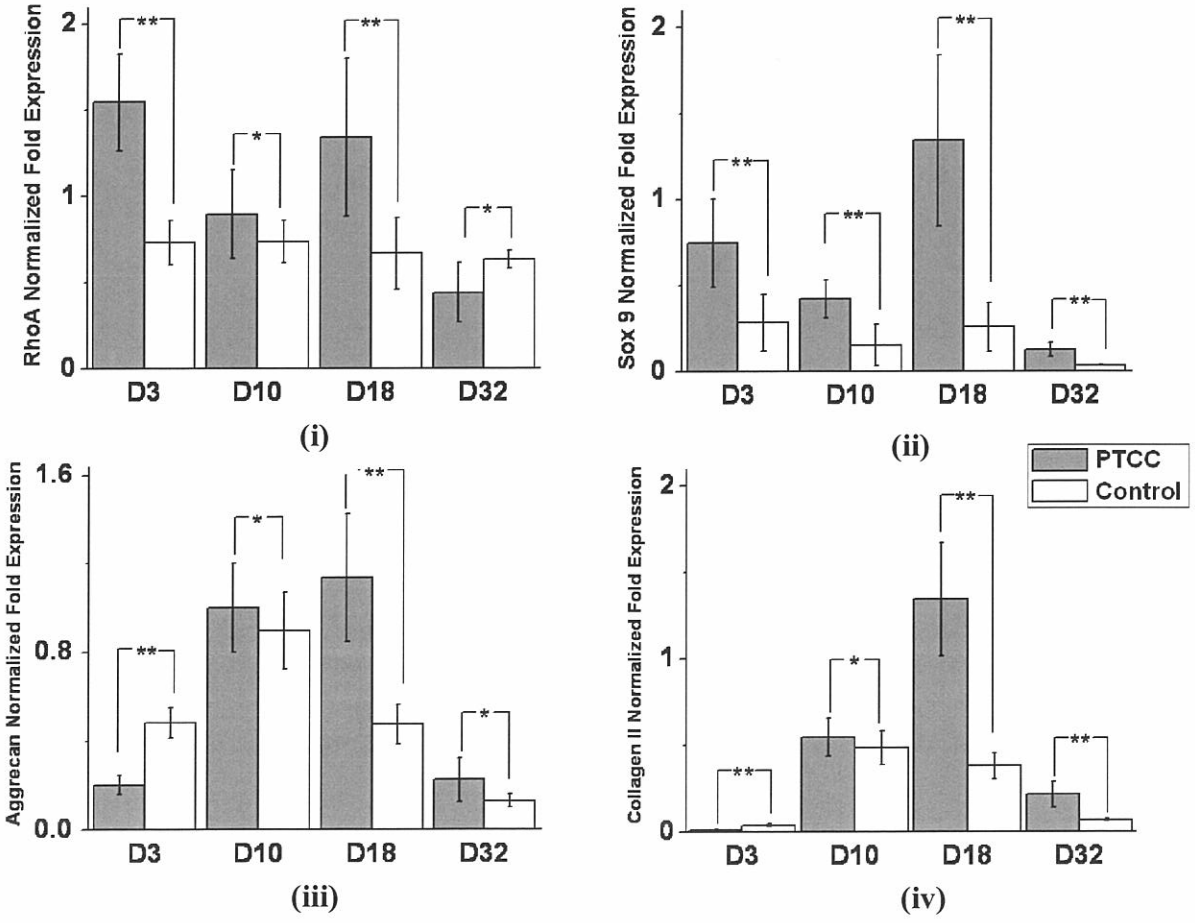

RhoA Normalized Fold Expression
Sox 9 Normalized Fold Expression
Aggrecan Normalized Fold Expression
Collagen II Normalized Fold Expression
D3
D10
D18
D32
(i)
(ii)
(iii)
(iv)
PTCC
Control

FIG. 6B

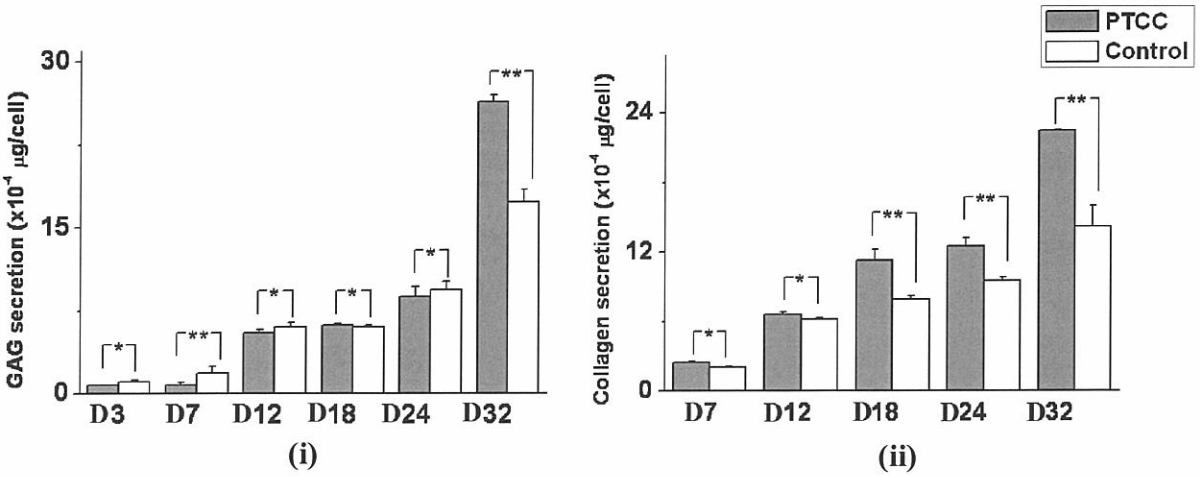

PTCC
Control
GAG secretion (x10⁻⁴ μg/cell)
30
15
0
D3
D7
D12
D18
D24
D32
(i)
Collagen secretion (x10⁻⁴ μg/cell)
24
12
0
D7
D12
D18
D24
D32
(ii)

FIG. 6C

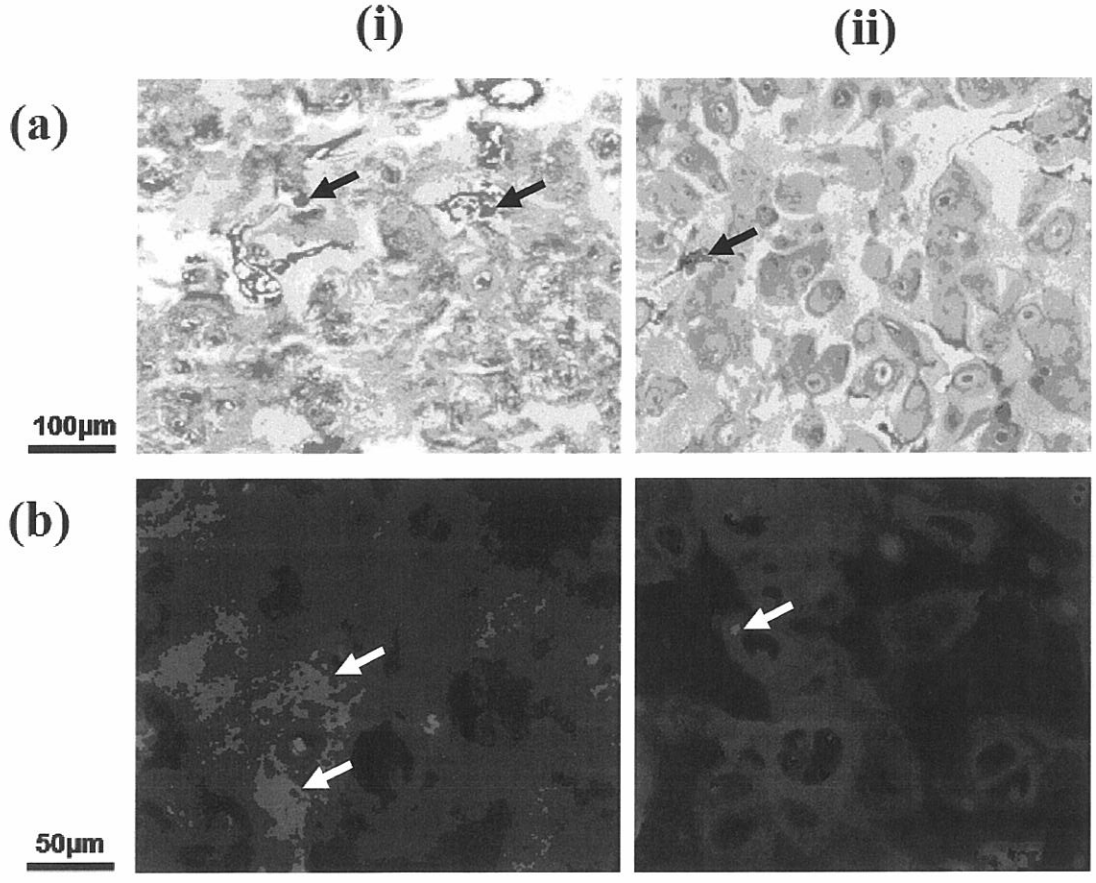

(i)
(ii)
(a)
100μm
(b)
50μm

FIG. 6D

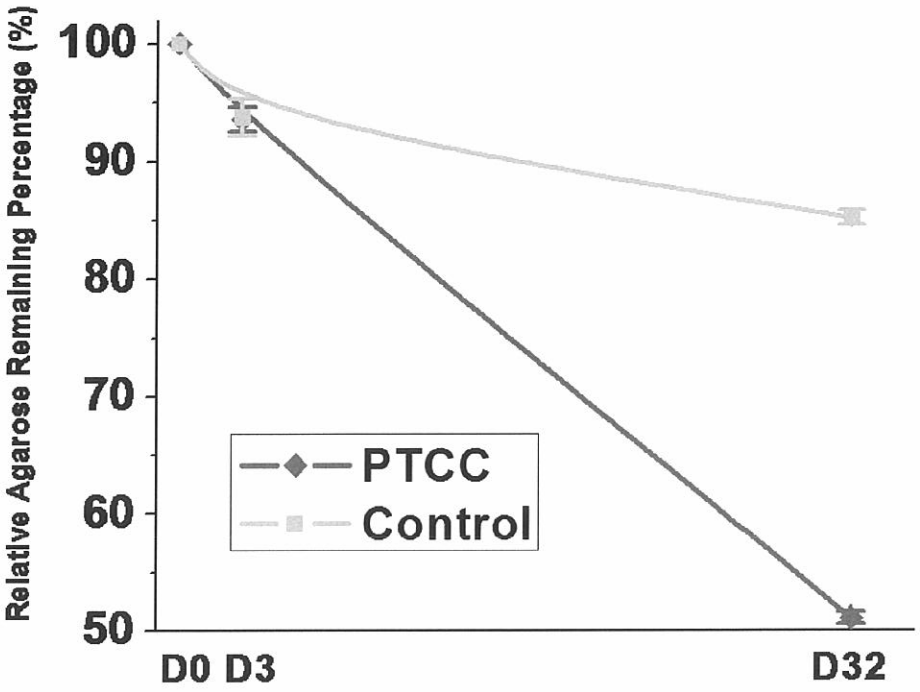

Relative Agarose Remaining Percentage (%)
100
90
80
70
60
50
PTCC
Control
D0 D3
D32

FIG. 7

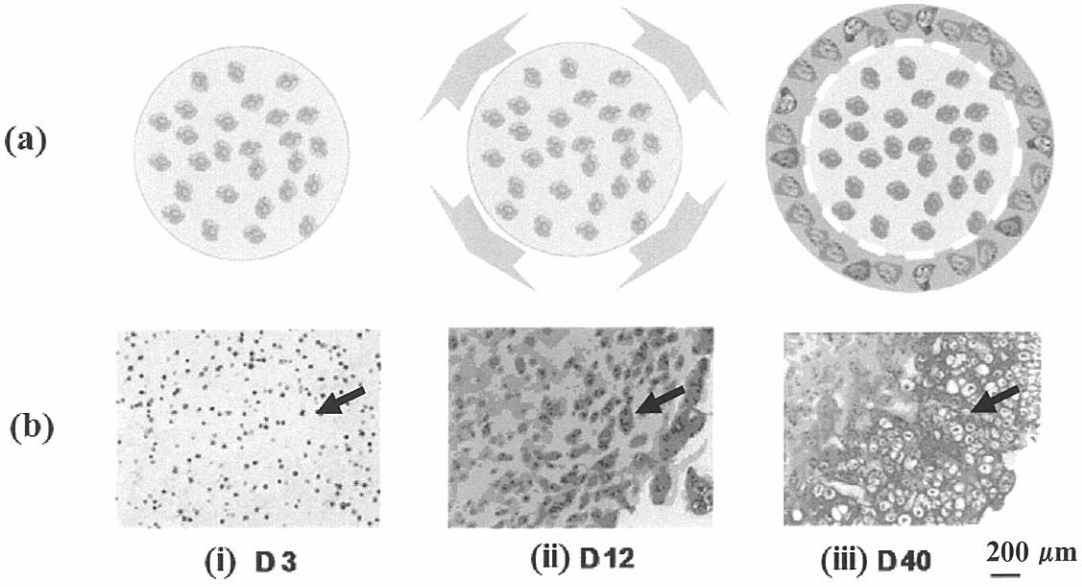

(a)
(b)
(i) D3
(ii) D12
(iii) D40
200 μm

FIG. 8

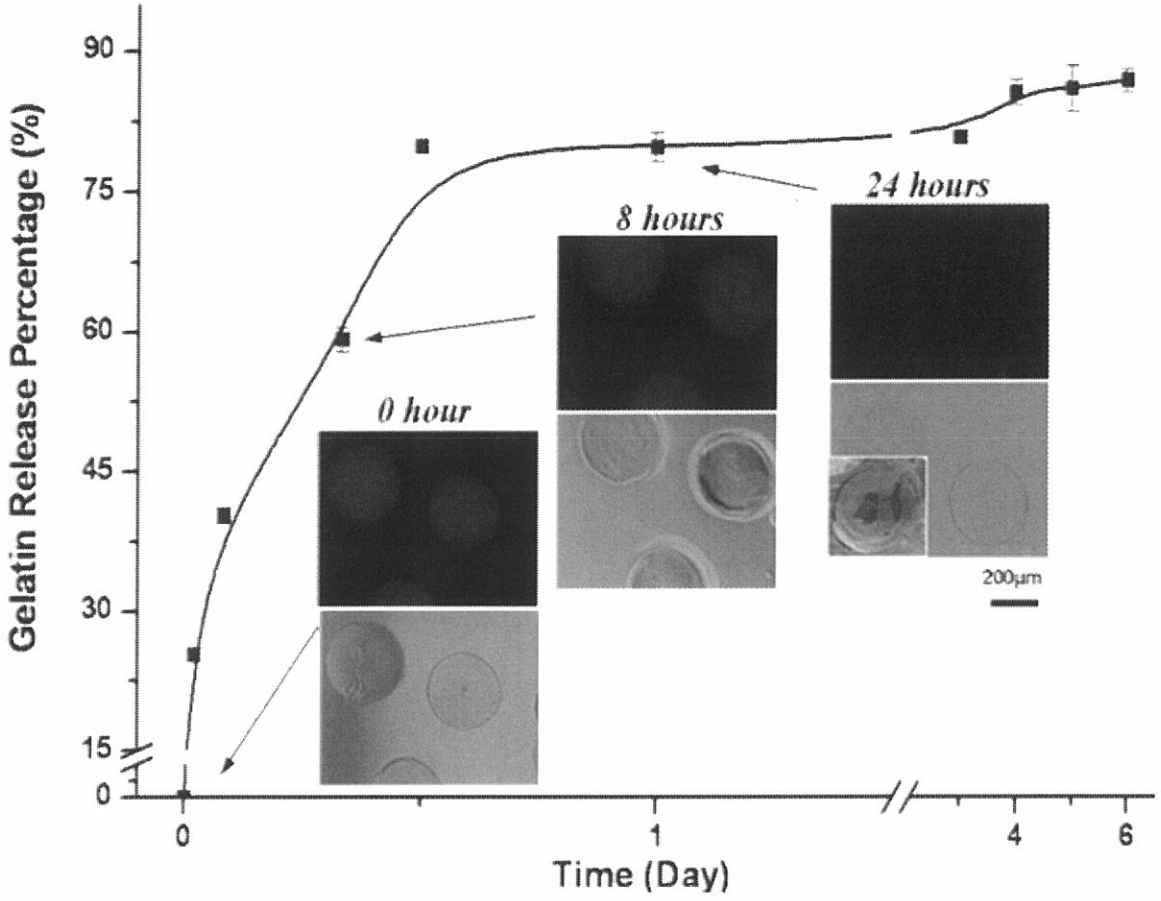
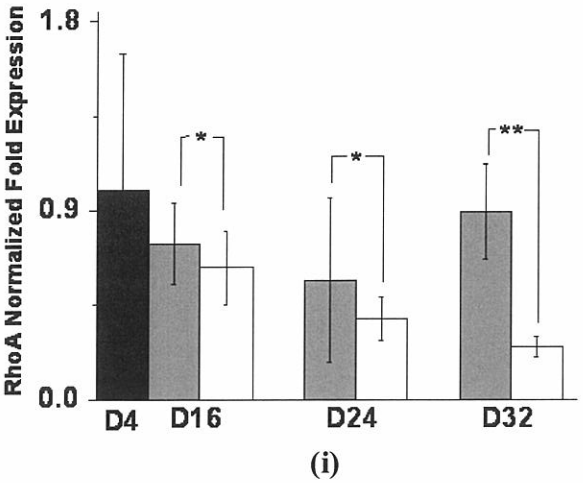
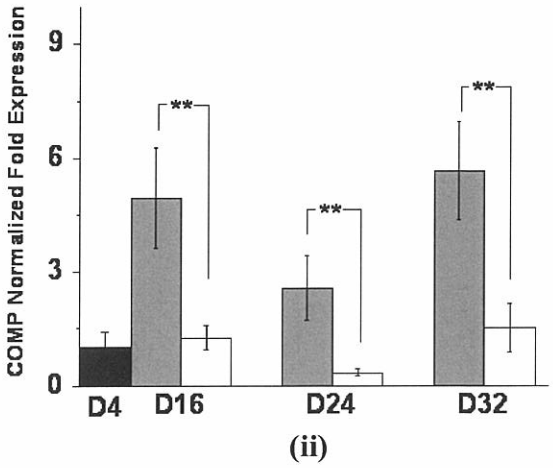

Gelatin Release Percentage (%)
90
75
60
45
30
15
0
0
1
4
6
Time (Day)
0 hour
8 hours
24 hours
200μm

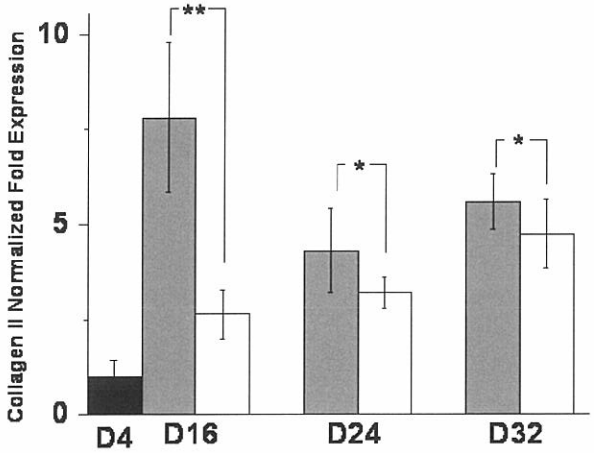
FIG. 9



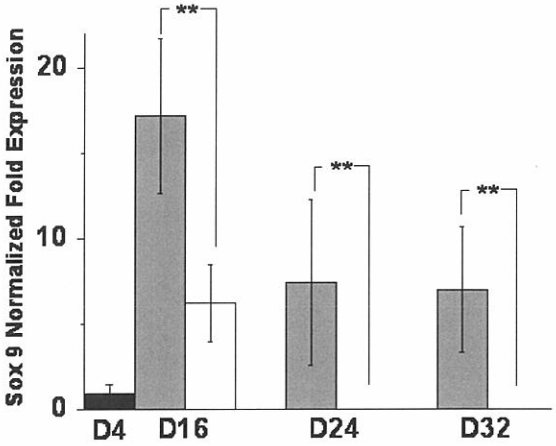
(i)



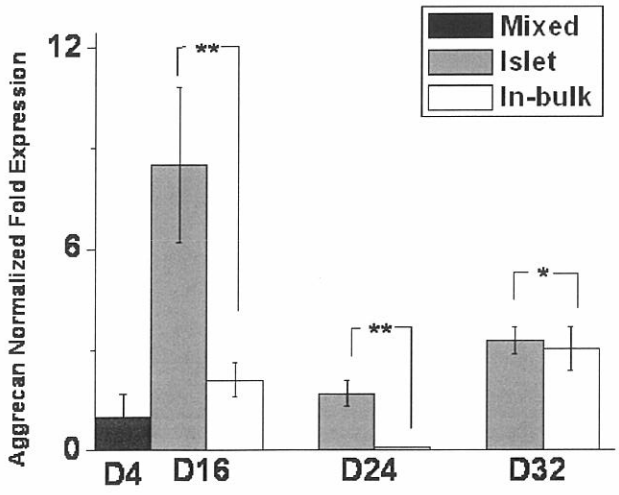
(ii)



(iii)



(iv)



(v)

FIG. 10

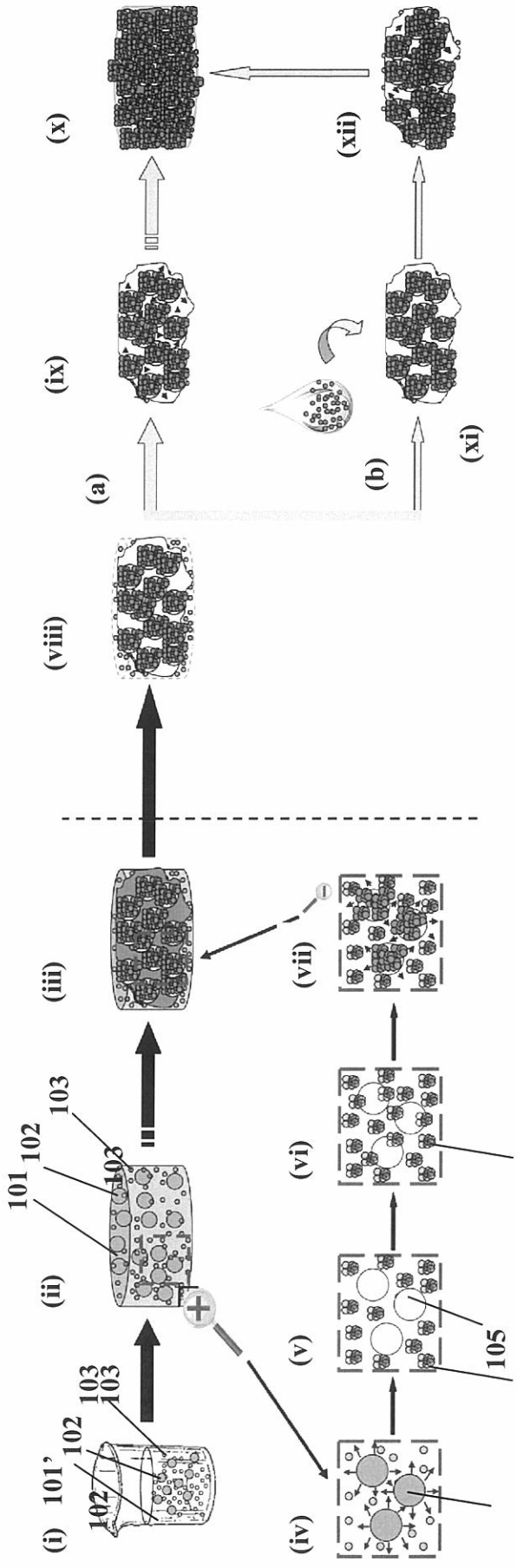


FIG. 11

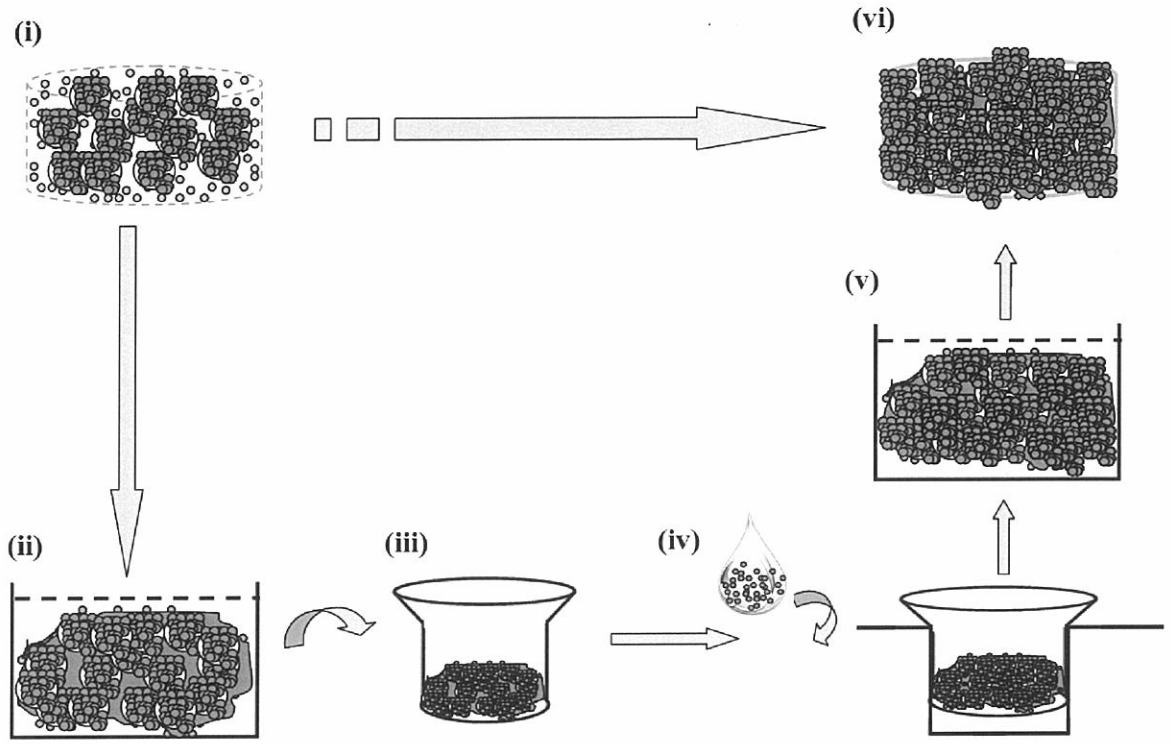


FIG. 12

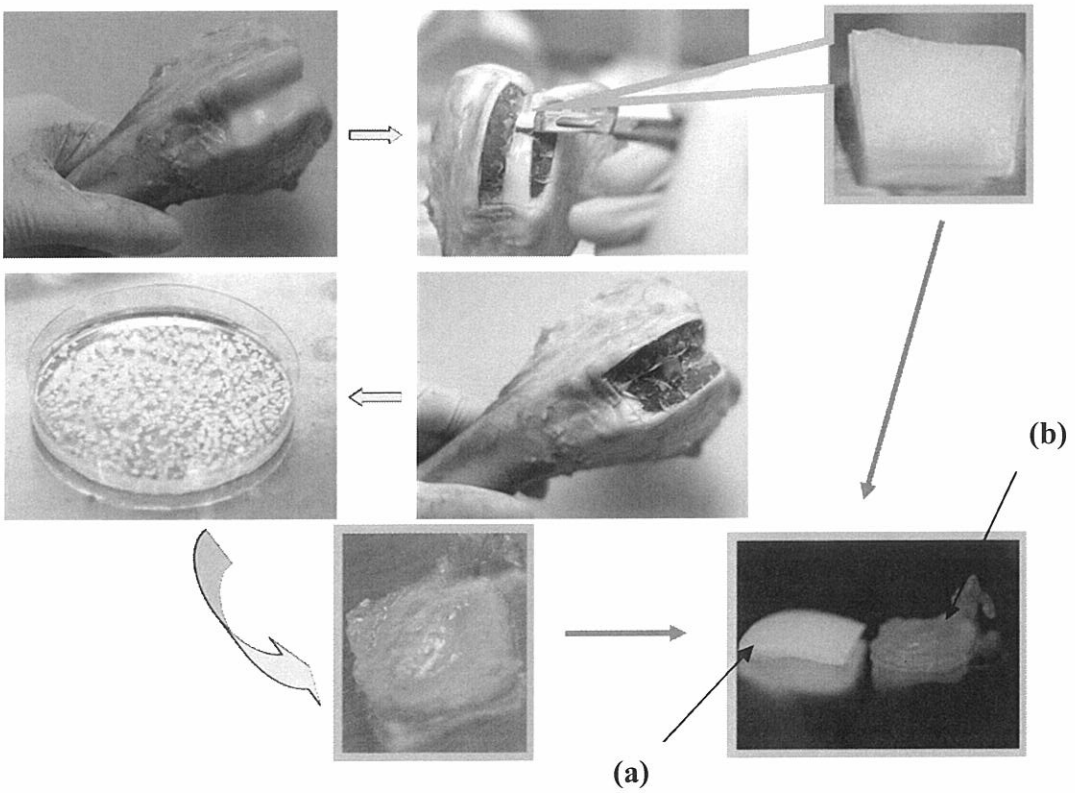


FIG. 13

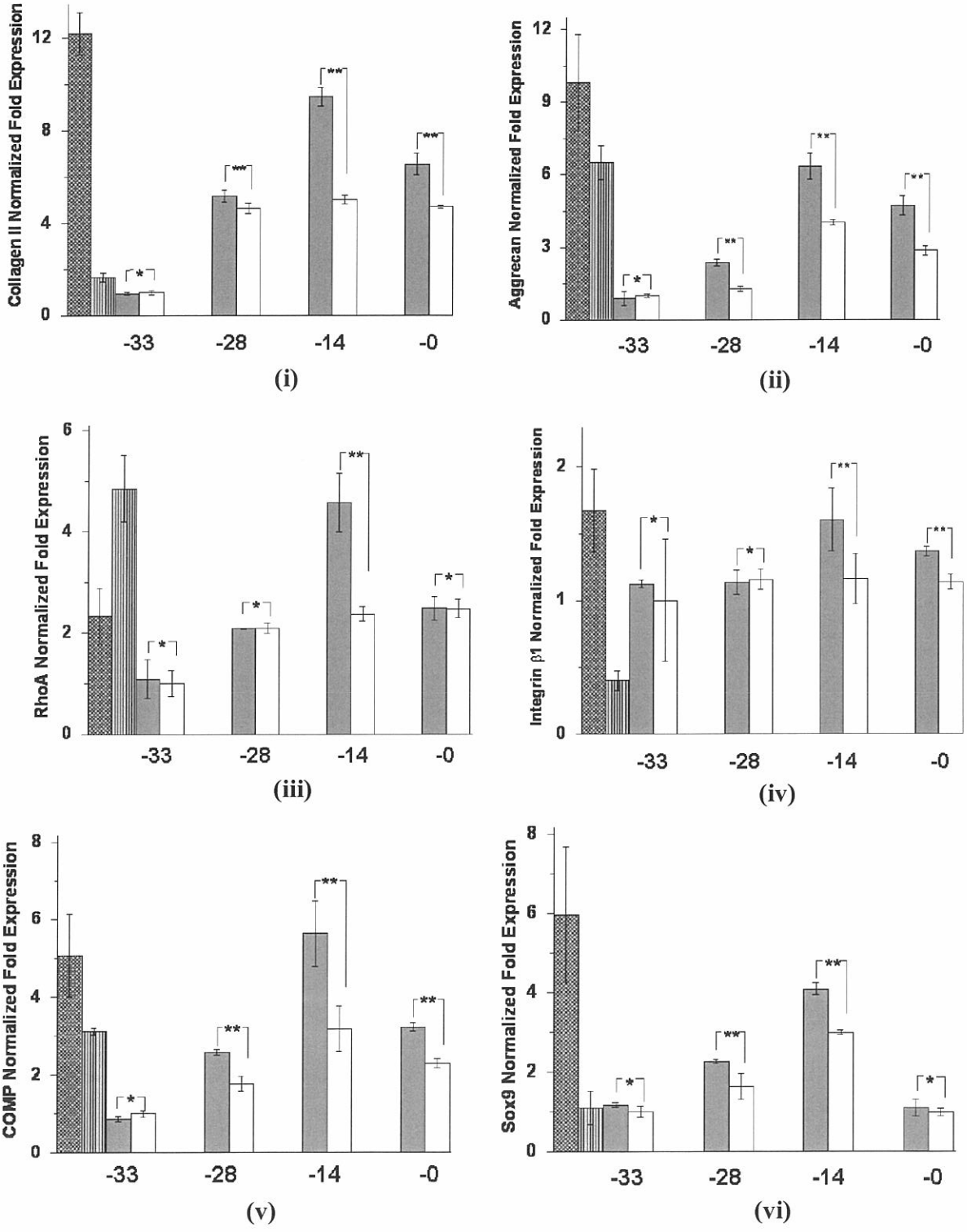
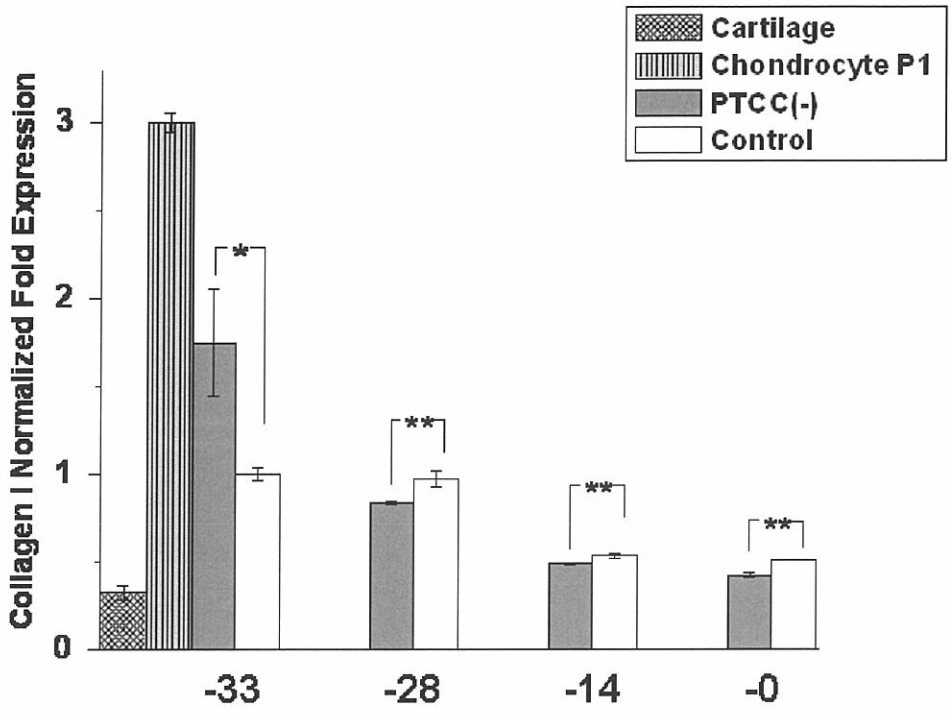
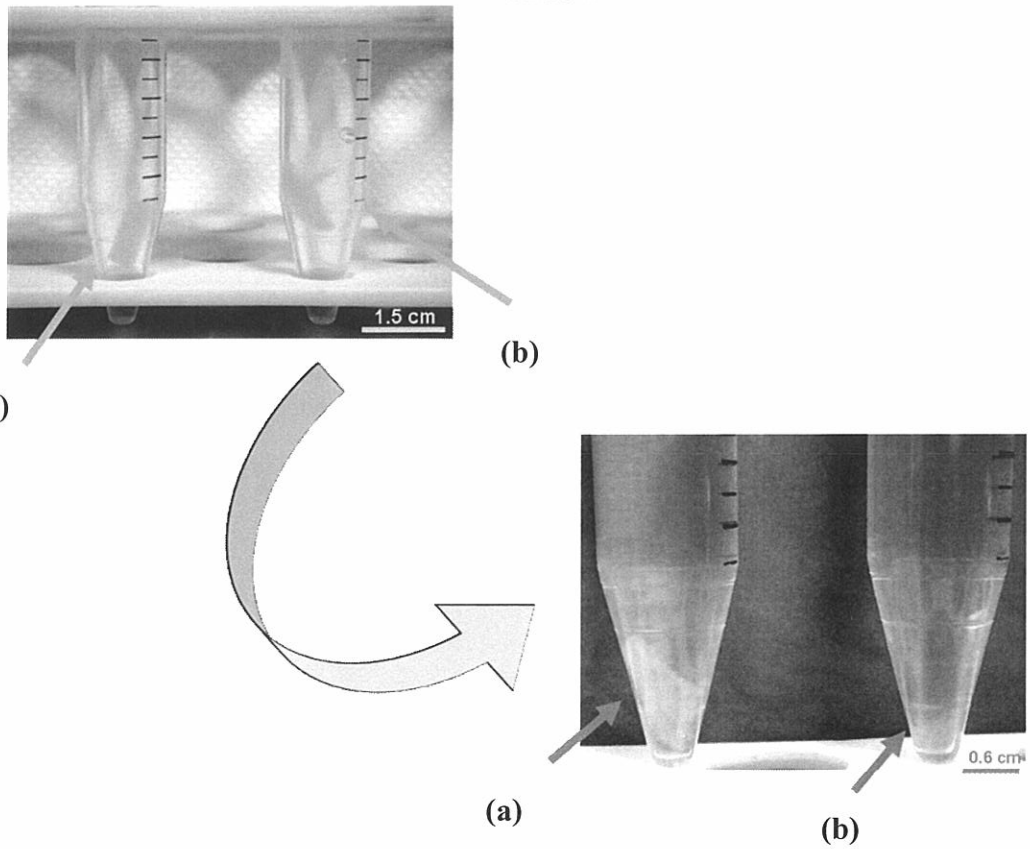

Collagen II Normalized Fold Expression
12
8
4
0
-33
-28
-14
-0
(i)
Aggrecan Normalized Fold Expression
12
9
6
3
0
-33
-28
-14
-0
(ii)
RhoA Normalized Fold Expression
6
4
2
0
-33
-28
-14
-0
(iii)
Integrin β1 Normalized Fold Expression
2
1
0
-33
-28
-14
-0
(iv)
COMP Normalized Fold Expression
8
6
4
2
0
-33
-28
-14
-0
(v)
Sox9 Normalized Fold Expression
8
6
4
2
0
-33
-28
-14
-0
(vi)

FIG. 13 (cont.)



(vii)

FIG. 14



(a) (b)

(a) (b)

FIG. 15

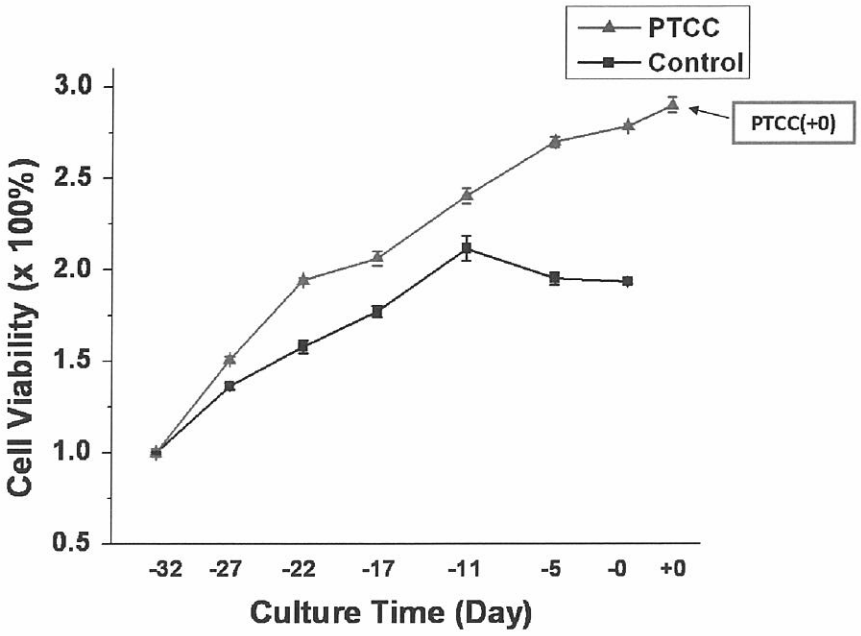

PTCC
Control
PTCC(+0)
Cell Viability (x 100%)
3.0
2.5
2.0
1.5
1.0
0.5
-32
-27
-22
-17
-11
-5
-0
+0
Culture Time (Day)

FIG. 16

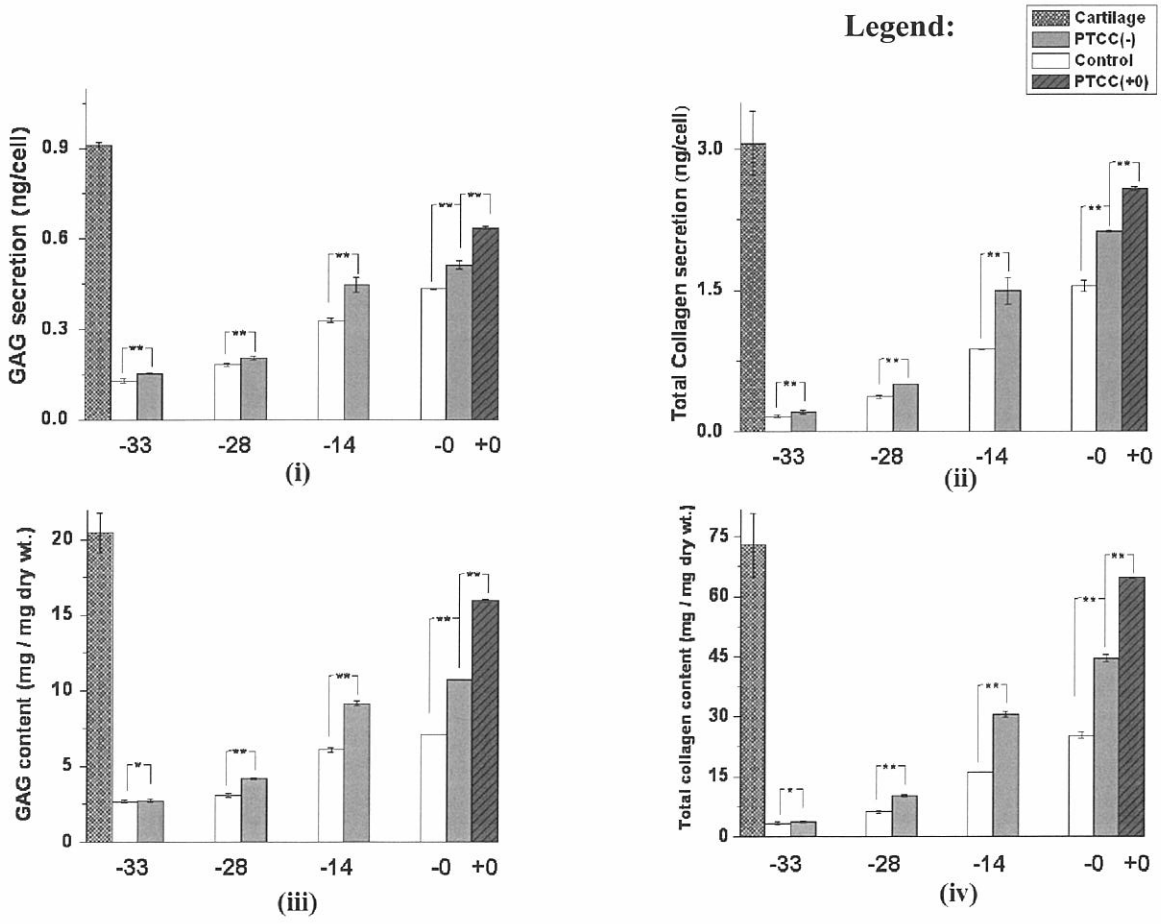

Legend:
Cartilage
PTCC(-)
Control
PTCC(+0)
GAG secretion (ng/cell)
Total Collagen secretion (ng/cell)
GAG content (mg / mg dry wt.)
Total collagen content (mg / mg dry wt.)
-33
-28
-14
-0
+0
(i)
(ii)
(iii)
(iv)

FIG. 17A

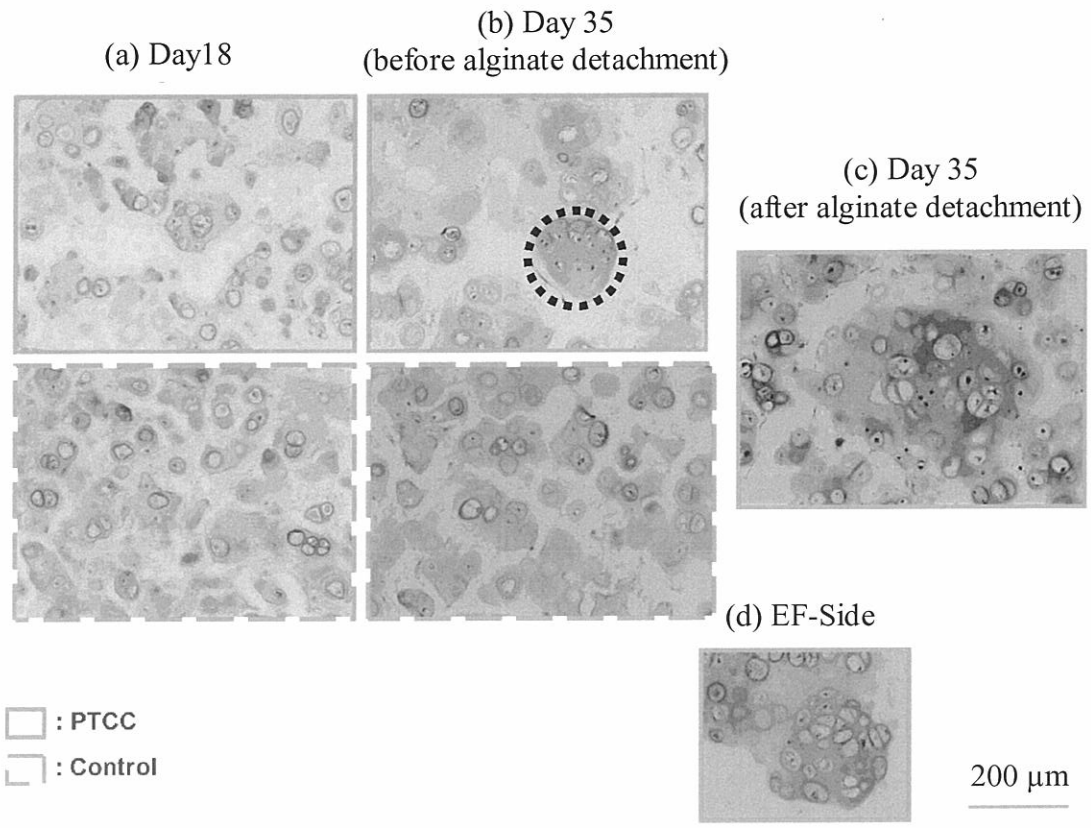


FIG. 17B

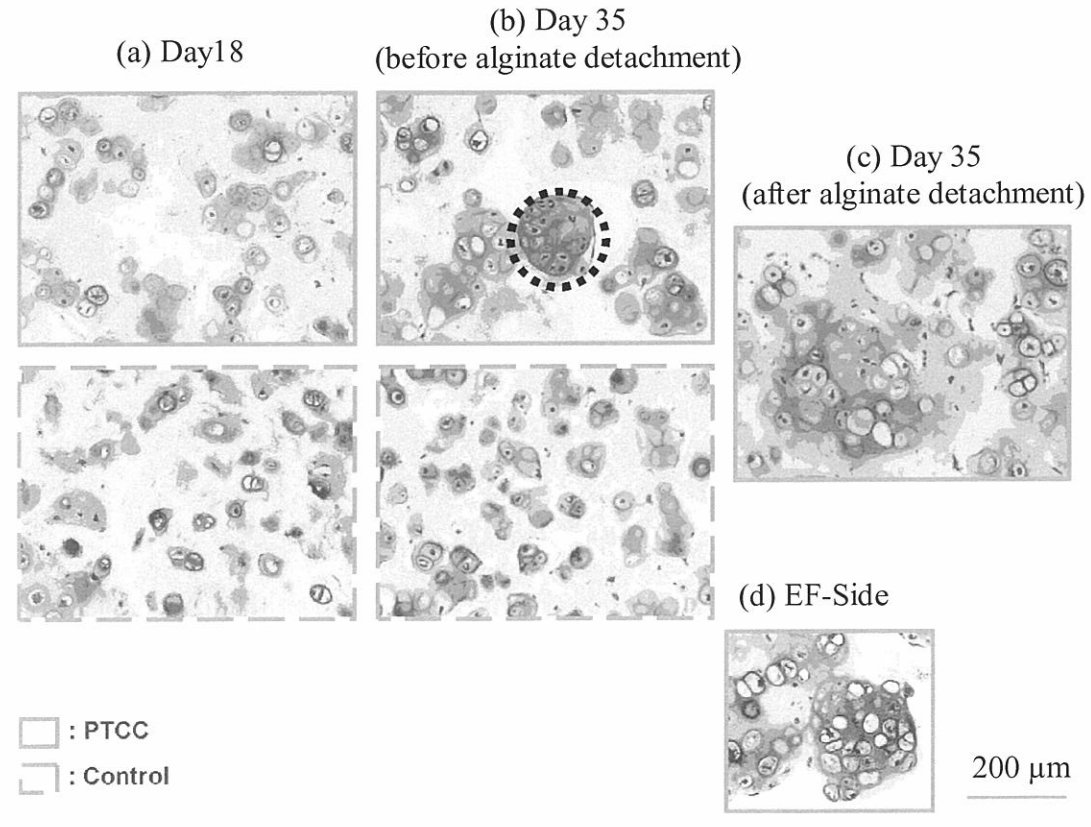


FIG. 17C

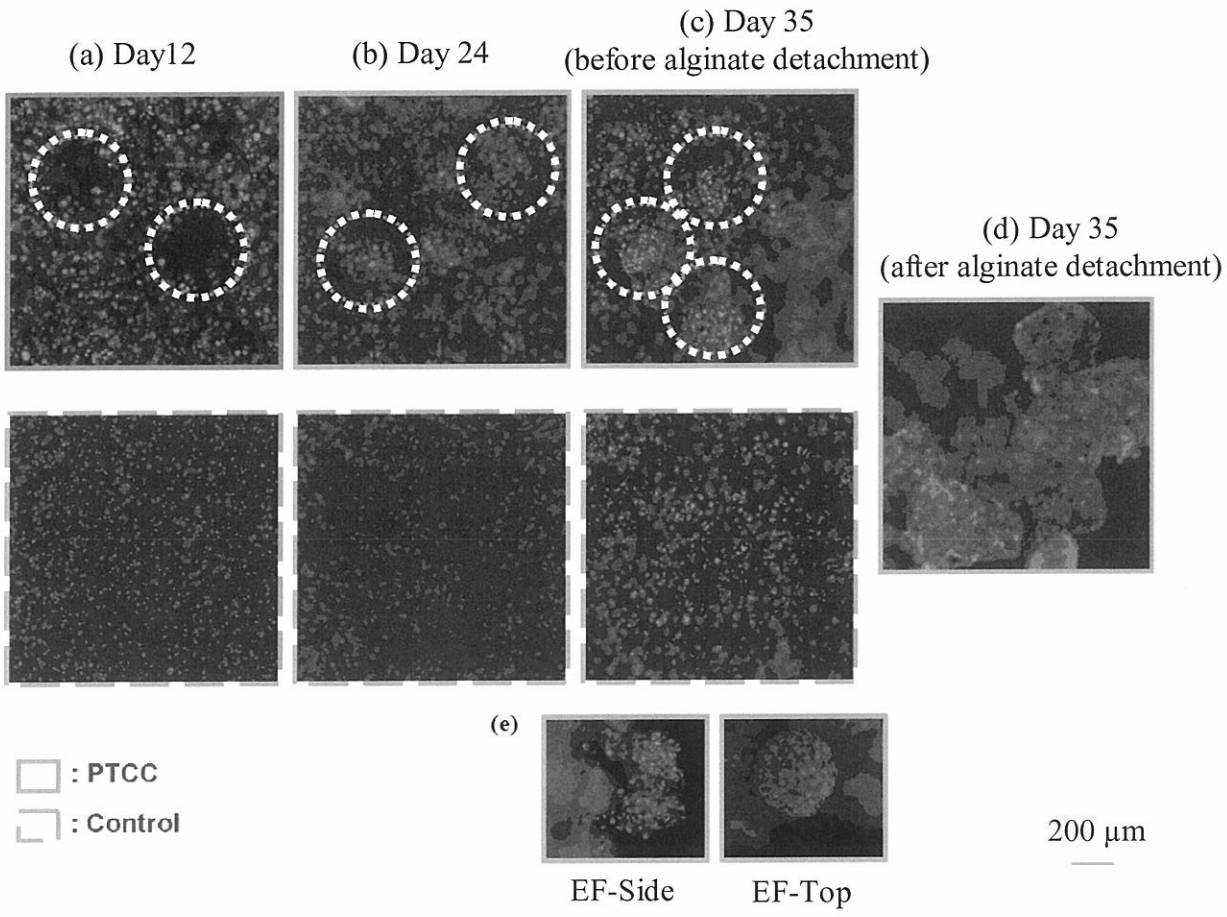

(a) Day12
(b) Day 24
(c) Day 35
(before alginate detachment)
(d) Day 35
(after alginate detachment)
: PTCC
: Control
(e)
EF-Side
EF-Top
200 μm

FIG. 18

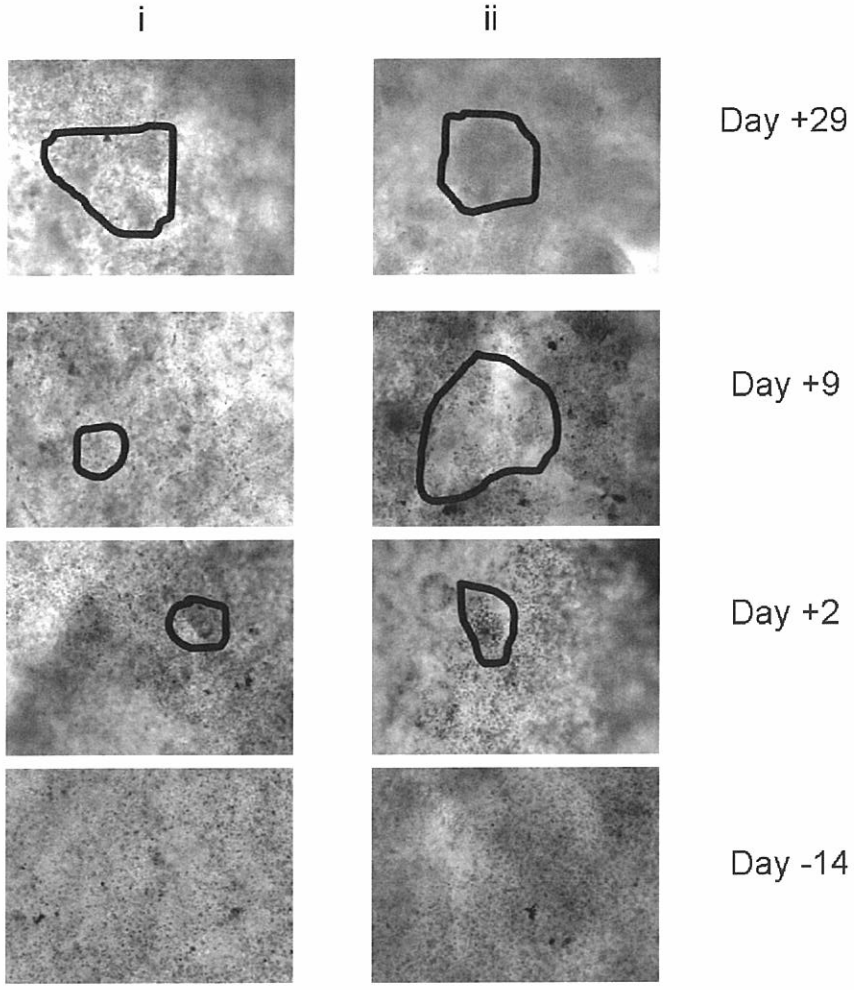


FIG. 19

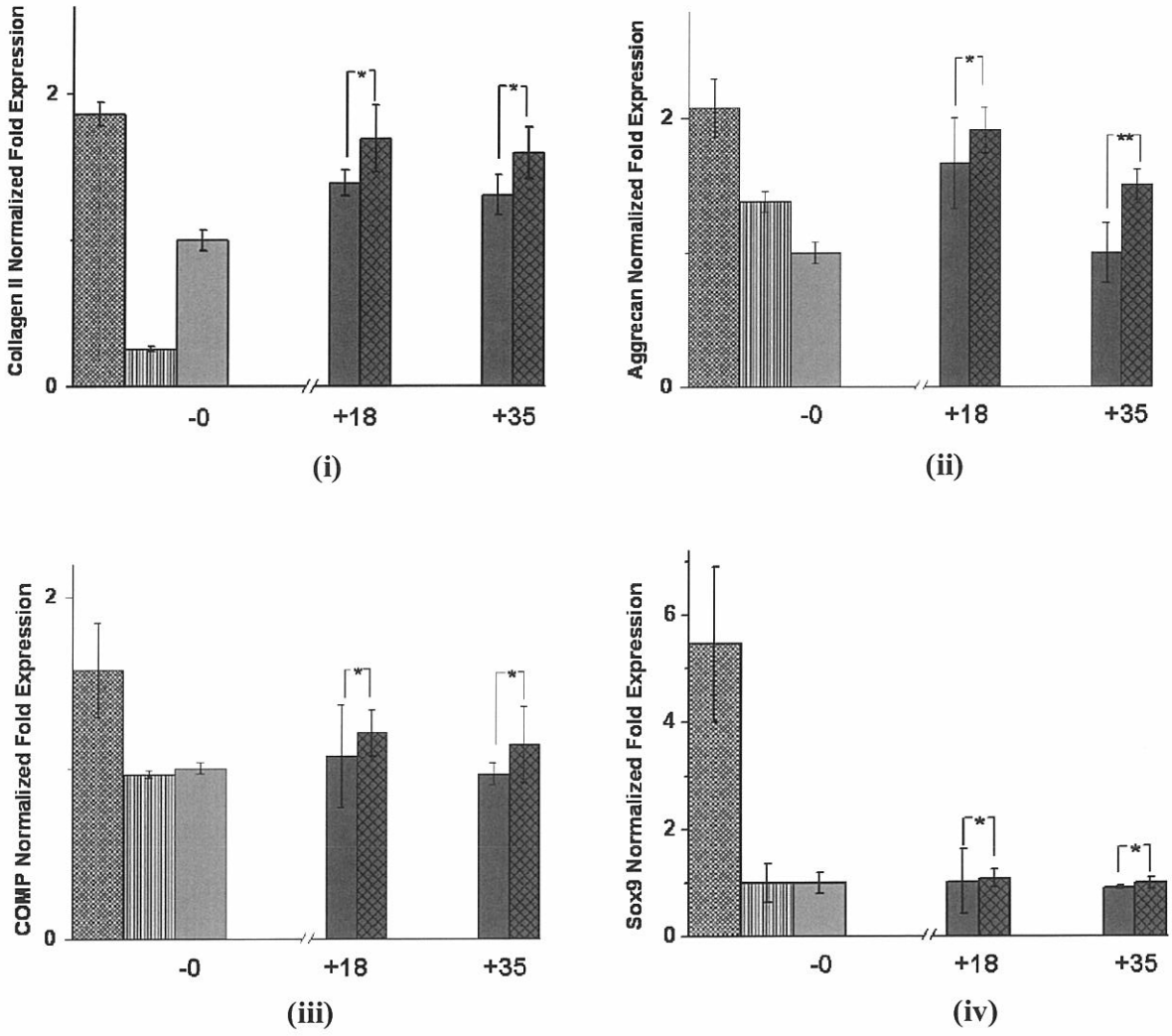
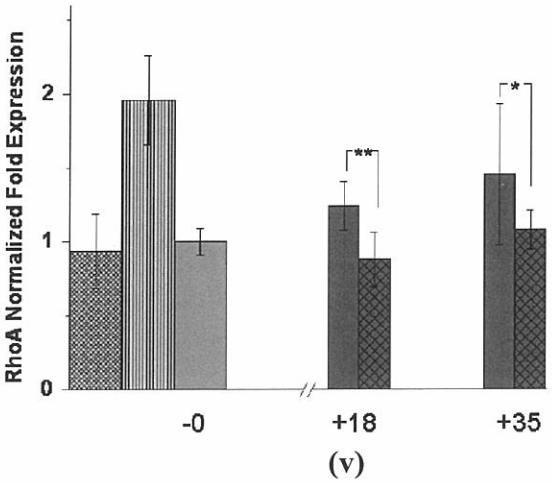
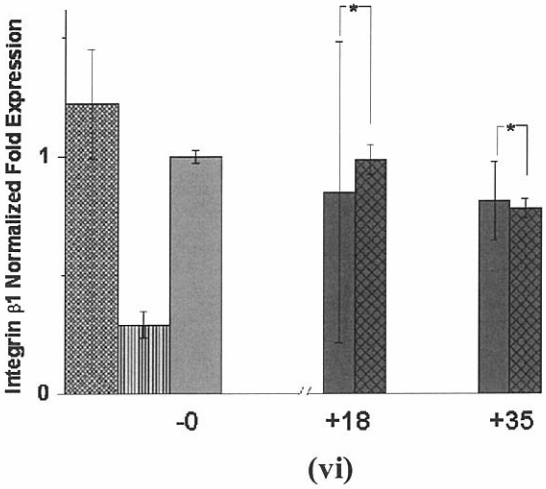

Collagen II Normalized Fold Expression
2
0
-0
+18
+35
*
*
(i)
Aggrecan Normalized Fold Expression
2
0
-0
+18
+35
*
**
(ii)
COMP Normalized Fold Expression
2
0
-0
+18
+35
*
*
(iii)
Sox9 Normalized Fold Expression
6
4
2
0
-0
+18
+35
*
*
(iv)

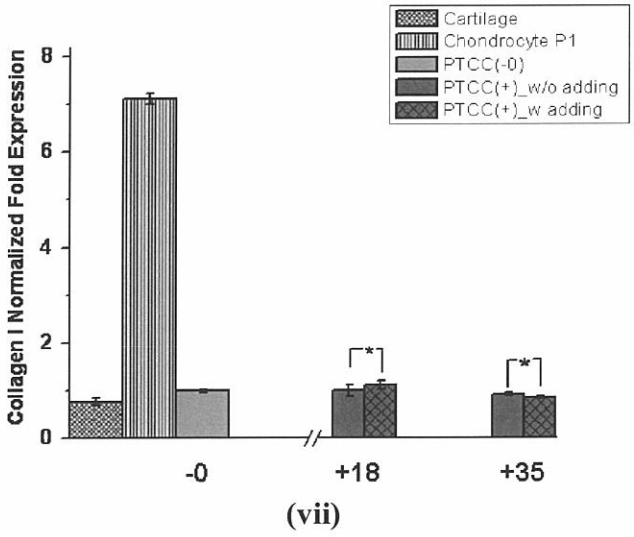
FIG. 19 (cont.)



(v)



(vi)



(vii)