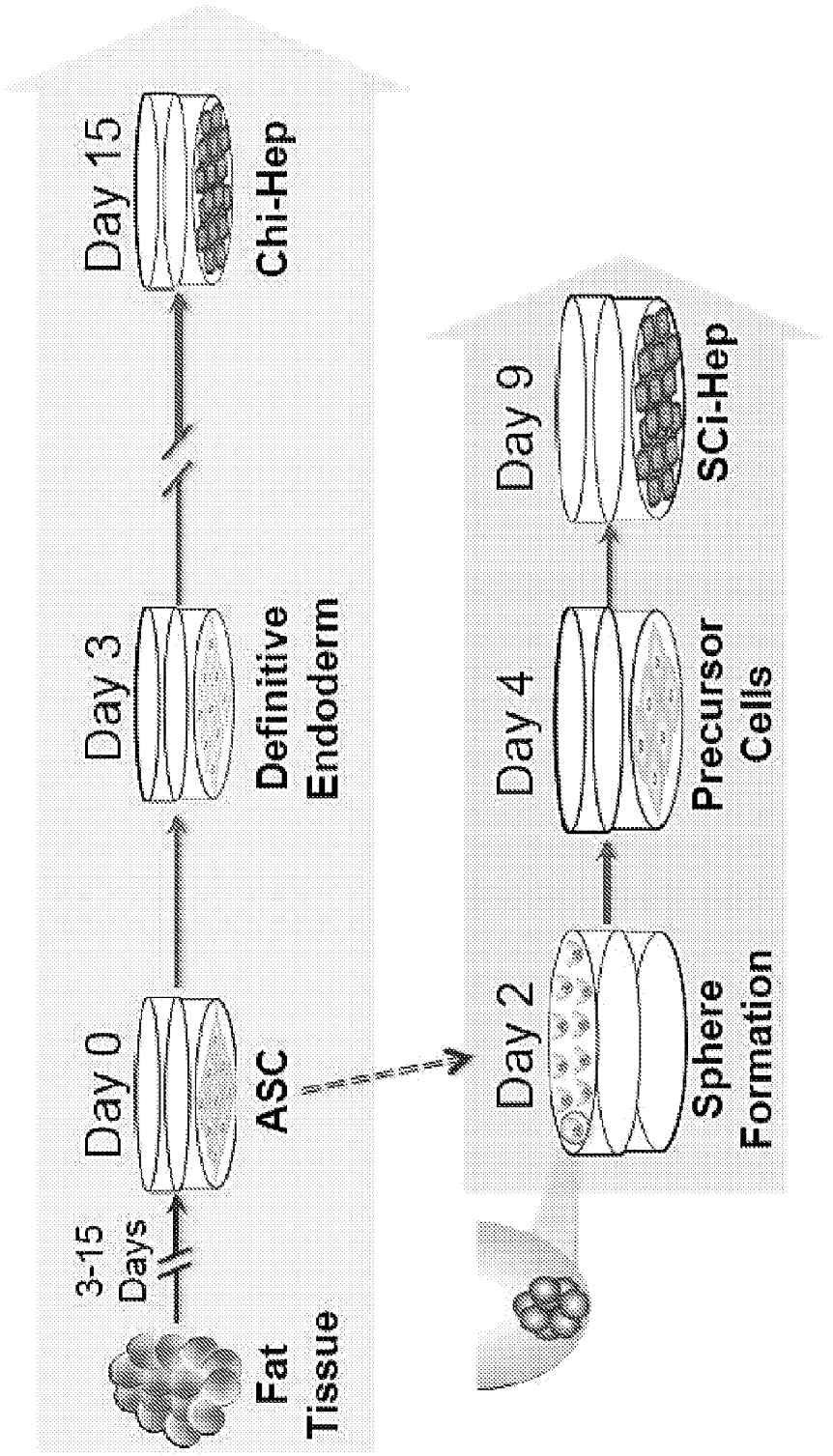

3-15 Days
Day 0
Day 2
Day 3
Day 4
Day 9
Day 15
Fat Tissue
ASC
Sphere Formation
Definitive Endoderm
Precursor Cells
SCi-Hep
Chi-Hep

FIGURE 1A

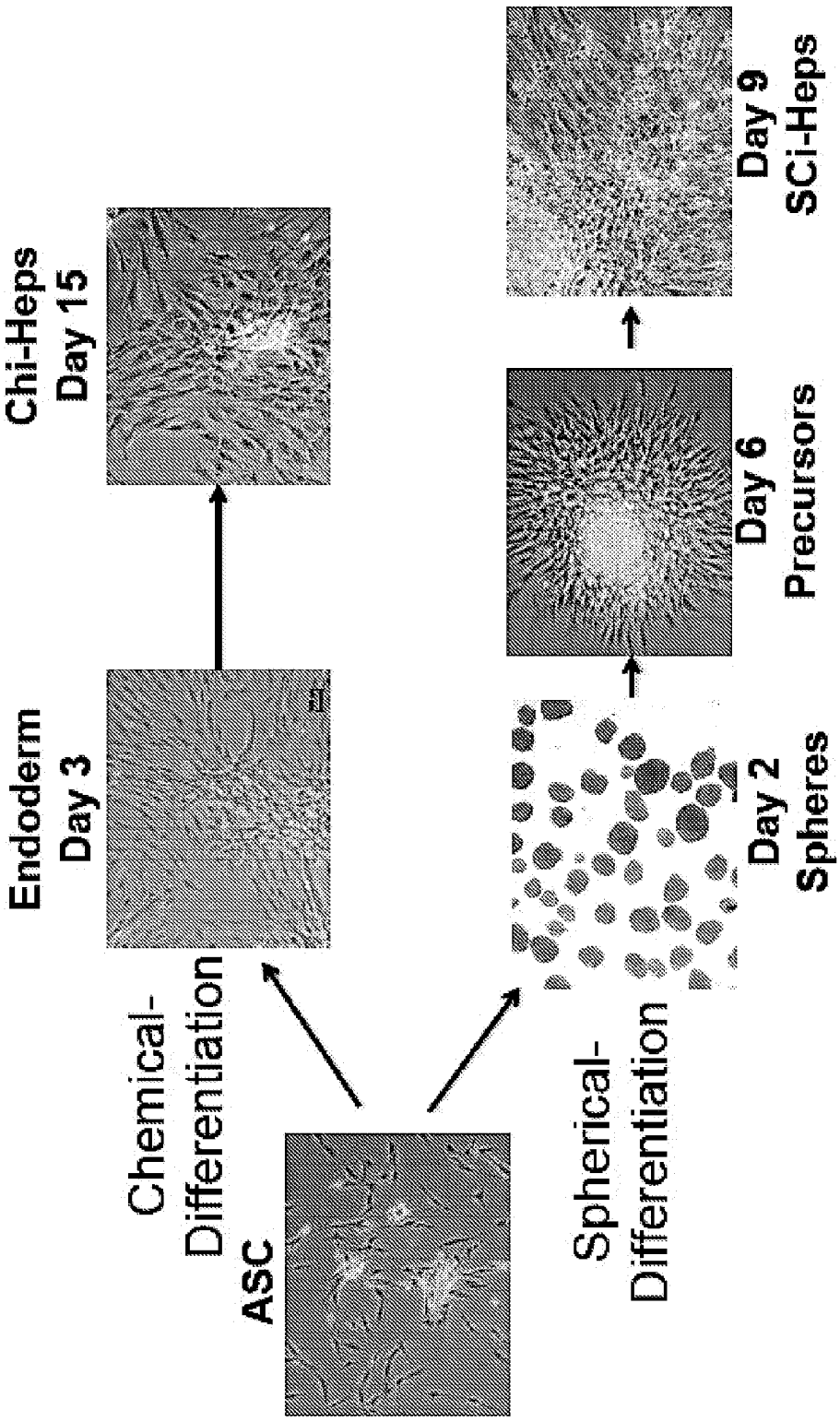

ASC
Chemical-
Differentiation
Endoderm
Day 3
Chi-Heps
Day 15
Spherical-
Differentiation
Day 2
Spheres
Day 6
Precursors
Day 9
SCi-Heps

FIGURE 1B

FIGURE 1C

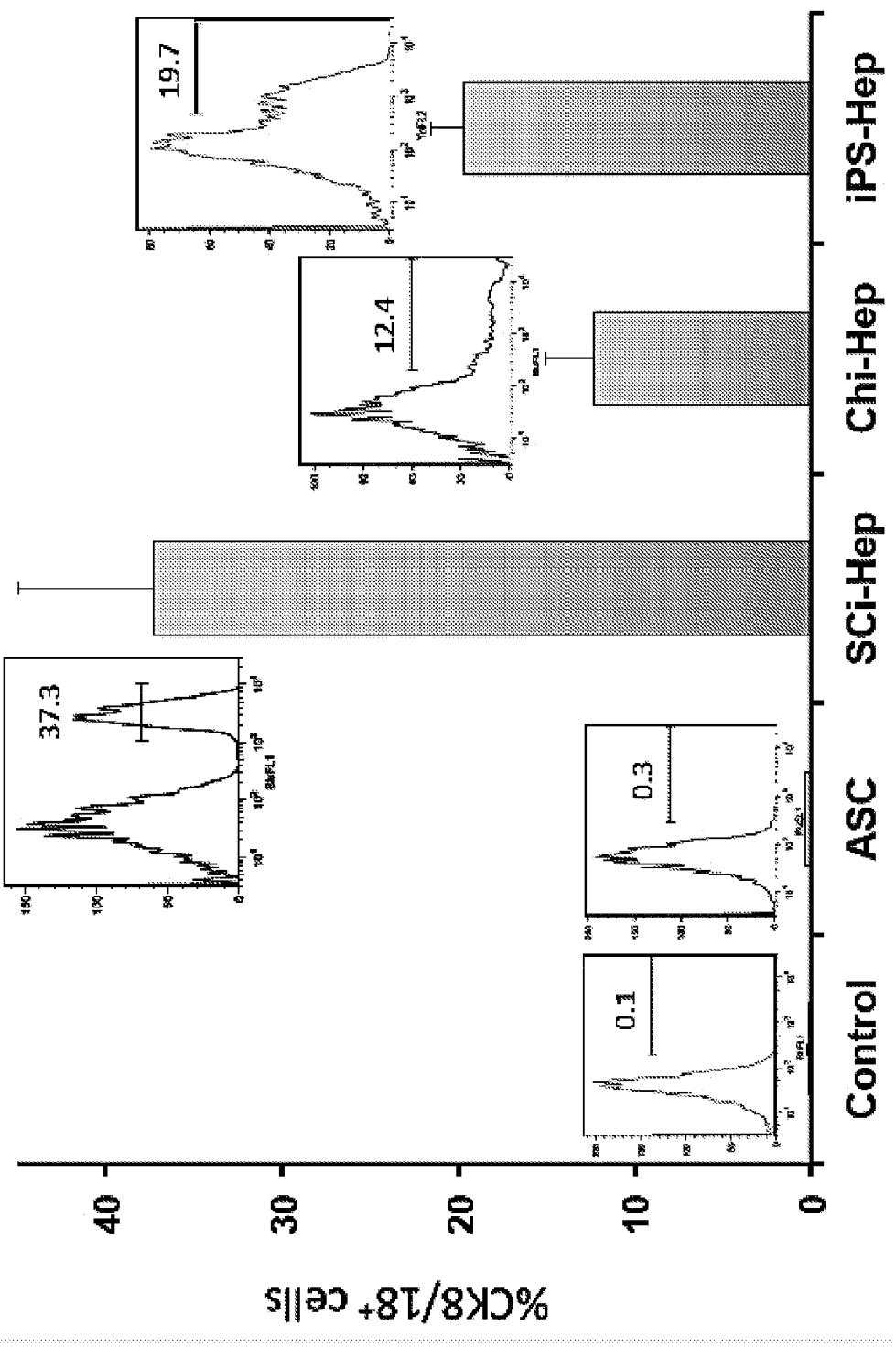

%CK8/18+ cells
0
10
20
30
40
Control
ASC
SCi-Hep
Chi-Hep
iPS-Hep
0.1
0.3
37.3
12.4
19.7

FIGURE 1D

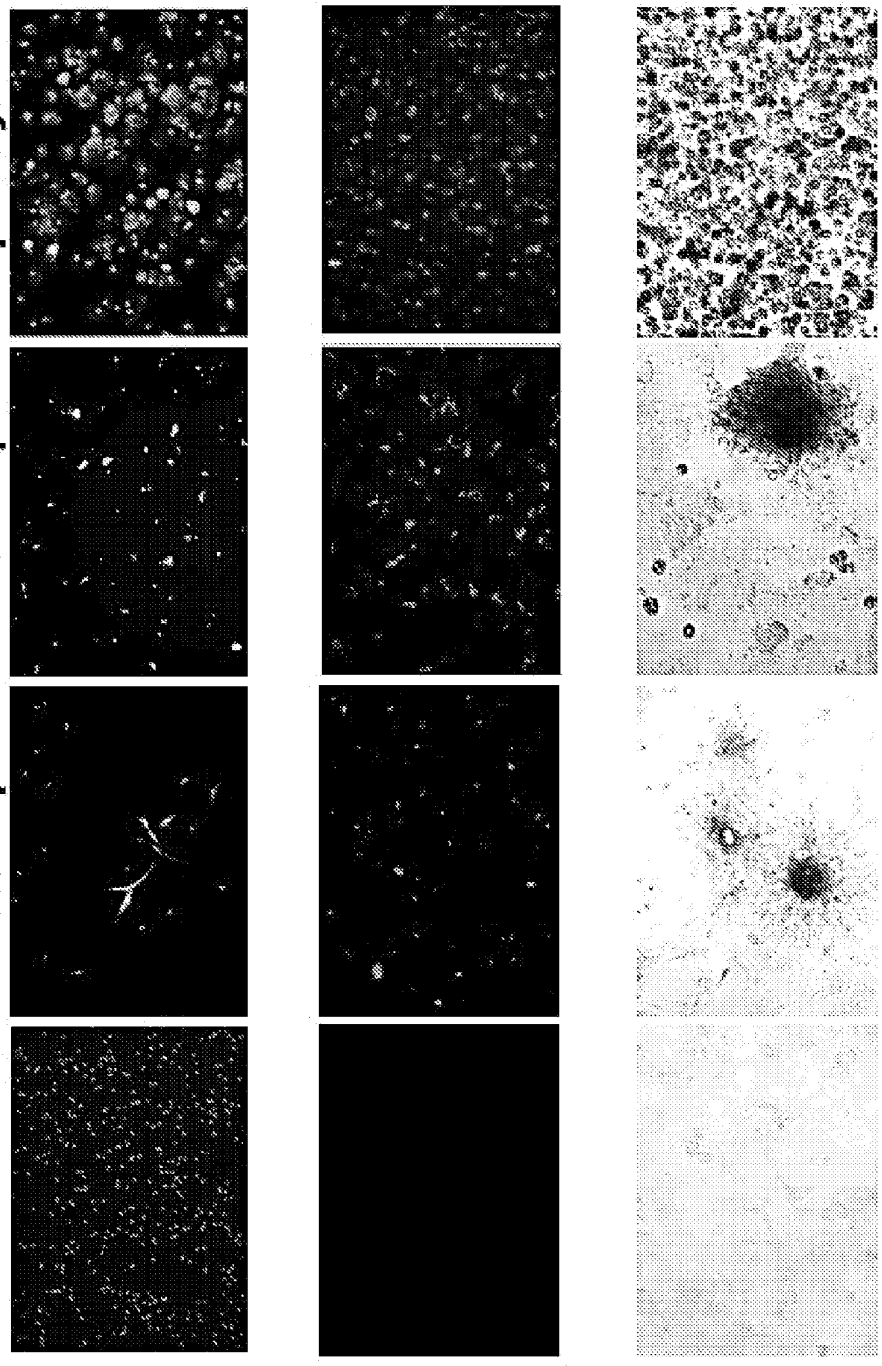


FIGURE 1E

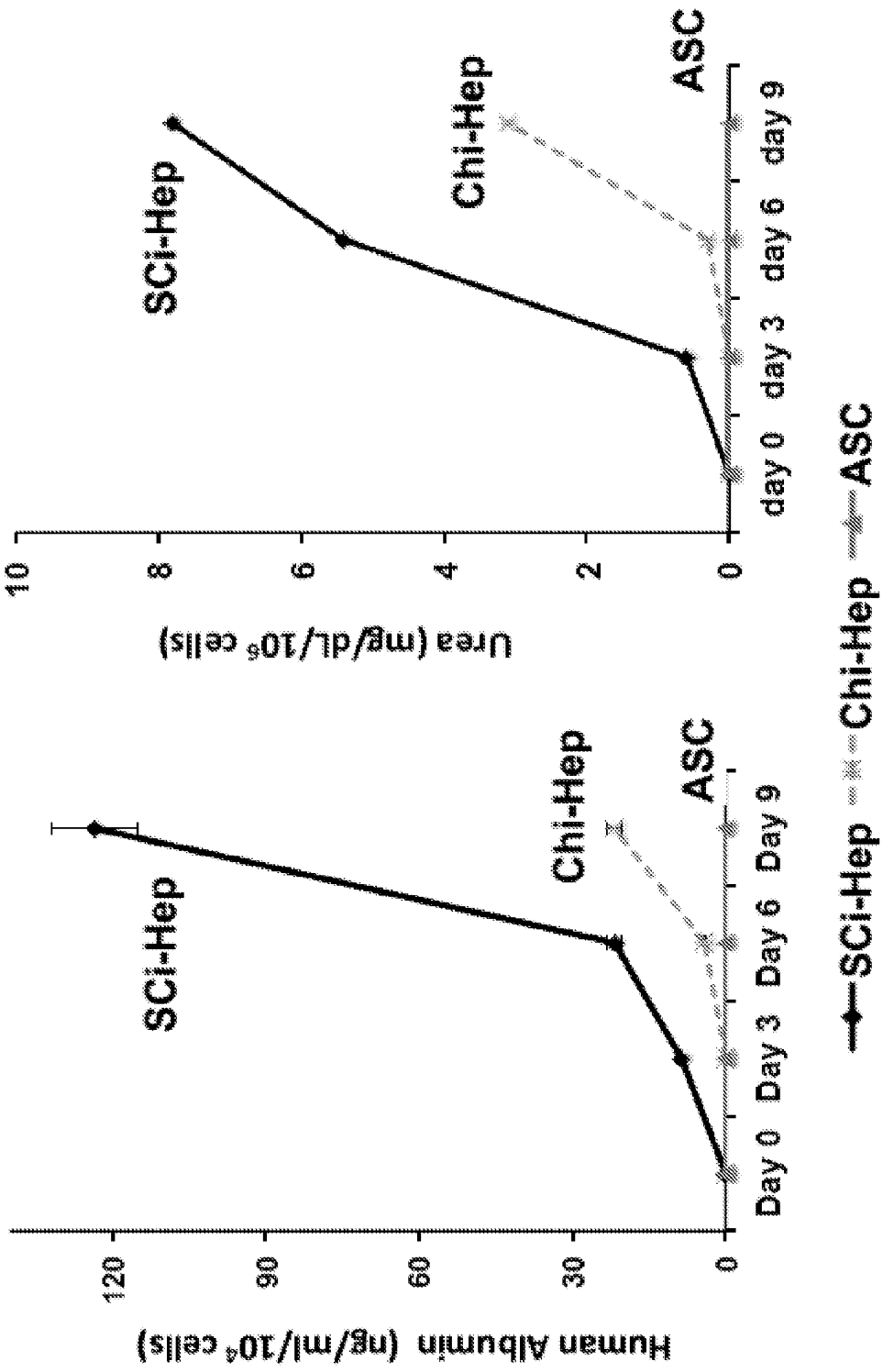
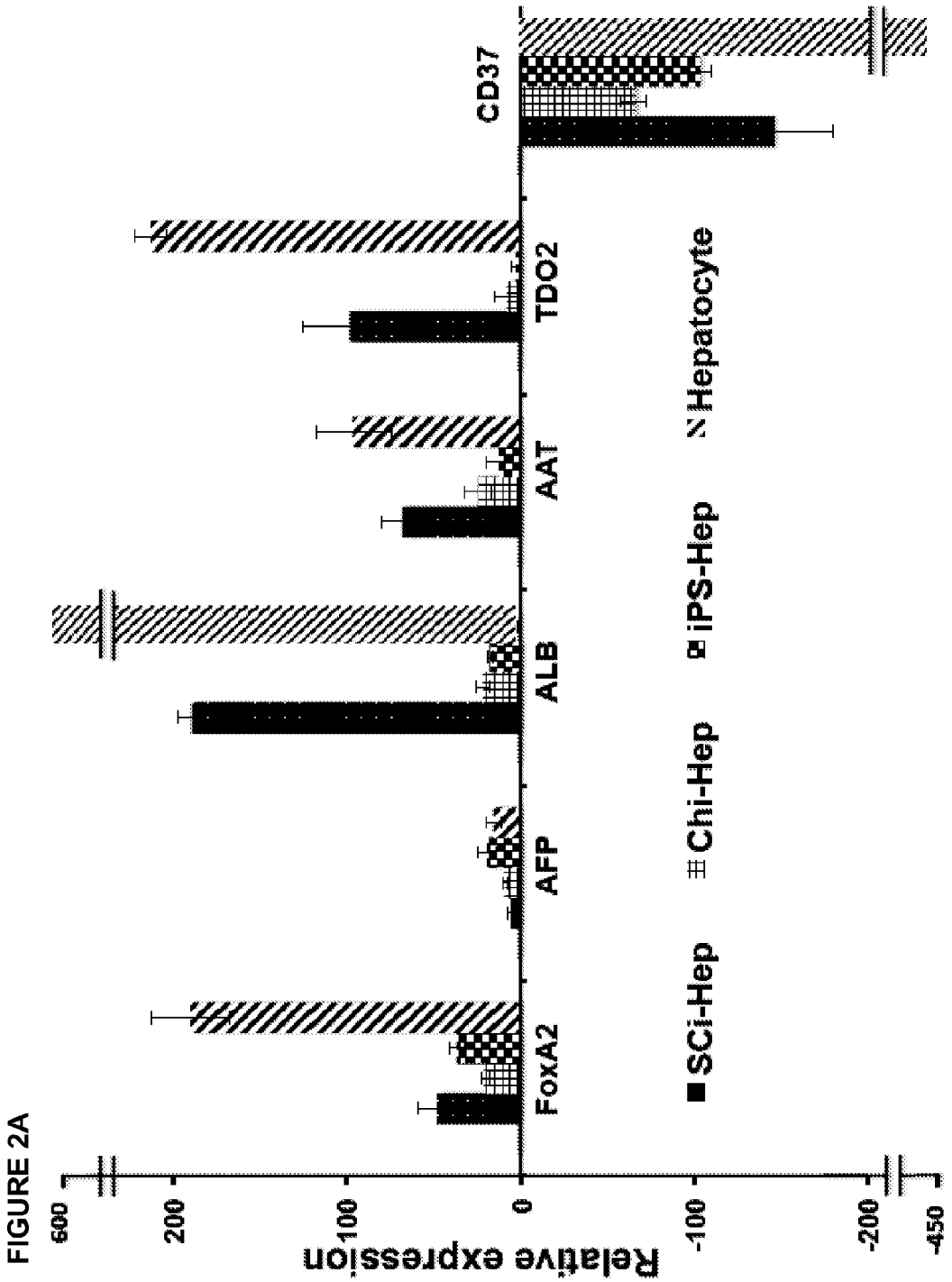

Human Albumin (ng/ml/10^6 cells)
120
90
60
30
0
SCi-Hep
Chi-Hep
ASC
Day 0 Day 3 Day 6 Day 9
Urea (mg/dL/10^6 cells)
10
8
6
4
2
0
SCi-Hep
Chi-Hep
ASC
day 0 day 3 day 6 day 9
SCi-Hep
Chi-Hep
ASC

FIGURE 2A


Relative expression
600
200
-100
-200
-450
0
FoxA2
AFP
ALB
AAT
TDO2
CD37
SCi-Hep
Chi-Hep
iPS-Hep
Hepatocyte

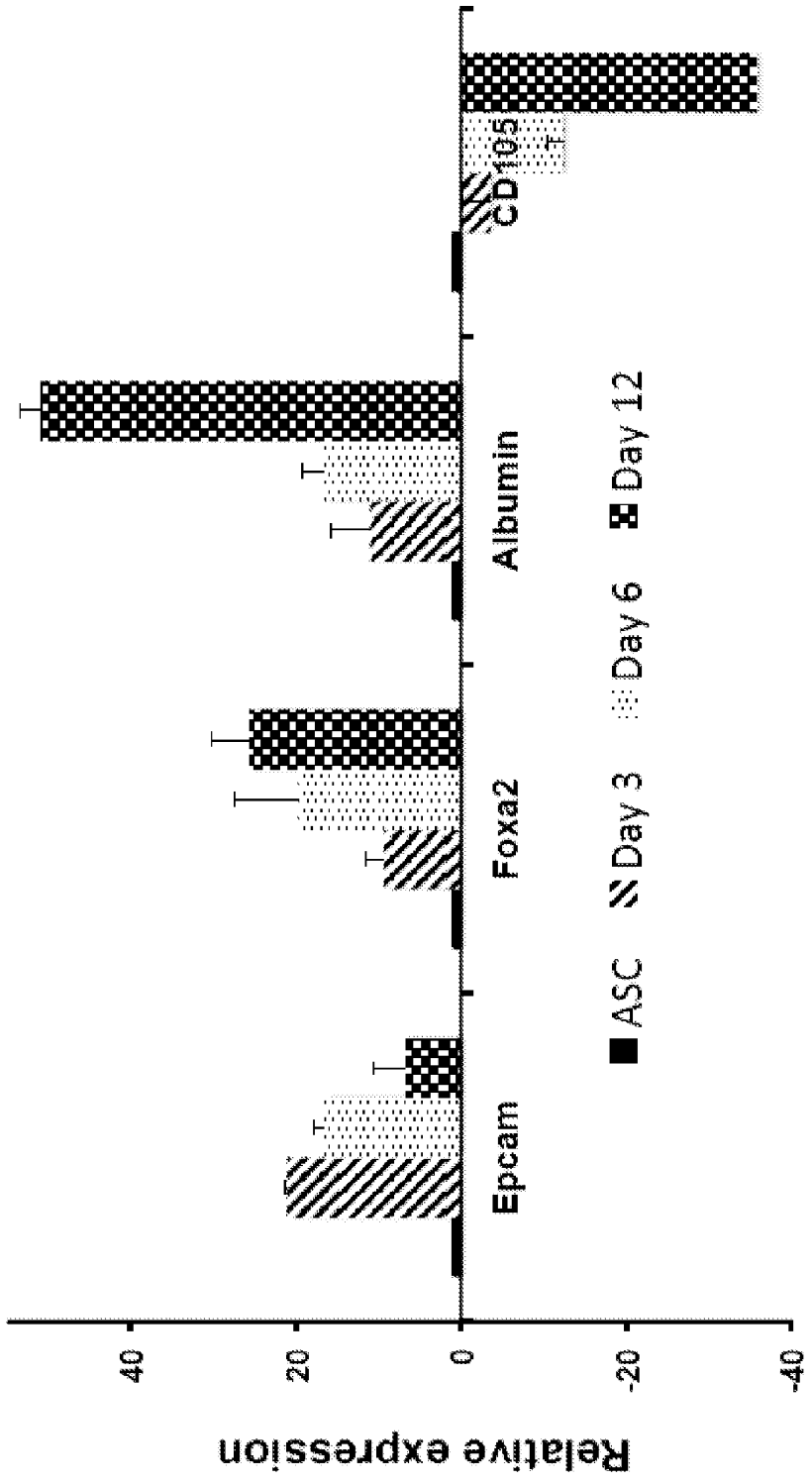

Relative expression
40
20
0
-20
-40
Epcam
Foxa2
Albumin
CD105
ASC
Day 3
Day 6
Day 12

FIGURE 2B

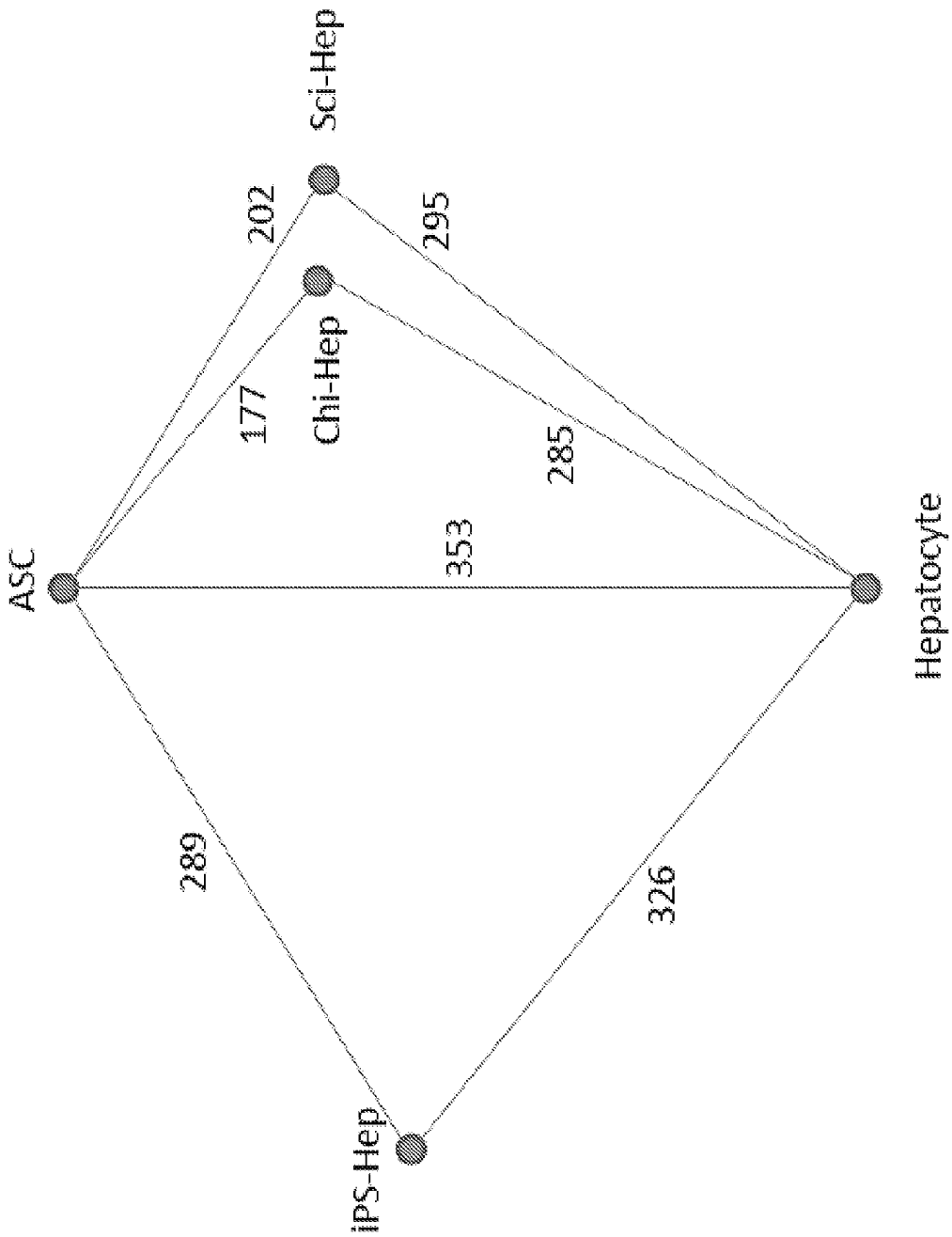

Sci-Hep
202
295
Chi-Hep
177
285
ASC
353
Hepatocyte
289
326
iPS-Hep

FIGURE 2C

FIGURE 3A

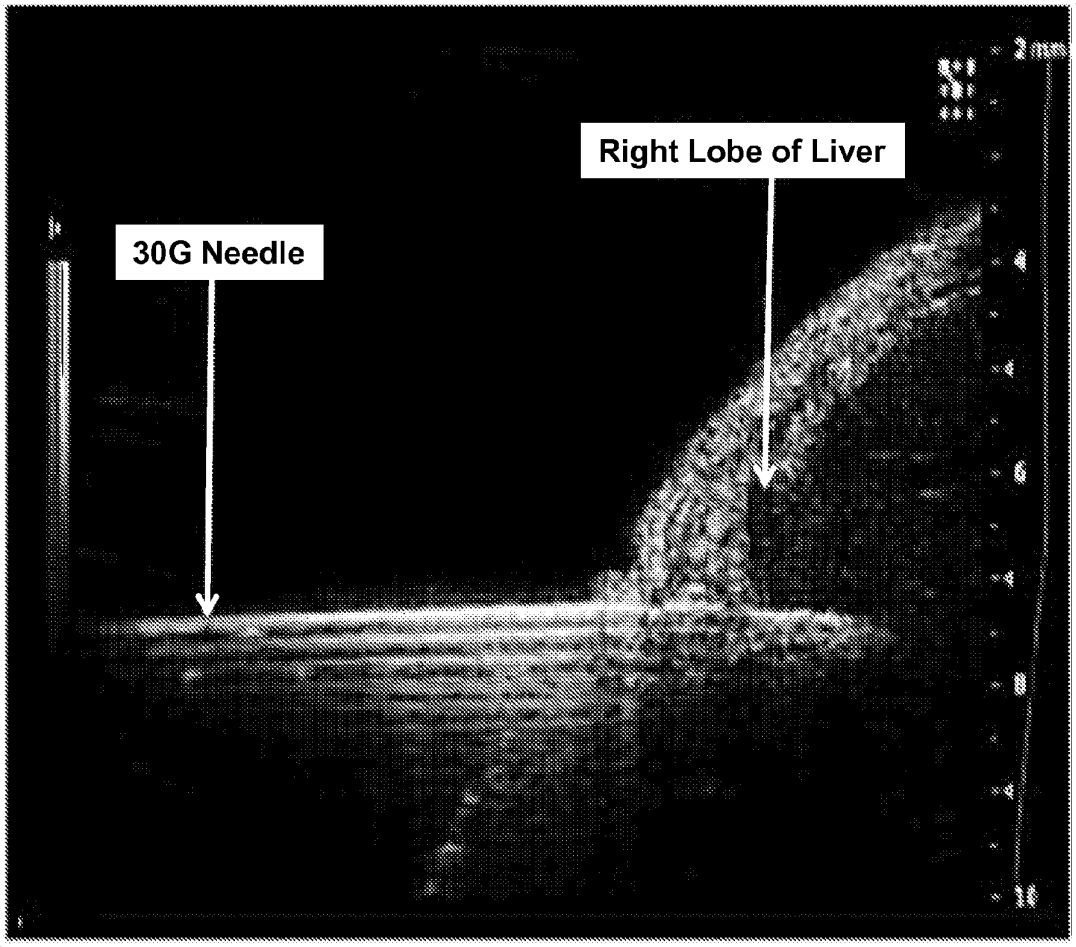


FIGURE 3B

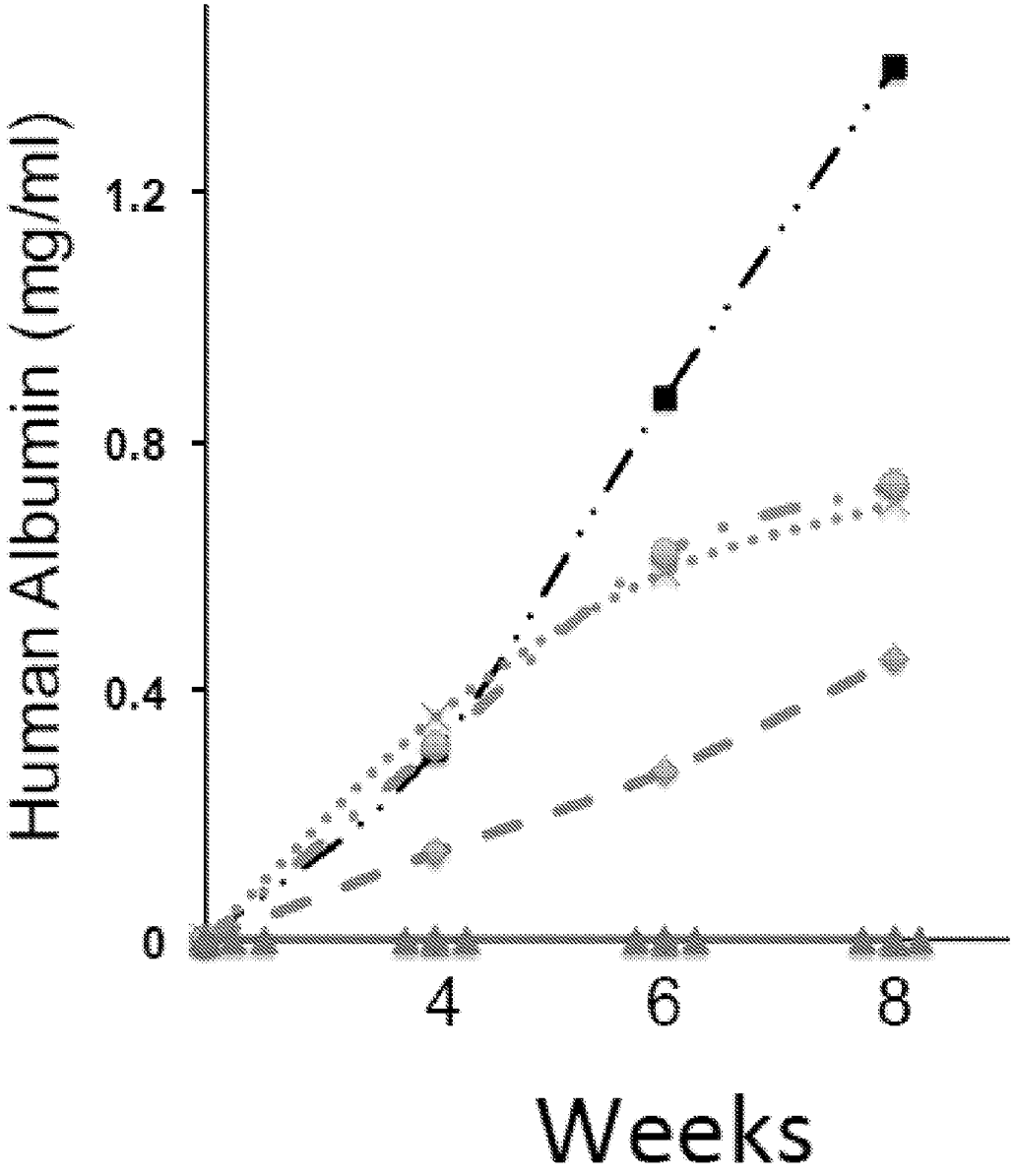


FIGURE 3C

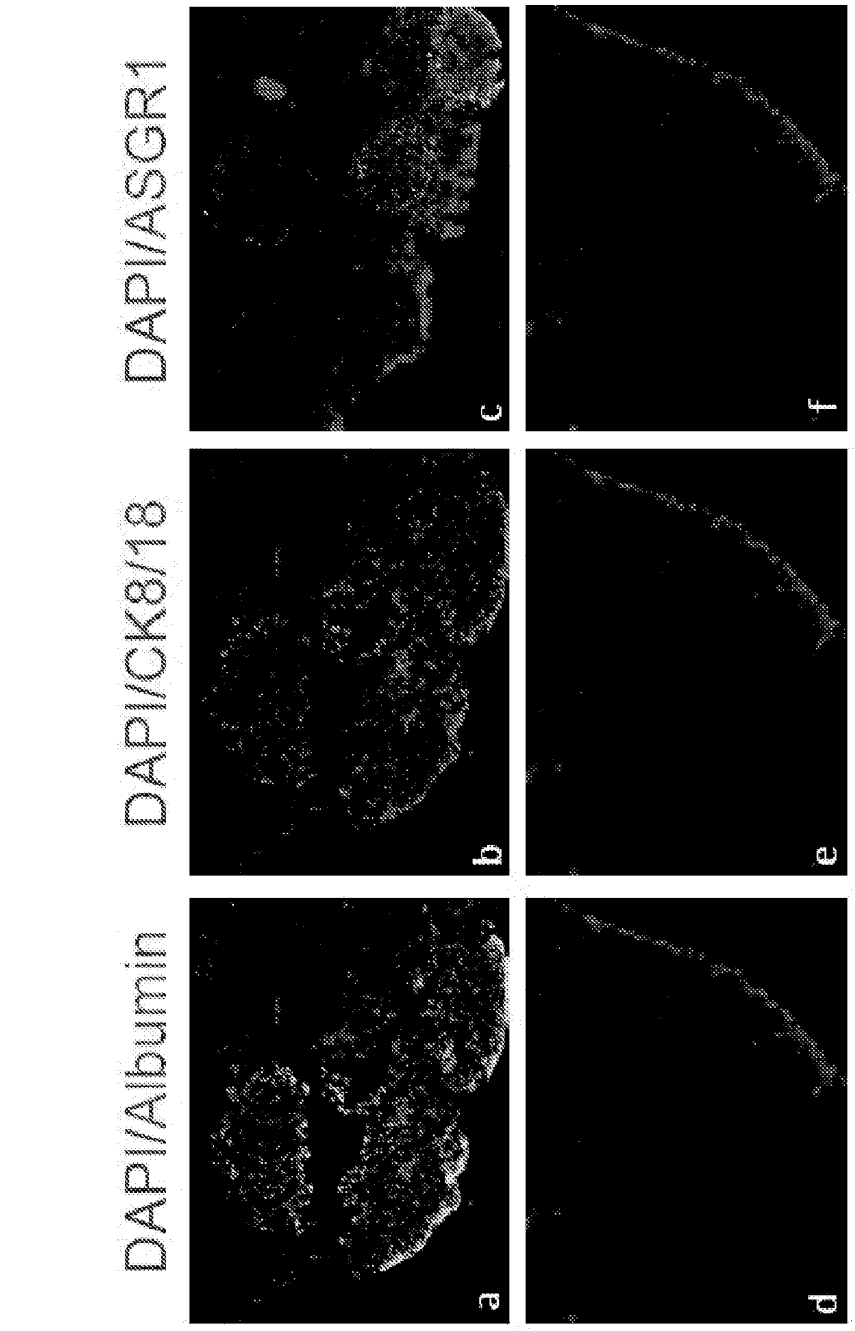


FIGURE 3D

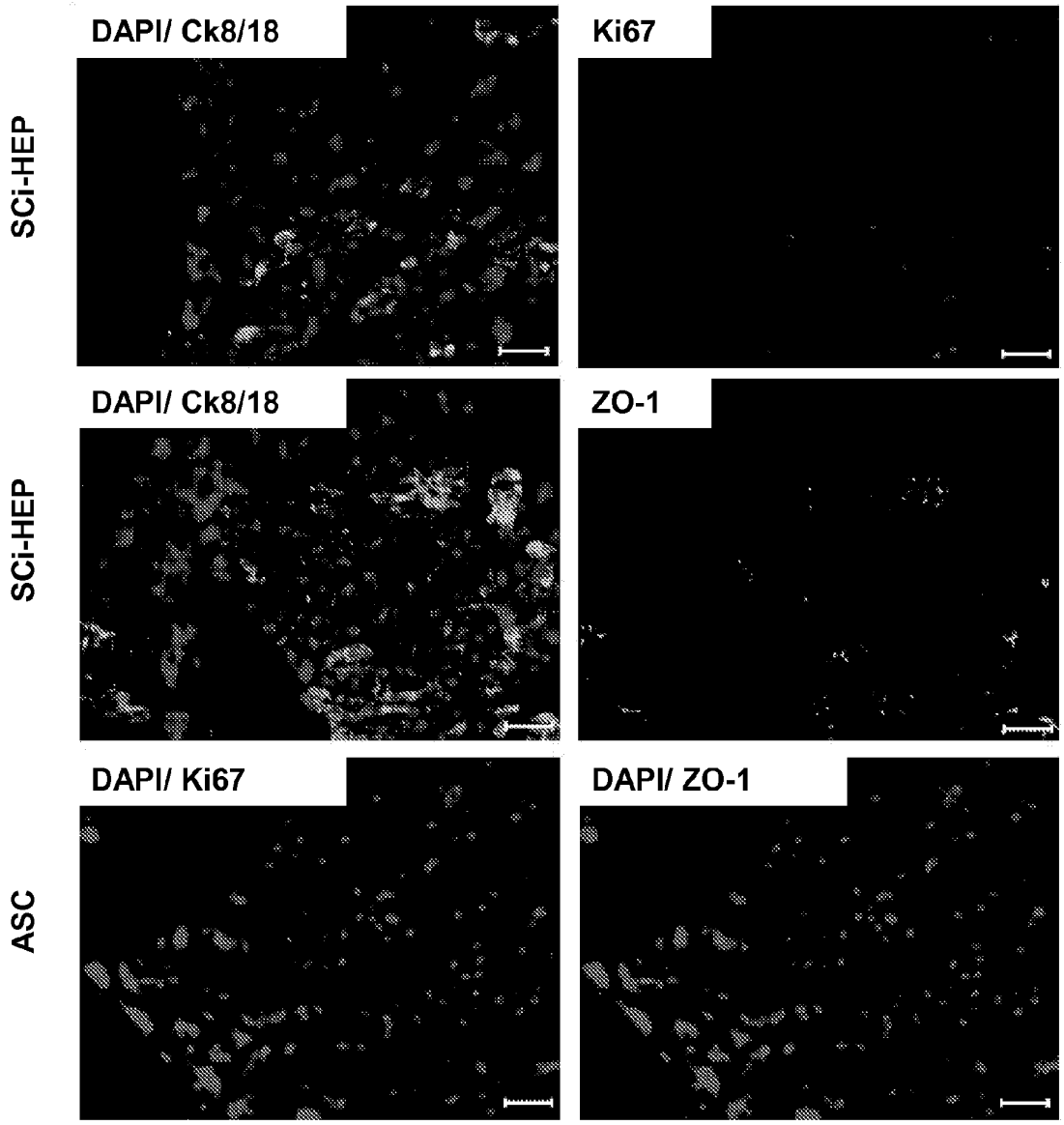

SCi-HEP
DAPI/ Ck8/18
Ki67
SCi-HEP
DAPI/ Ck8/18
ZO-1
ASC
DAPI/ Ki67
DAPI/ ZO-1

FIGURE 4A

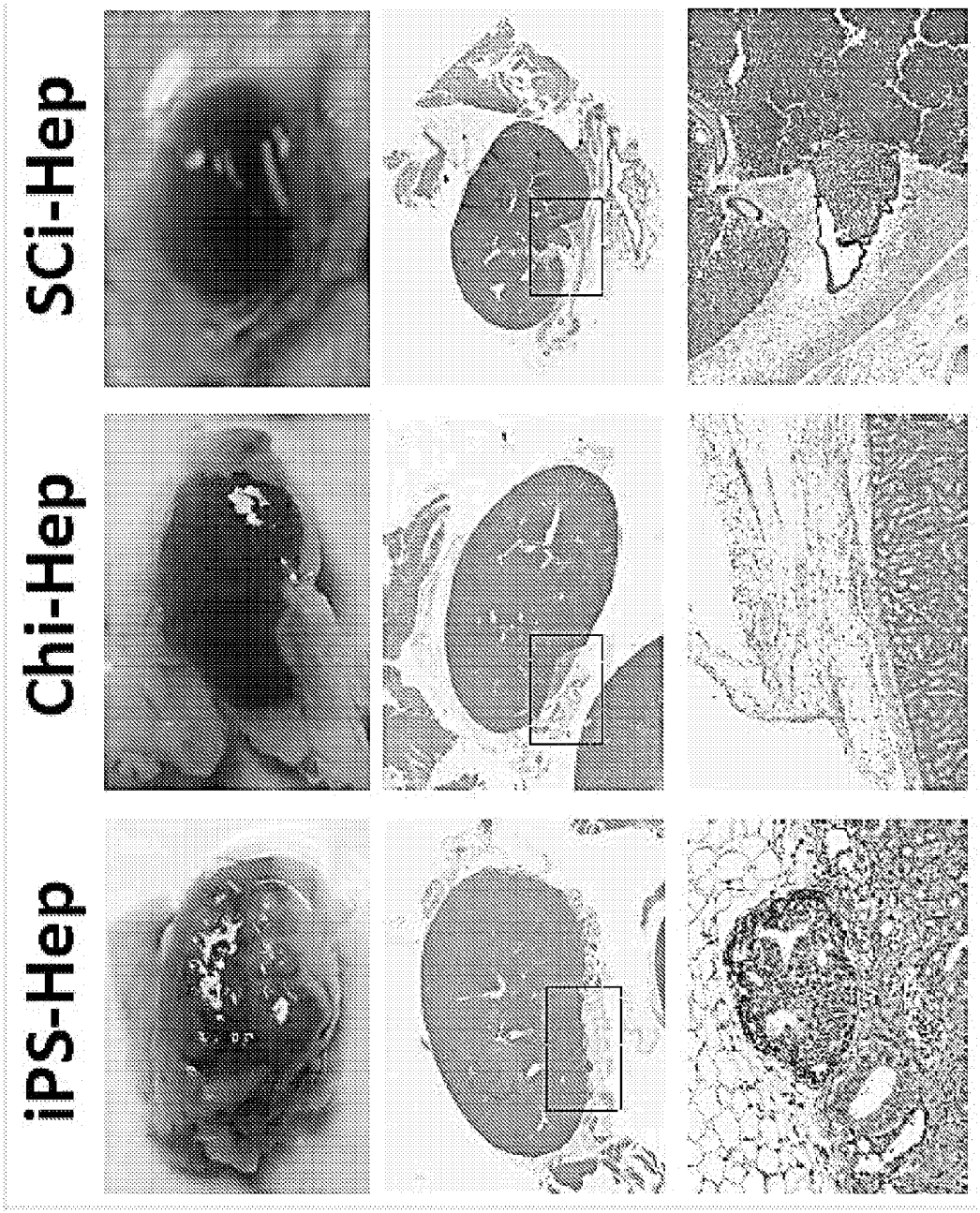
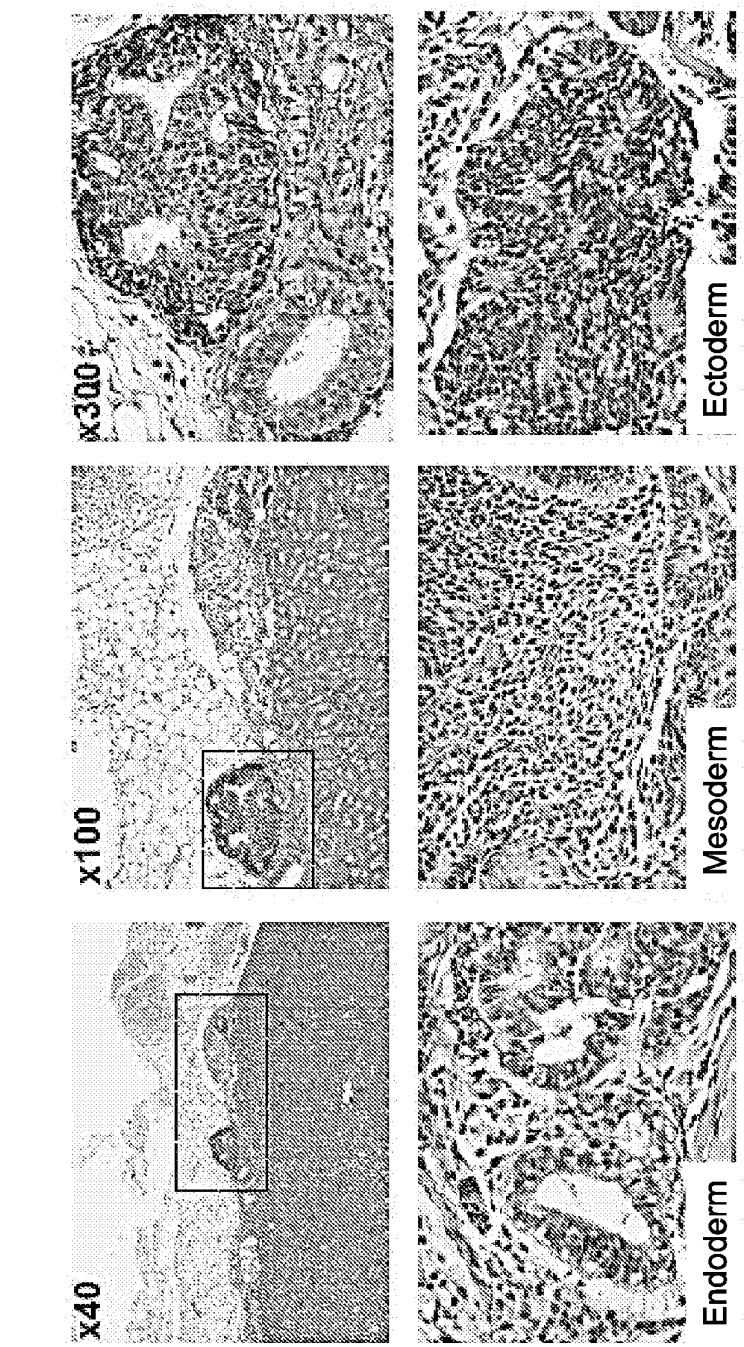


FIGURE 4B



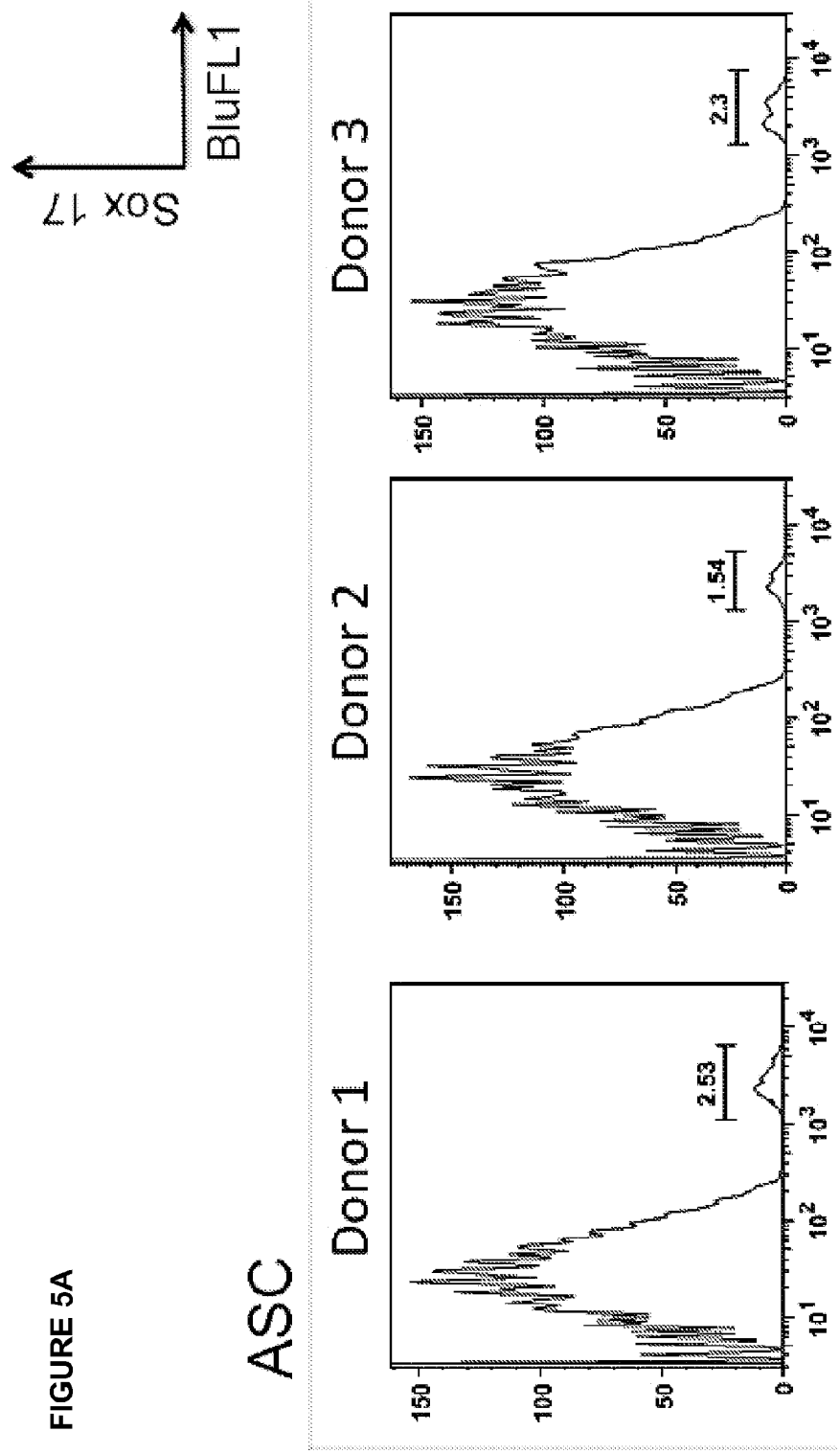

Sox 17
BluFL1
ASC
Donor 1
Donor 2
Donor 3
2.53
1.54
2.3
0
50
100
150
10^1
10^2
10^3
10^4

FIGURE 5A

FIGURE 5B

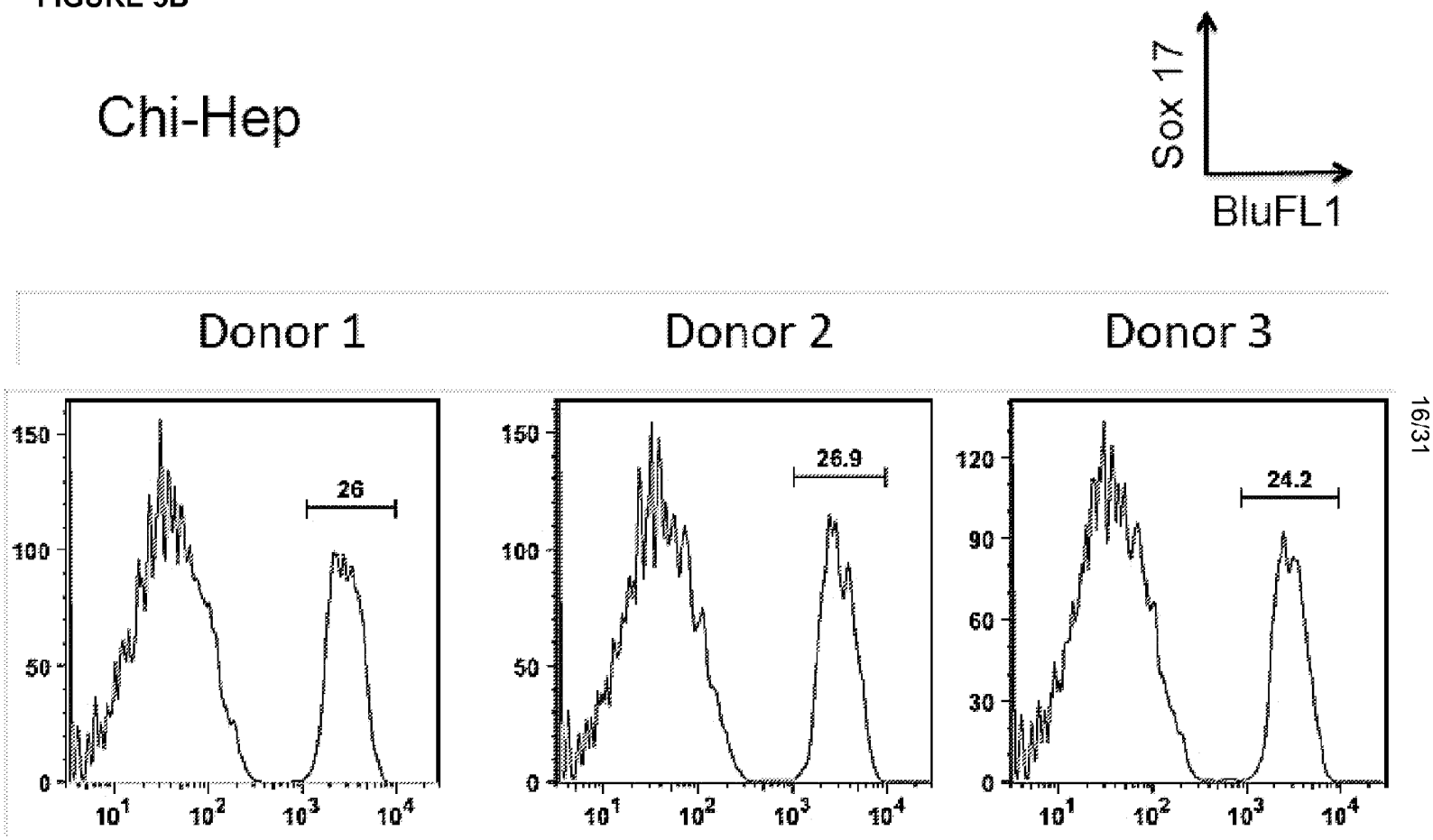
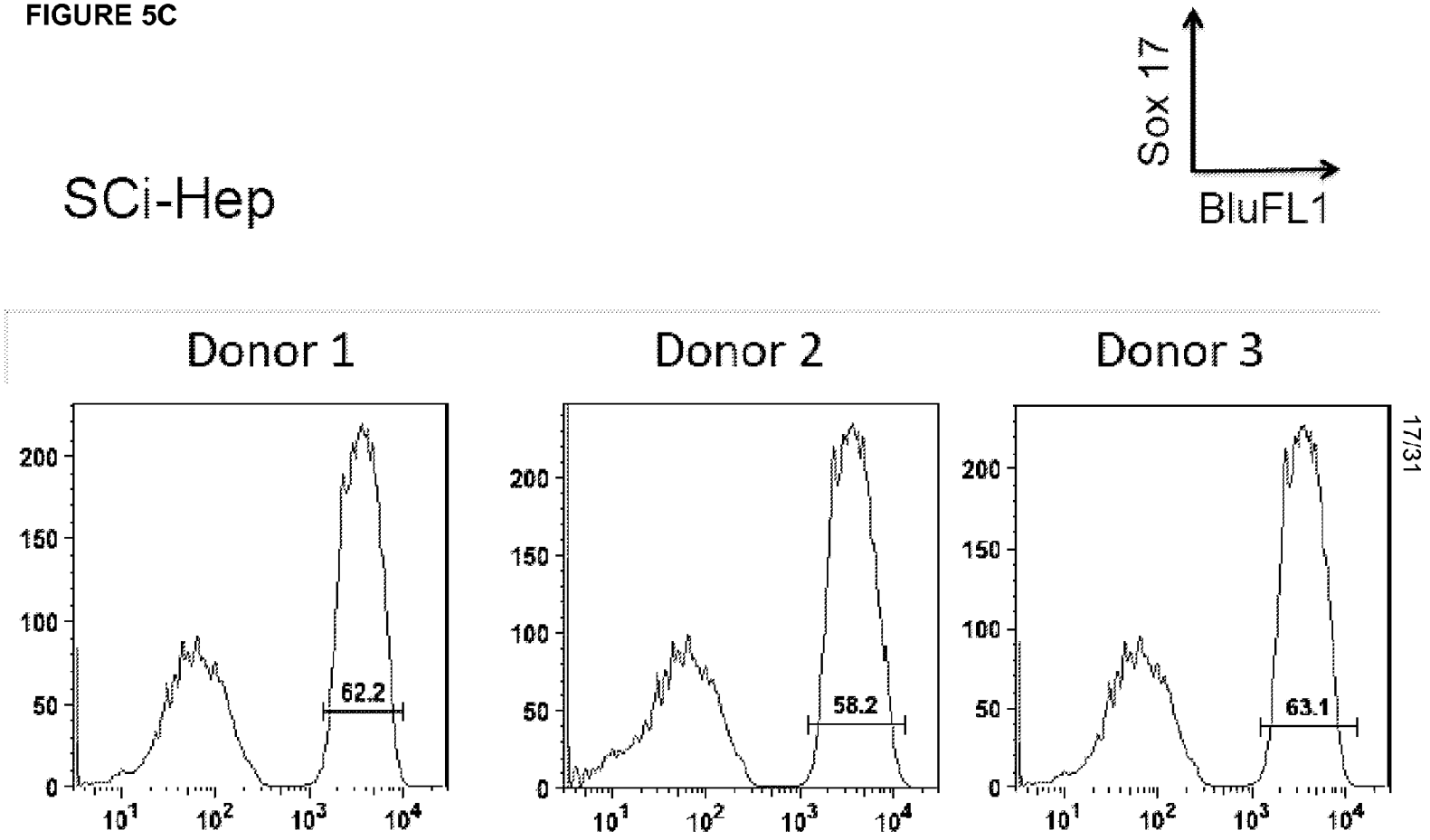


FIGURE 5C


SCi-Hep
Sox 17
BluFL1
Donor 1
Donor 2
Donor 3
200
150
100
50
0
62.2
58.2
63.1
10^1
10^2
10^3
10^4

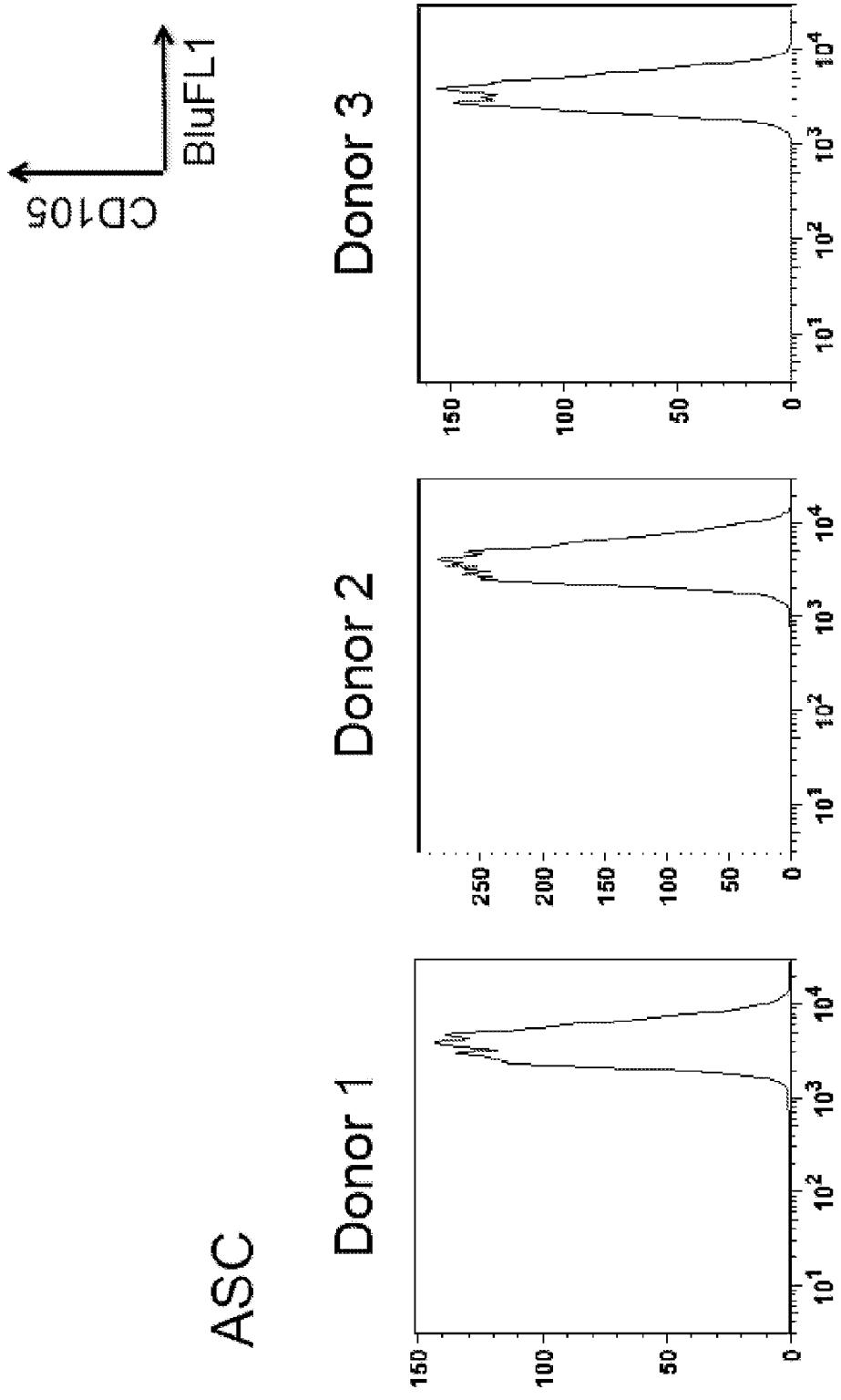

CD105
BluFL1
ASC
Donor 1
Donor 2
Donor 3
0
50
100
150
200
250
10^1
10^2
10^3
10^4

FIGURE 6A

FIGURE 6B

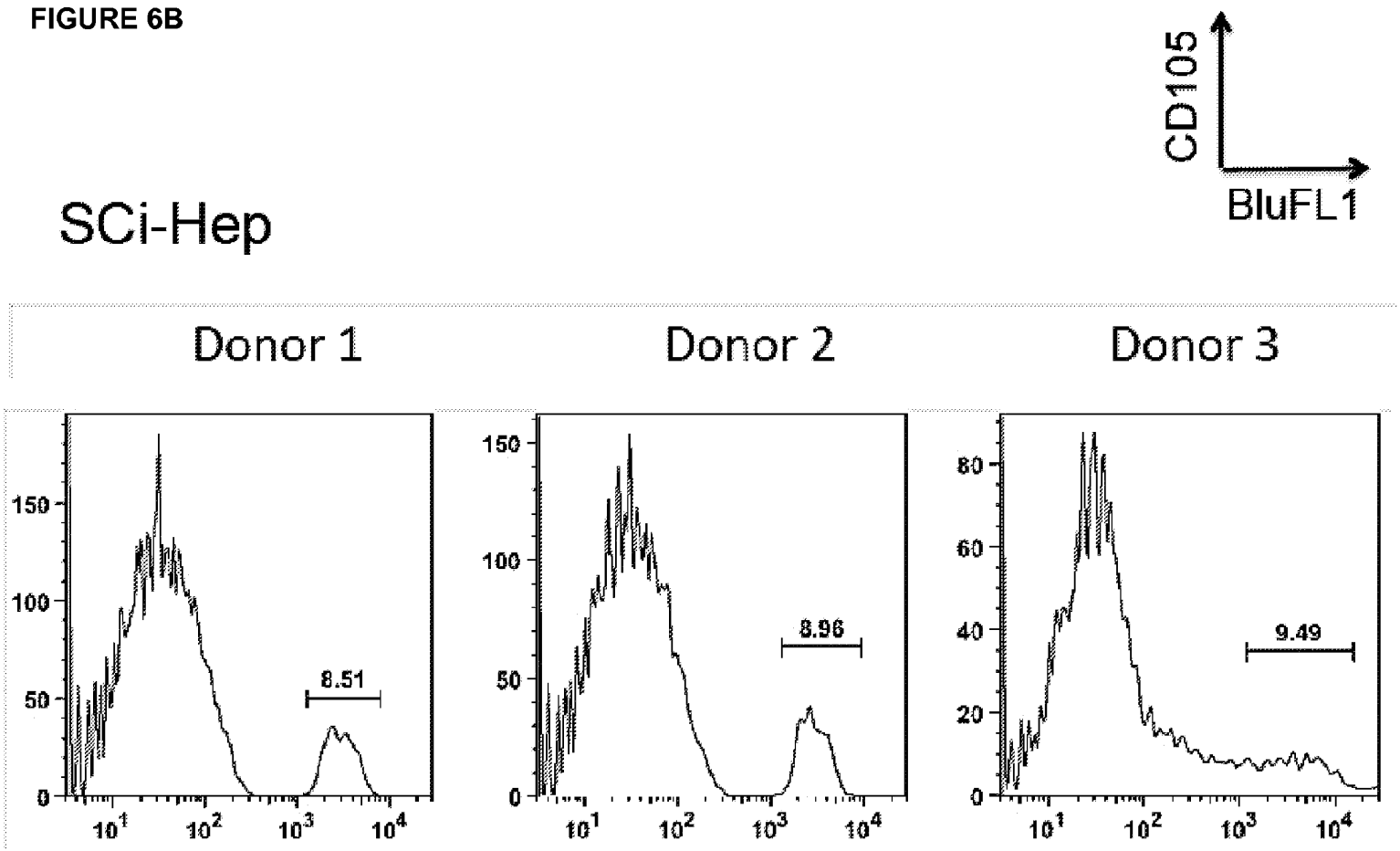

CD105
BluFL1
SCi-Hep
Donor 1
Donor 2
Donor 3
150
100
50
0
8.51
150
100
50
0
8.96
80
60
40
20
0
9.49
10^1
10^2
10^3
10^4

FIGURE 7

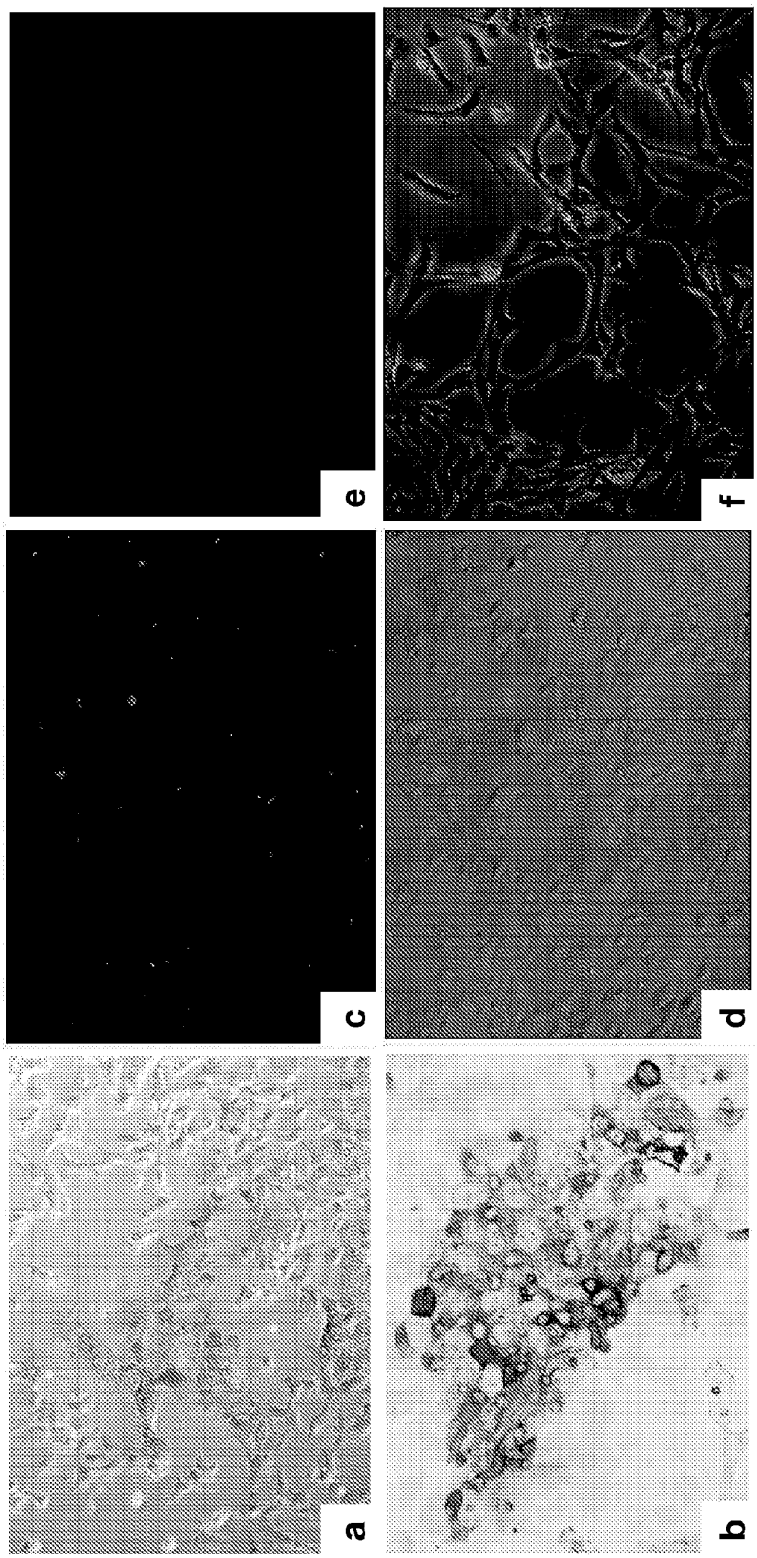
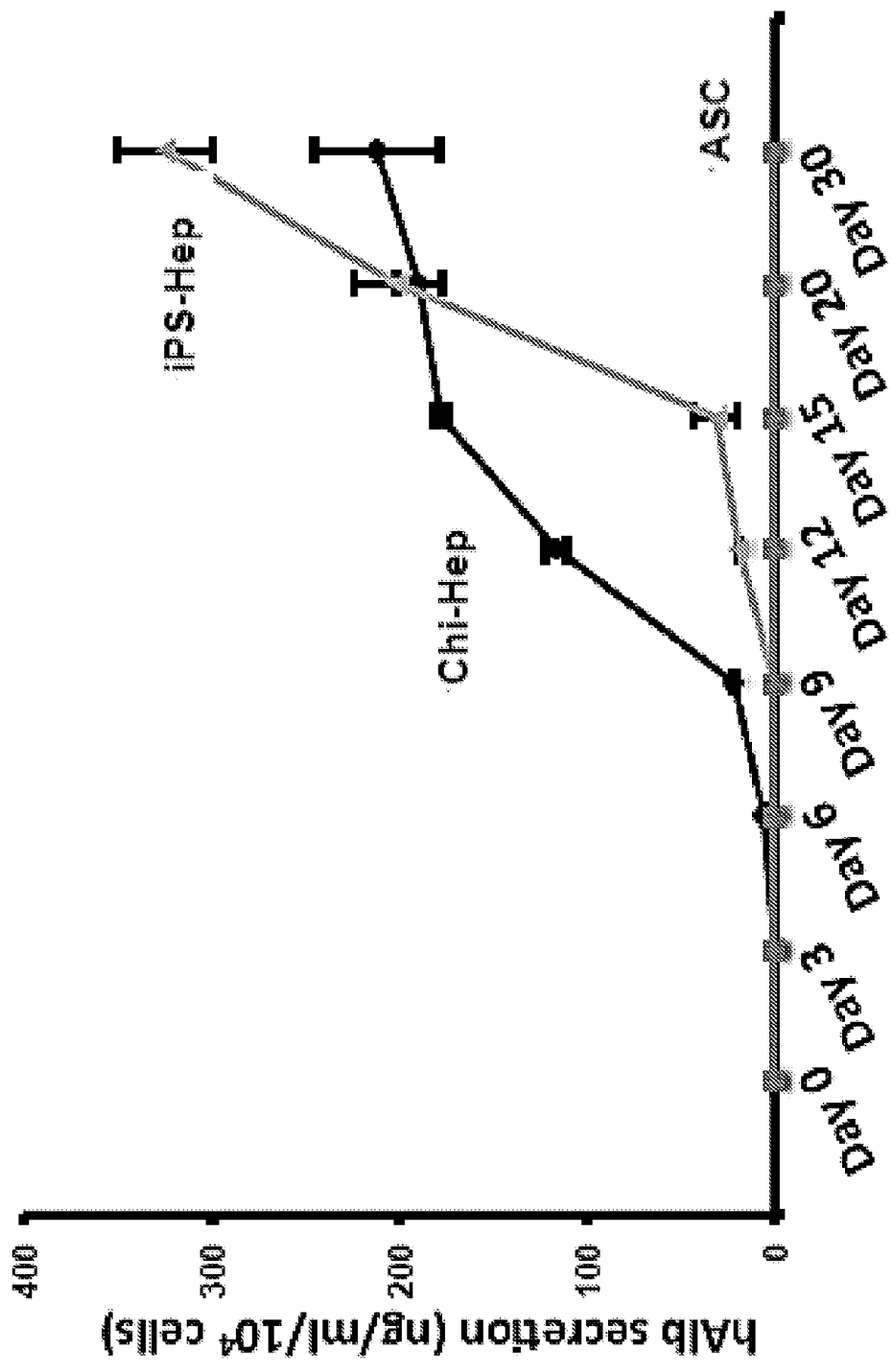


FIGURE 8A


hAlb secretion (ng/ml/10⁴ cells)
400
300
200
100
0
Day 0
Day 3
Day 6
Day 9
Day 12
Day 15
Day 20
Day 30
iPS-Hep
Chi-Hep
ASC

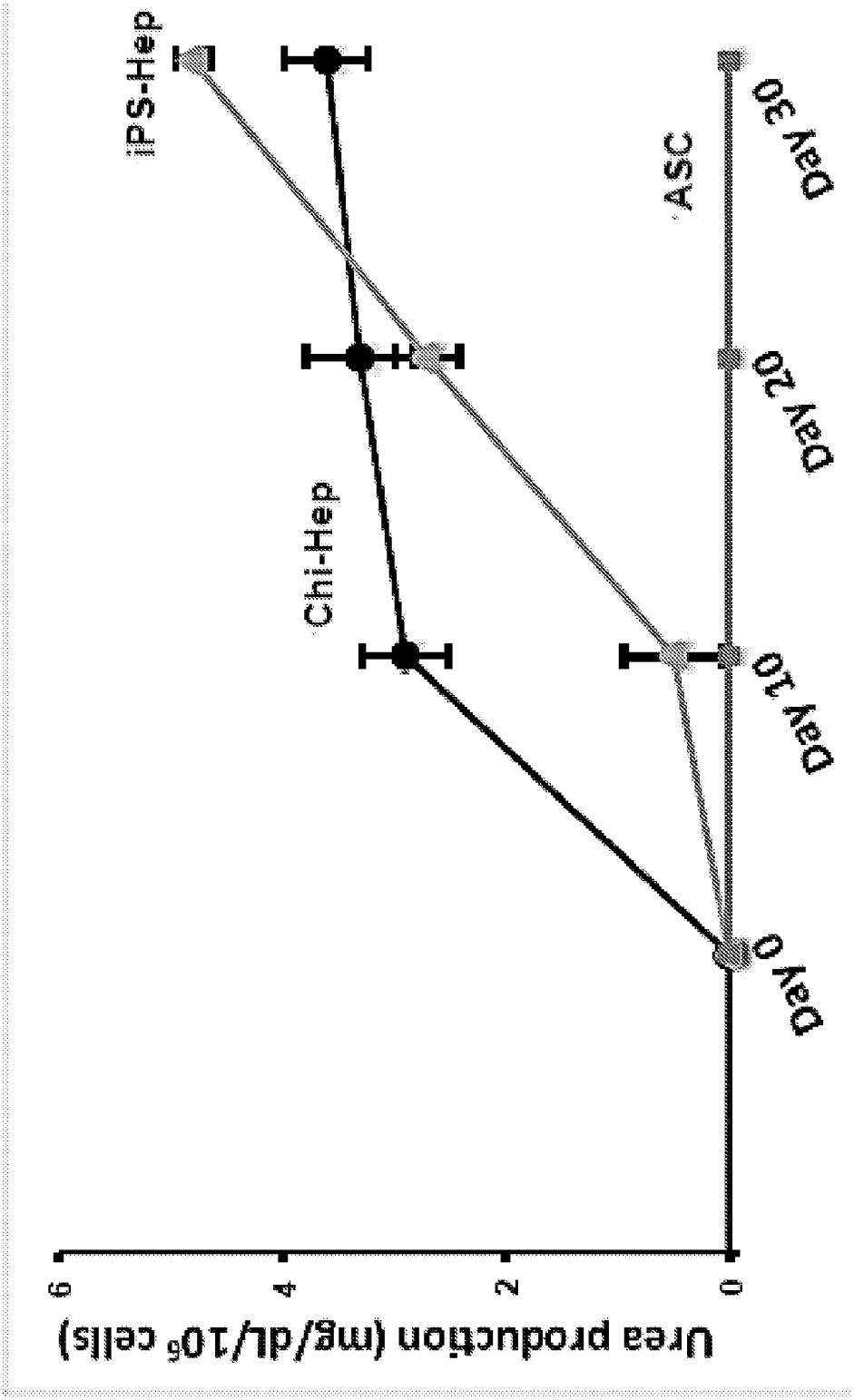

Urea production (mg/dL/10^6 cells)
0
2
4
6
Day 0
Day 10
Day 20
Day 30
ASC
Chi-Hep
iPS-Hep

FIGURE 8B

FIGURE 8C

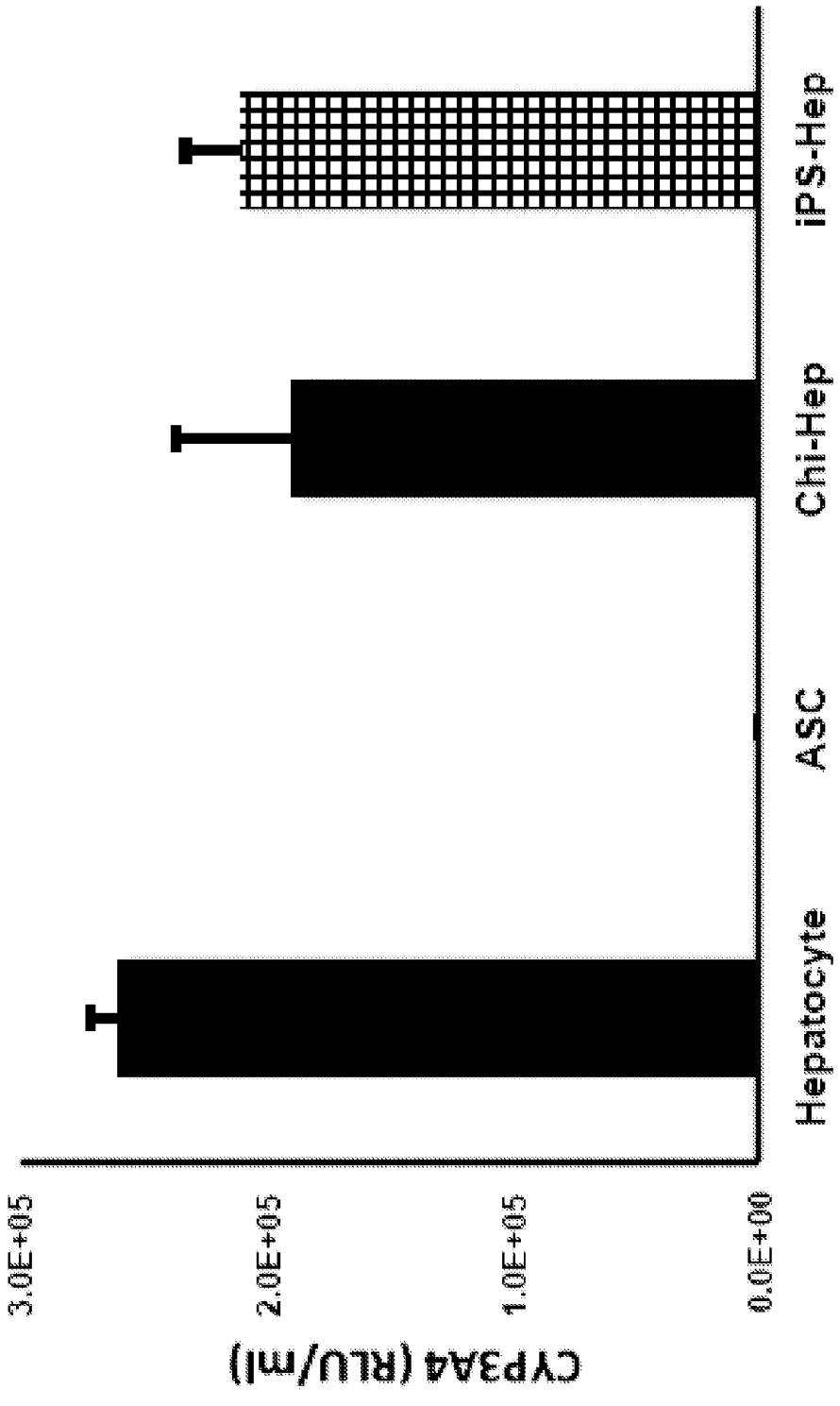

CYP3A4 (RLU/ml)
3.0E+05
2.0E+05
1.0E+05
0.0E+00
Hepatocyte
ASC
Chi-Hep
iPS-Hep

FIGURE 8D

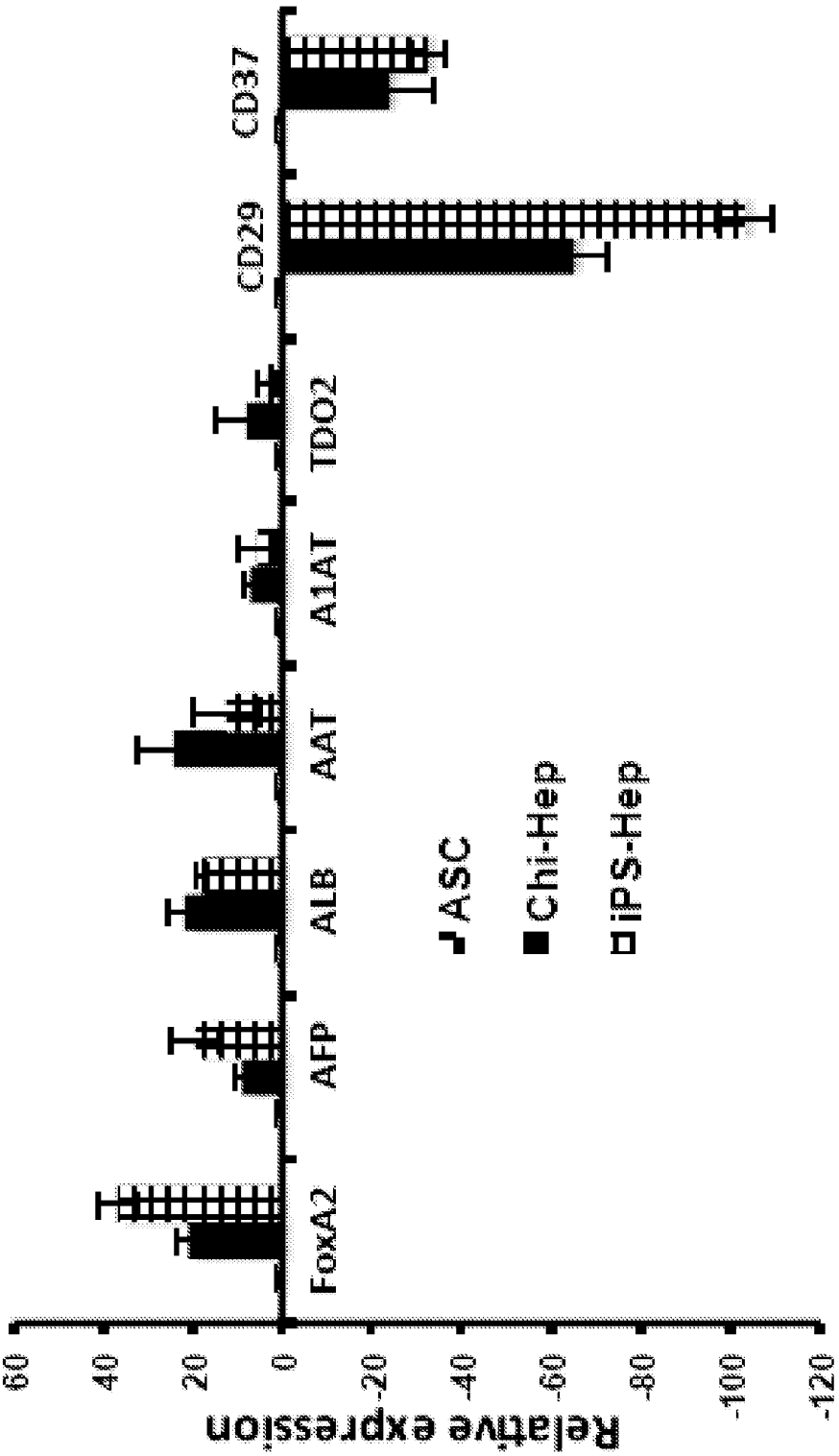

Relative expression
60
40
20
0
-20
-40
-60
-80
-100
-120
FoxA2
AFP
ALB
AAT
A1AT
TDO2
CD29
CD37
ASC
Chi-Hep
iPS-Hep

FIGURE 9

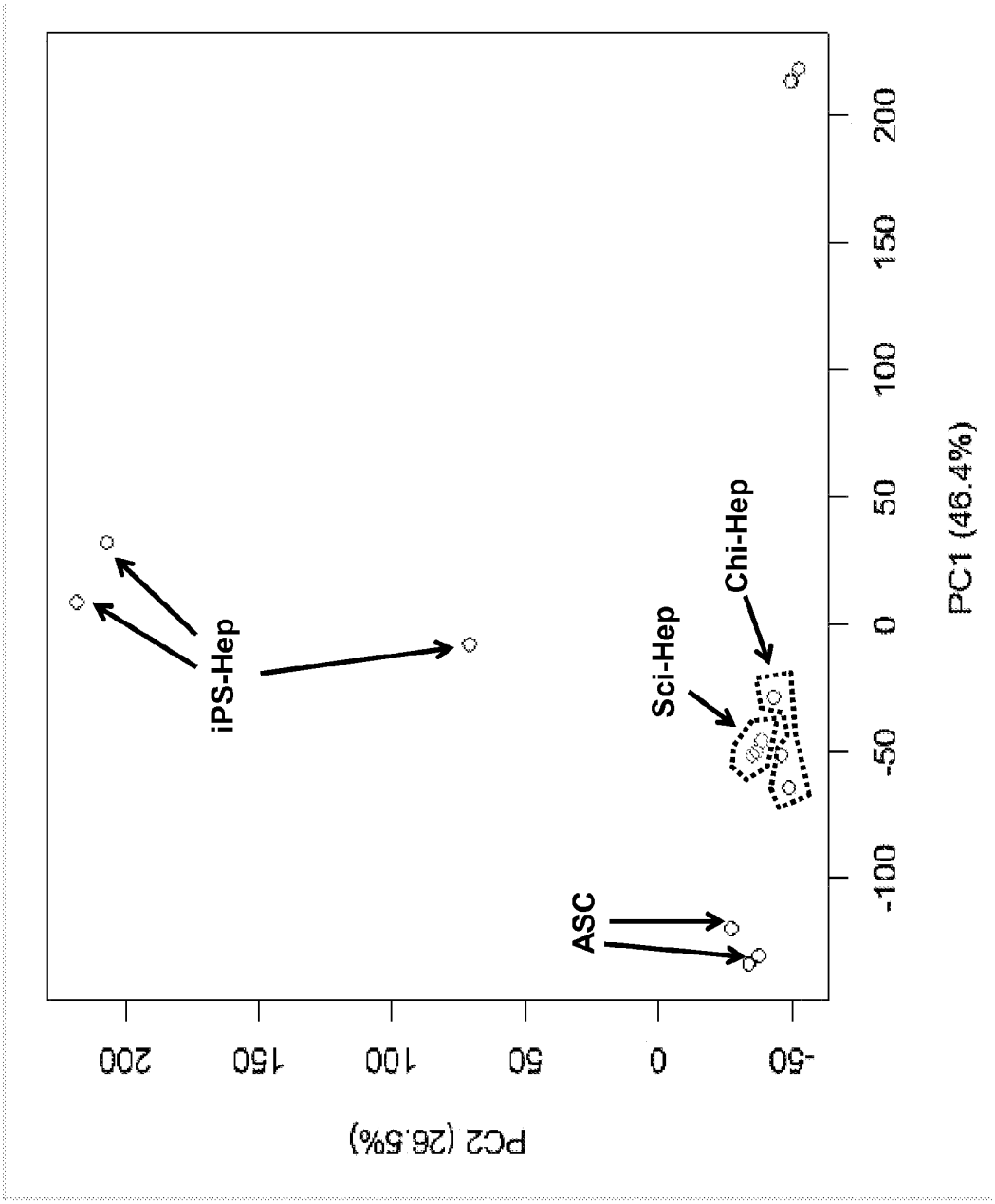

iPS-Hep
Sci-Hep
Chi-Hep
ASC
PC2 (26.5%)
PC1 (46.4%)
-50
0
50
100
150
200
-100
-50
0
50
100
150
200

FIGURE 10

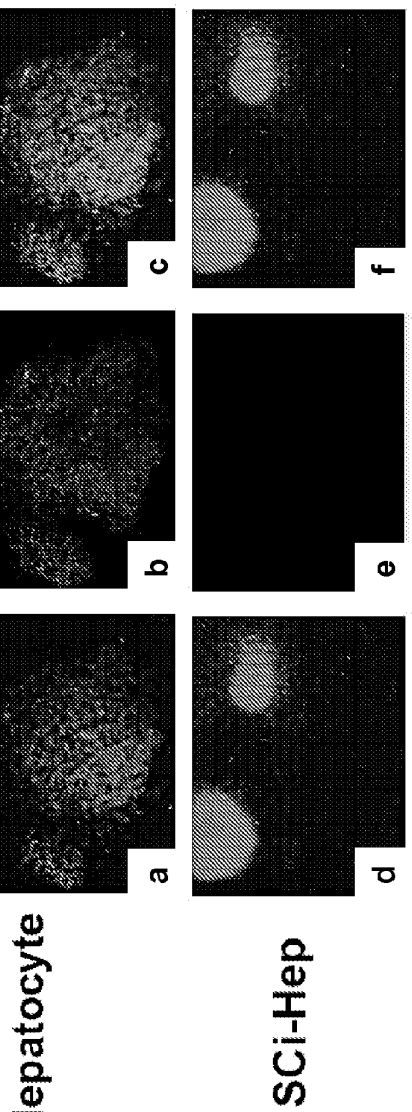


FIGURE 11

Selected Genes: 1129 genes with increased expression in hepatocytes (vs ASC)

	Increased	Decreased	NS
Chi-Hep vs ASC	494 (44%)	2 (0%)	633 (56%)
Sci-Hep vs ASC	565 (50%)	6 (1%)	558 (49%)
iPS-Hep vs ASC	591 (52%)	22 (2%)	516 (46%)

Selected Genes: 1437 genes with decreased expression in hepatocytes (vs ASC)

	Increased	Decreased	NS
Chi-Hep vs ASC	49 (3%)	341 (24%)	1047 (73%)
Sci-Hep vs ASC	81 (6%)	449 (31%)	907 (63%)
iPS-Hep vs ASC	93 (6%)	781 (54%)	563 (39%)

Selected Genes: 16446 genes with insignificant changes in hepatocytes (vs ASC)

	Increased	Decreased	NS
Chi-Hep vs ASC	256 (2%)	345 (2%)	15845 (96%)
Sci-Hep vs ASC	764 (5%)	507 (3%)	15175 (92%)
iPS-Hep vs ASC	1718 (10%)	1251 (8%)	13477 (82%)

FIGURE 12

	Foxa2	*Albumin*	*CD105*
P-value			
Day 3	2.81E-06	0.00307	0.012584
Day 6	0.000182	0.000224	0.000616
Day 12	0.000683	9.35 E-05	0.001107
Fold-Change			
Day 3	9.4	11.0	-3.3
Day 6	19.7	16.7	-12.3
Day 12	25.3	50.8	-34.8

FIGURE 13

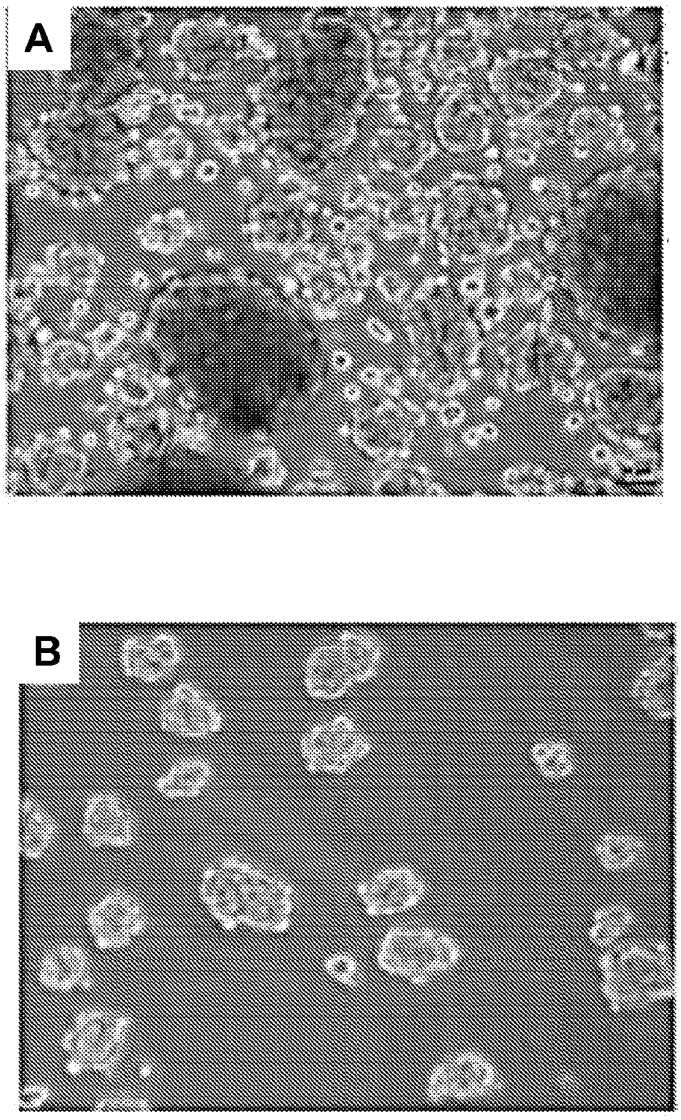


FIGURE 14

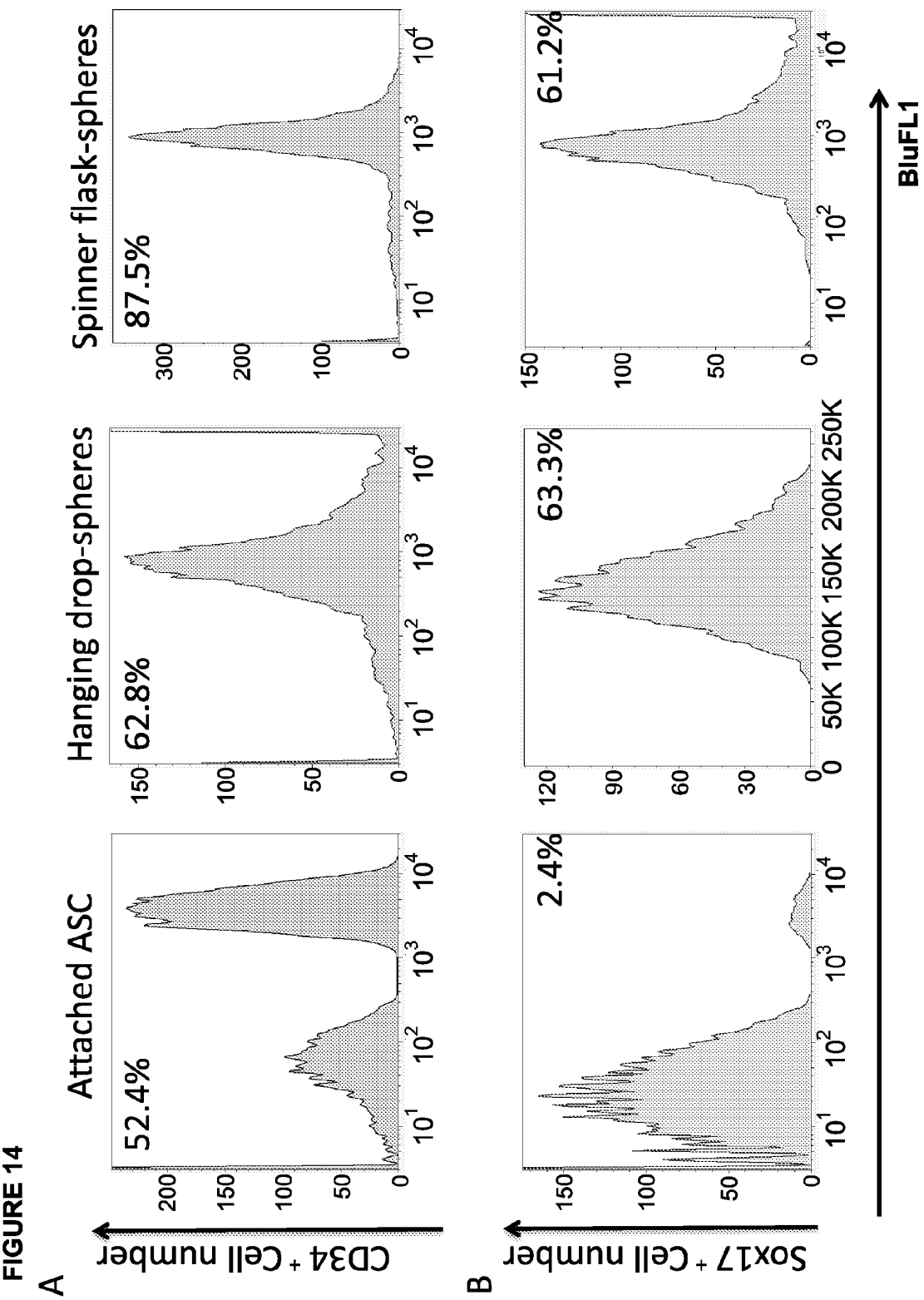

A
Attached ASC
Hanging drop-spheres
Spinner flask-spheres
CD34+ Cell number
52.4%
62.8%
87.5%
B
Sox17+ Cell number
2.4%
63.3%
61.2%
0
50K
100K
150K
200K
250K
BluFL1

FIGURE 15

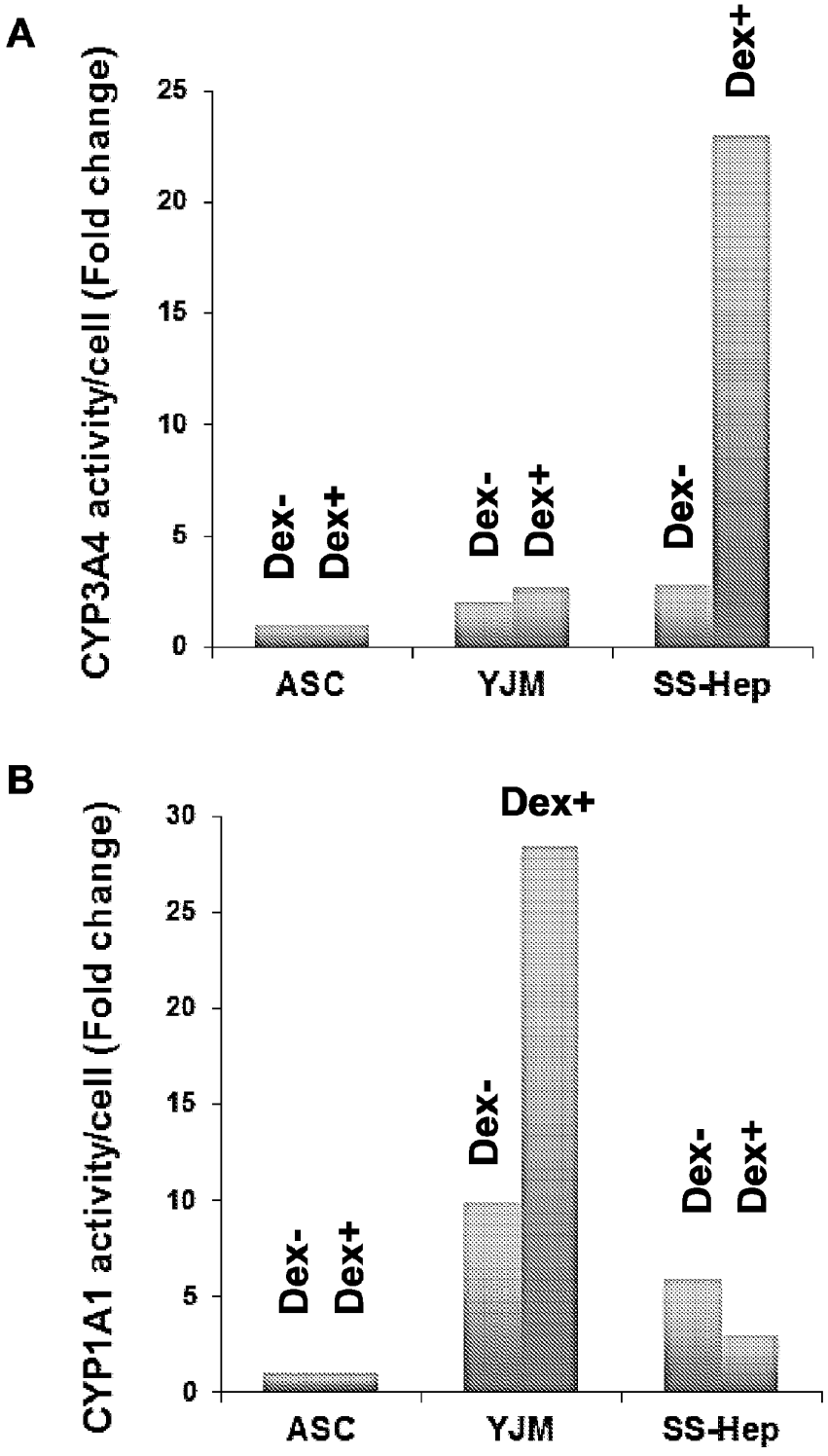
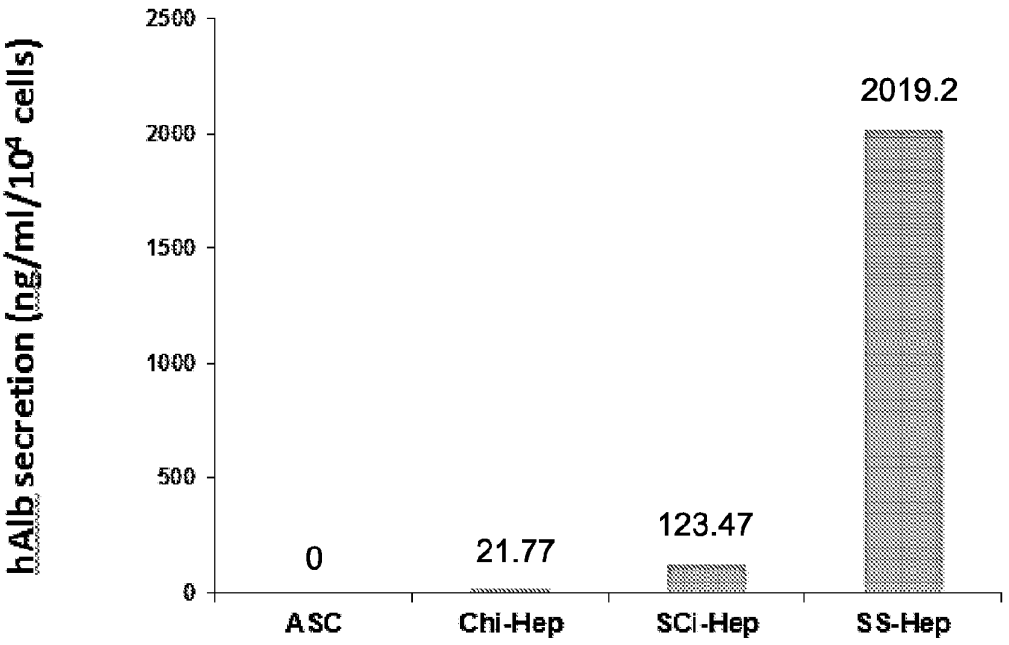

A
CYP3A4 activity/cell (Fold change)
25
20
15
10
5
0
Dex-
Dex+
Dex-
Dex+
Dex-
Dex+
ASC
YJM
SS-Hep
B
CYP1A1 activity/cell (Fold change)
30
25
20
15
10
5
0
Dex-
Dex+
Dex+
Dex-
Dex-
Dex+
ASC
YJM
SS-Hep

FIGURE 16


hAlb secretion (ng/ml/10^4 cells)
2500
2000
1500
1000
500
0
0
21.77
123.47
2019.2
ASC
Chi-Hep
SCi-Hep
SS-Hep