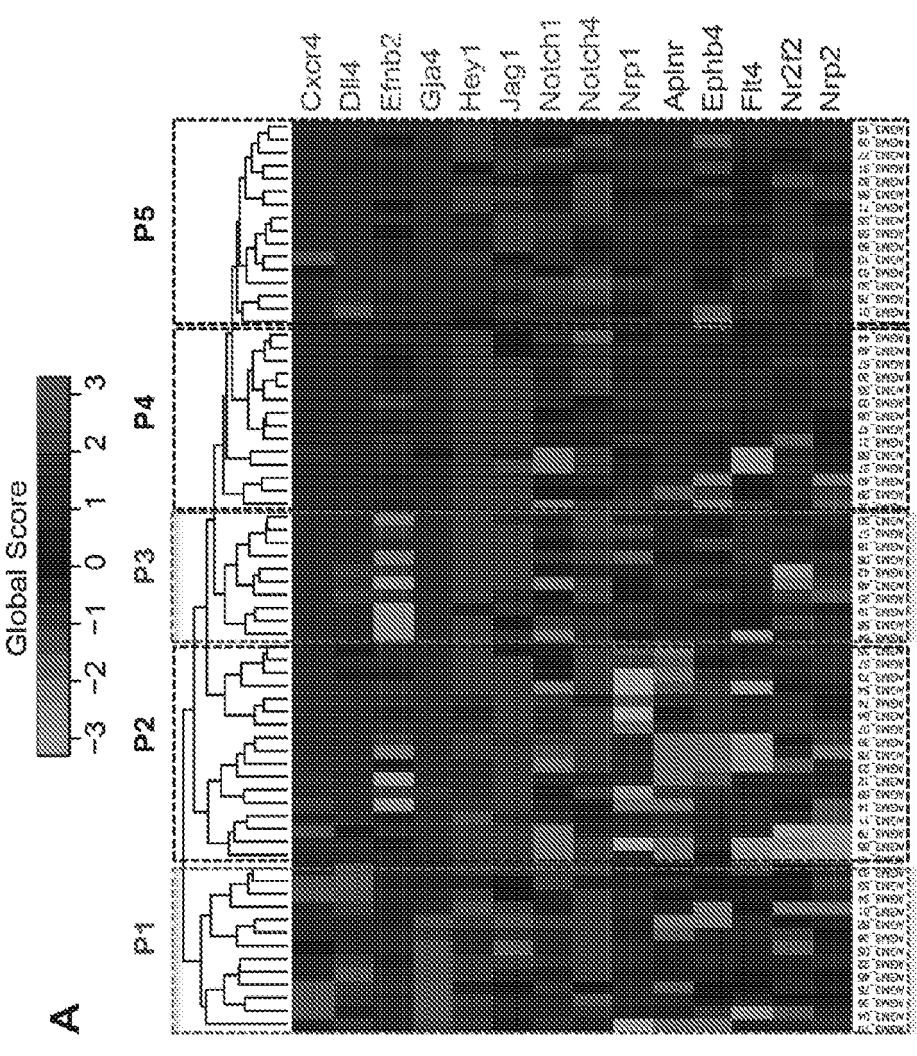
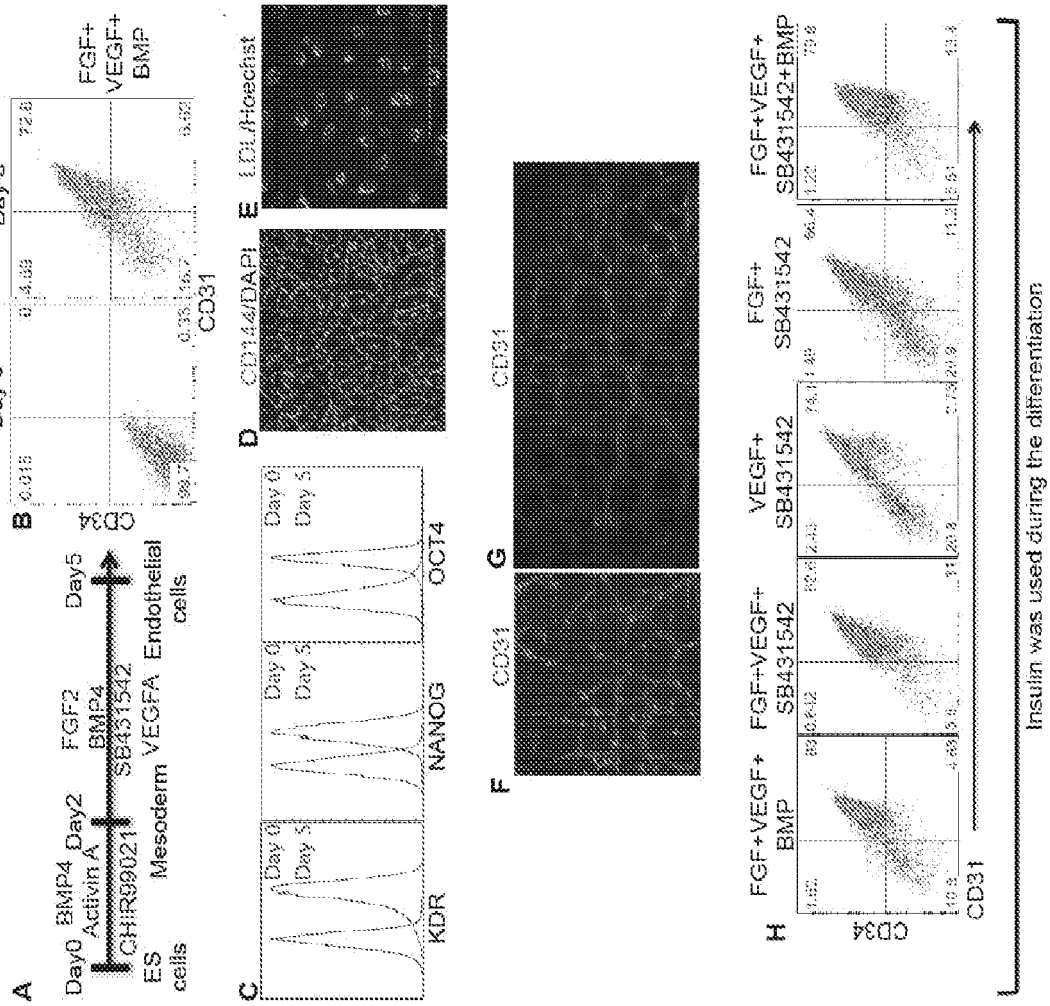
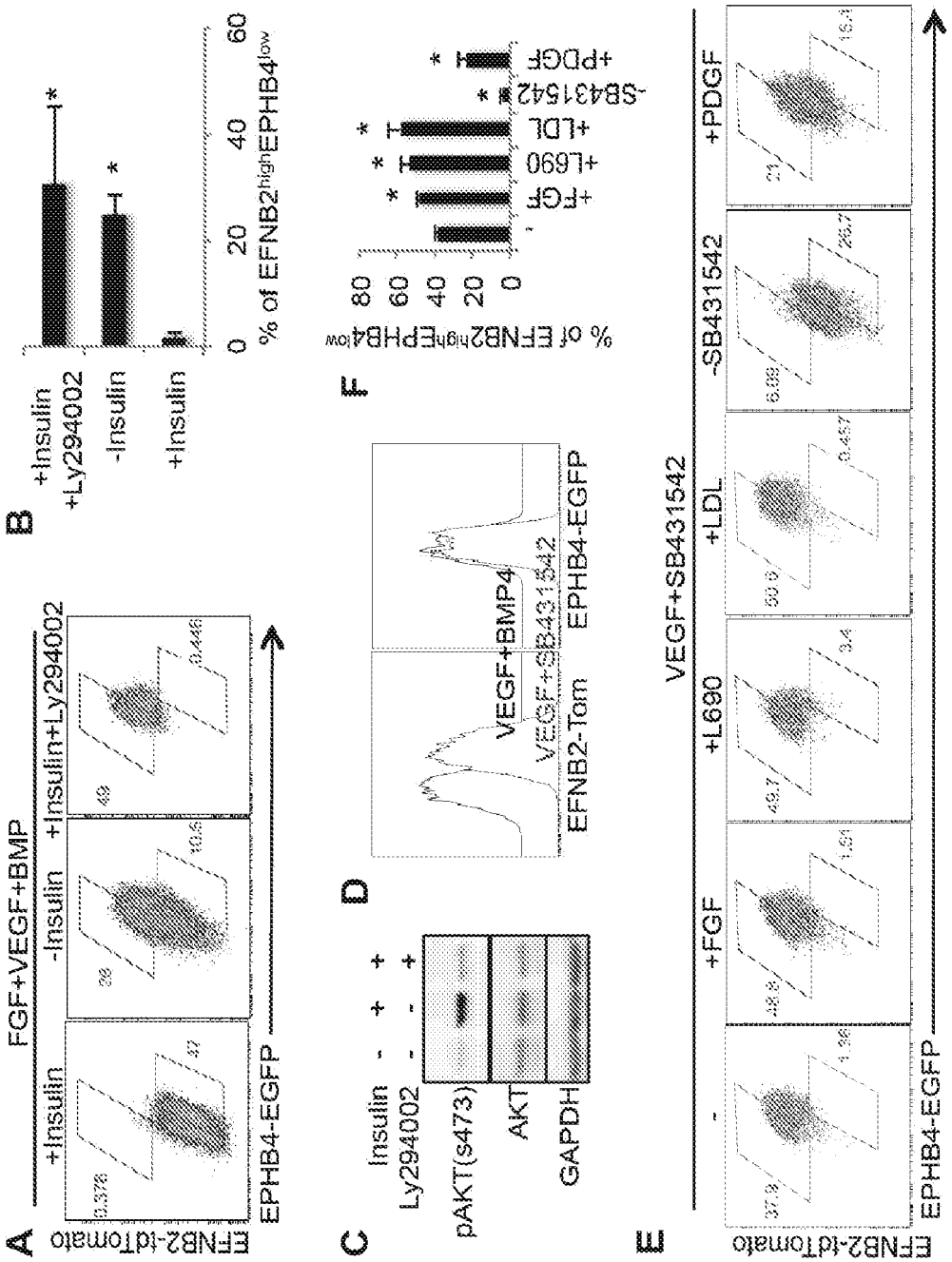
FIGS. 1A-1D


A
Global Score
−3 −2 −1 0 1 2 3
P1
P2
P3
P4
P5
Cxcr4
Dll4
Efnb2
Gja4
Hey1
Jag1
Notch1
Notch4
Nrp1
Aplnr
Ephb4
Flt4
Nr2f2
Nrp2
B
Relative expression
2.00
1.50
1.00
0.50
0.00
Arterial
Venous
P1 P2 P3 P4 P5
C
PCA Score Plot
PC2
PC1
P1
P3
D
P1 vs P3
Arterial enriched genes (918)
Growth factors related genes (42)

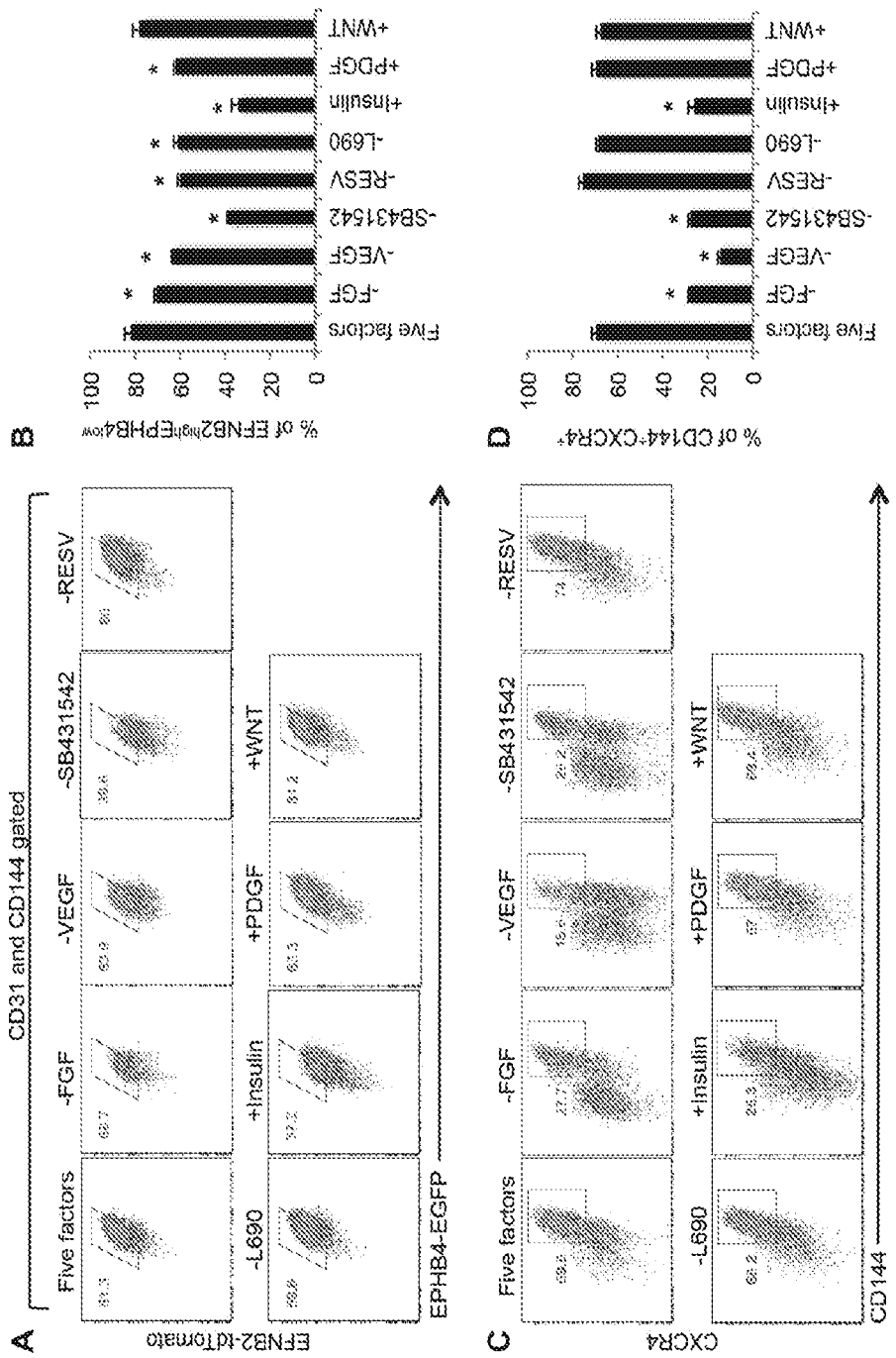
FIGS. 2A-2H


A
Day0 BMP4 Activin A
Day2
CHIR99021
FGF2 BMP4 SB431542
Day5
ES cells
Mesoderm
VEGFA
Endothelial cells
B
Day 0
Day 5
FGF+ VEGF+ BMP
CD34
CD31
C
Day 0
Day 5
KDR
NANOG
OCT4
D
CD144/DAPI
E
LDL/Hoechst
F
CD31
G
CD31
H
FGF+VEGF+ BMP
FGF+VEGF+ SB431542
VEGF+ SB431542
FGF+ SB431542
FGF+VEGF+ SB431542+BMP
CD34
CD31
Insulin was used during the differentiation

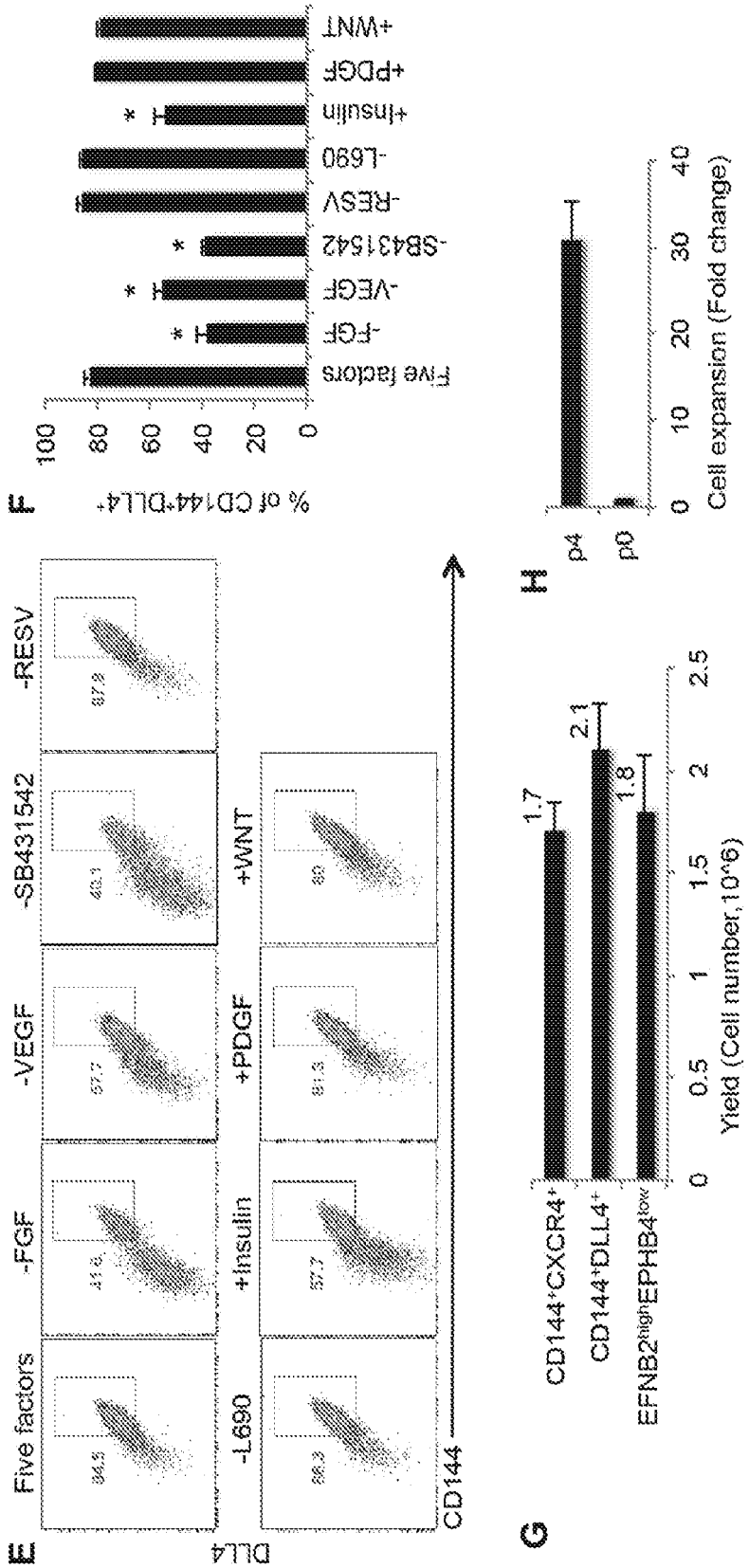
FIGS. 3A-3F


A
FGF+VEGF+BMP
+Insulin
-Insulin
+Insulin+Ly294002
EFNB2-idTomato
EPHB4-EGFP
B
+Insulin +Ly294002
-Insulin
+Insulin
% of EFNB2highEPHB4low
C
Insulin
Ly294002
pAKT(s473)
AKT
GAPDH
D
VEGF+BMP4
VEGF+SB431542
EFNB2-Tom
EPHB4-EGFP
E
VEGF+SB431542
-
+FGF
+L690
+LDL
-SB431542
+PDGF
EFNB2-idTomato
EPHB4-EGFP
F
% of EFNB2highEPHB4low
+FGF
+L690
+LDL
-SB431542
+PDGF

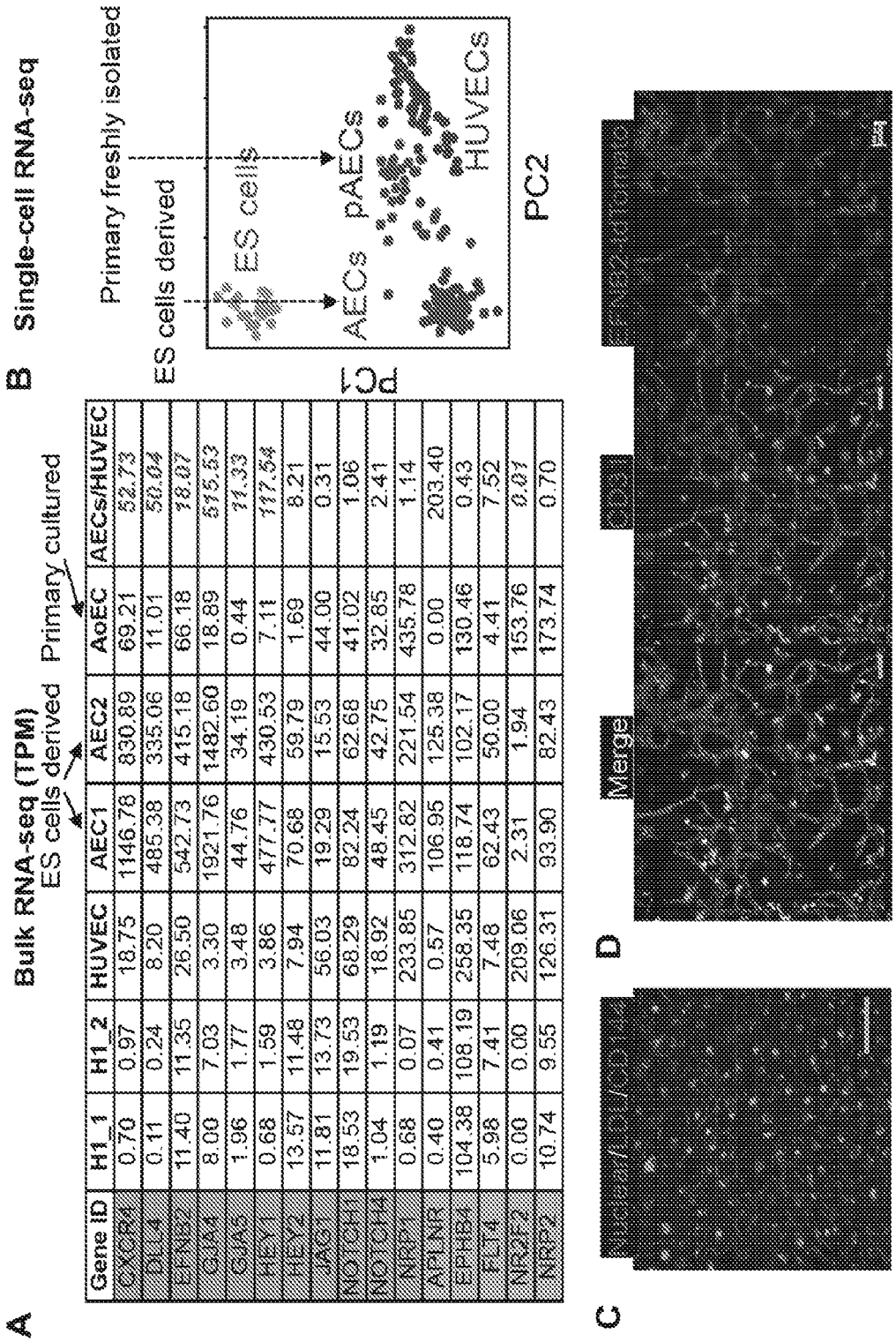
FIGS. 4A-4H


A
CD31 and CD144 gated
Five factors
-FGF
-VEGF
-SB431542
-RESV
-L690
+Insulin
+PDGF
+WNT
EFNB2-tdTomato
EPHB4-EGFP
B
% of EFNB2highEPHB4low
Five factors
-FGF
-VEGF
-SB431542
-RESV
-L690
+Insulin
+PDGF
+WNT
C
CXCR4
CD144
D
% of CD144+CXCR4+

FIGS. 4A-4H, CONTINUED

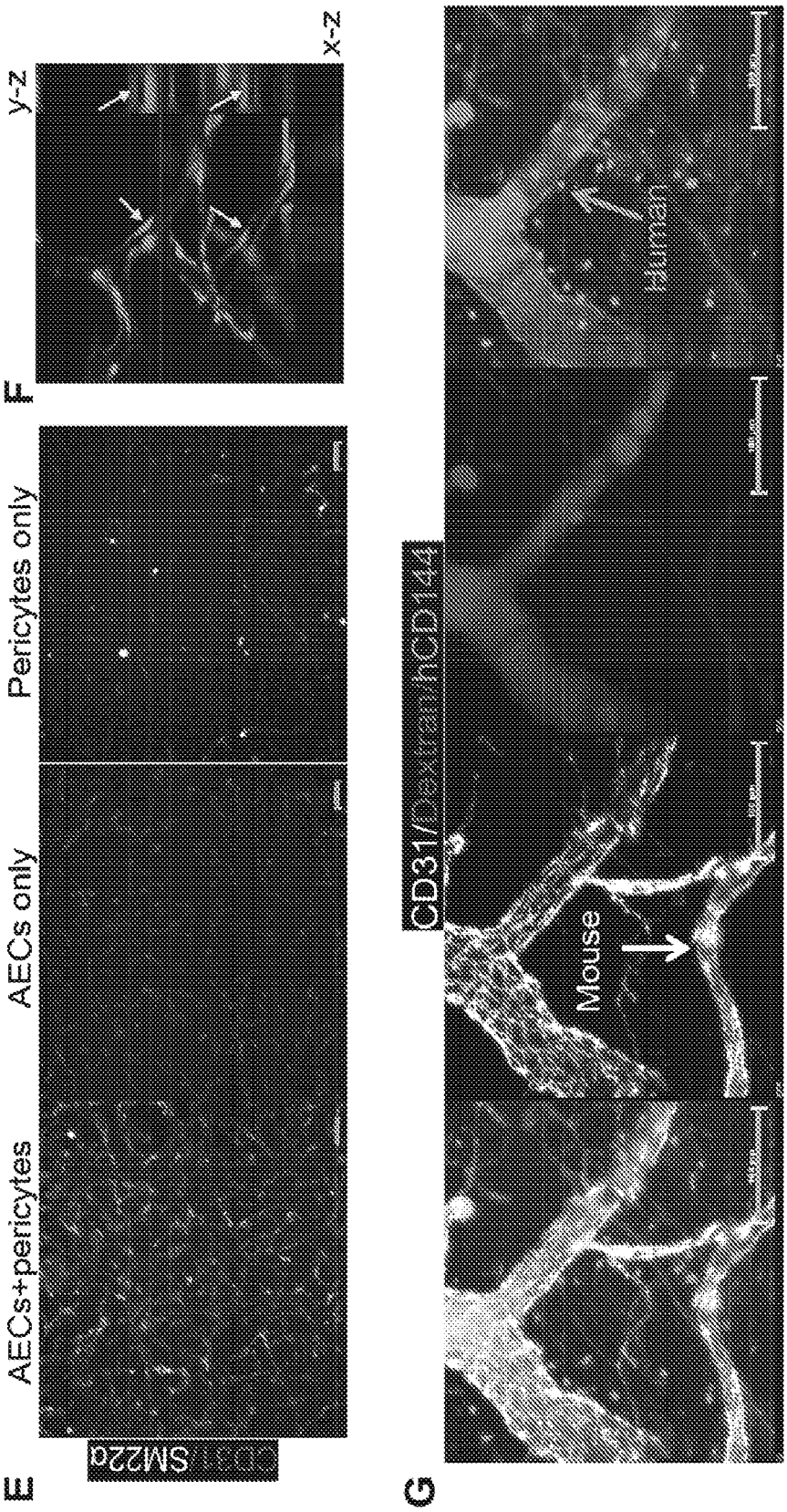


FIGS. 5A-5G

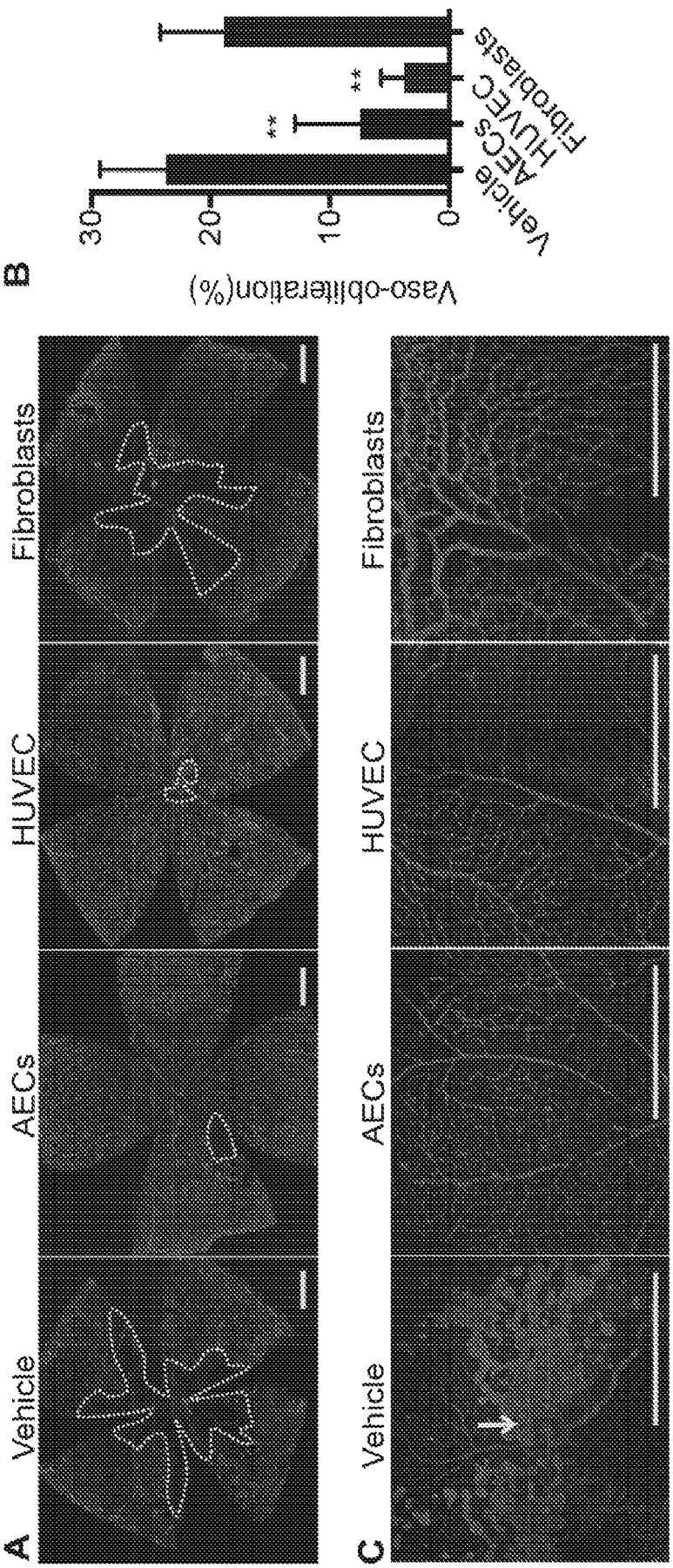


Gene ID	H1_1	H1_2	HUVEC	AEC1	AEC2	AoEC	AECs/HUVEC
CXCR4	0.70	0.97	18.75	1146.78	830.89	69.21	*52.73*
DLL4	0.11	0.24	8.20	485.38	335.06	11.01	*50.04*
EFNB2	11.40	11.35	26.50	542.73	415.18	66.18	*18.07*
GJA4	8.00	7.03	3.30	1921.76	1482.60	18.89	*575.53*
GJA5	1.96	1.77	3.48	44.76	34.19	0.44	*11.33*
HEY1	0.68	1.59	3.86	477.77	430.53	7.11	*117.54*
HEY2	13.57	11.48	7.94	70.68	59.79	1.69	8.21
JAG1	11.81	13.73	56.03	19.29	15.53	44.00	0.31
NOTCH1	18.53	19.53	68.29	82.24	62.68	41.02	1.06
NOTCH4	1.04	1.19	18.92	48.45	42.75	32.85	2.41
NRP1	0.68	0.07	233.85	312.82	221.54	435.78	1.14
APLNR	0.40	0.41	0.57	106.95	125.38	0.00	203.40
EPHB4	104.38	108.19	258.35	118.74	102.17	130.46	0.43
FLT4	5.98	7.41	7.48	62.43	50.00	4.41	7.52
NR2F2	0.00	0.00	209.06	2.31	1.94	153.76	*0.01*
NRP2	10.74	9.55	126.31	93.90	82.43	173.74	0.70

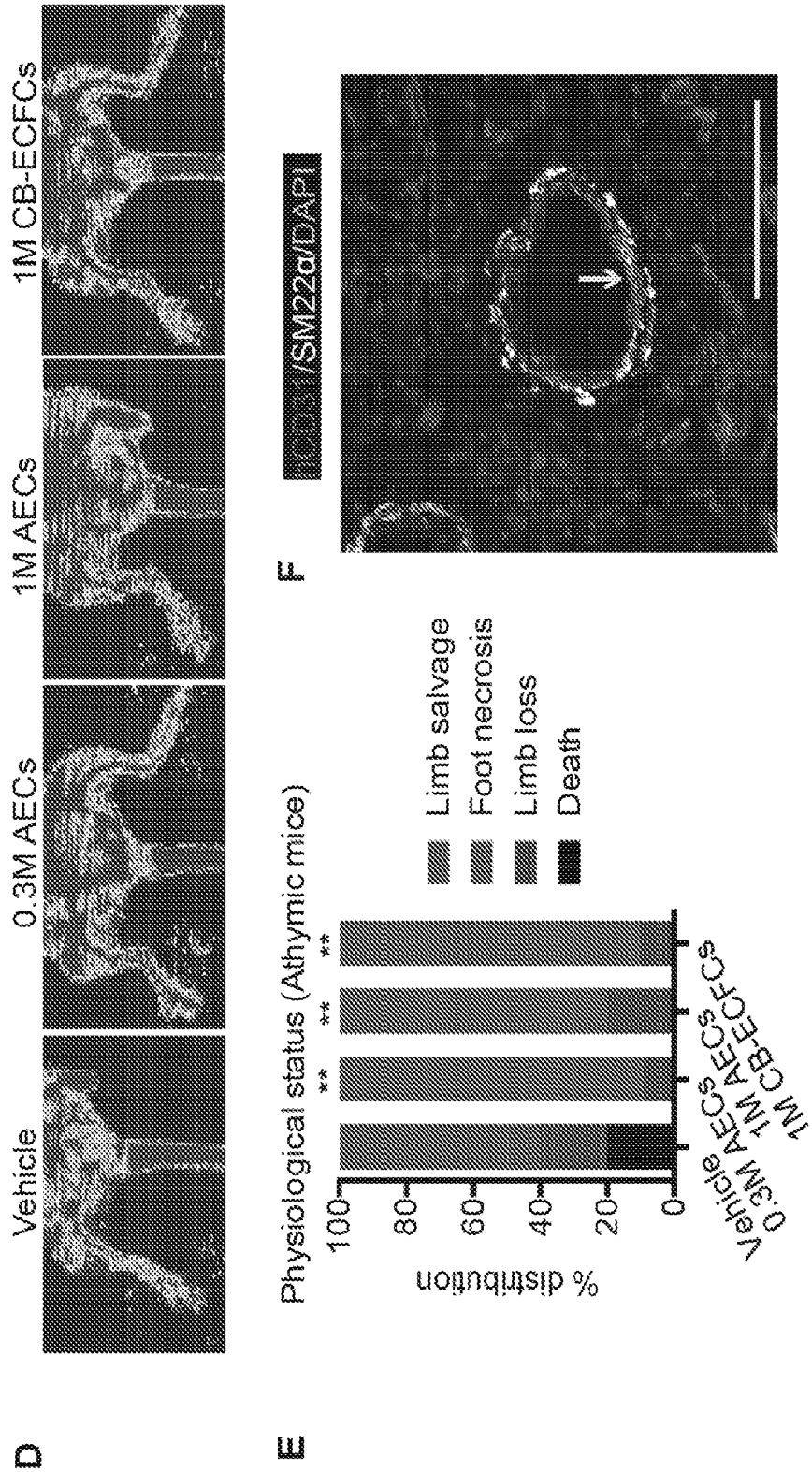
FIGS. 5A-5G, CONTINUED



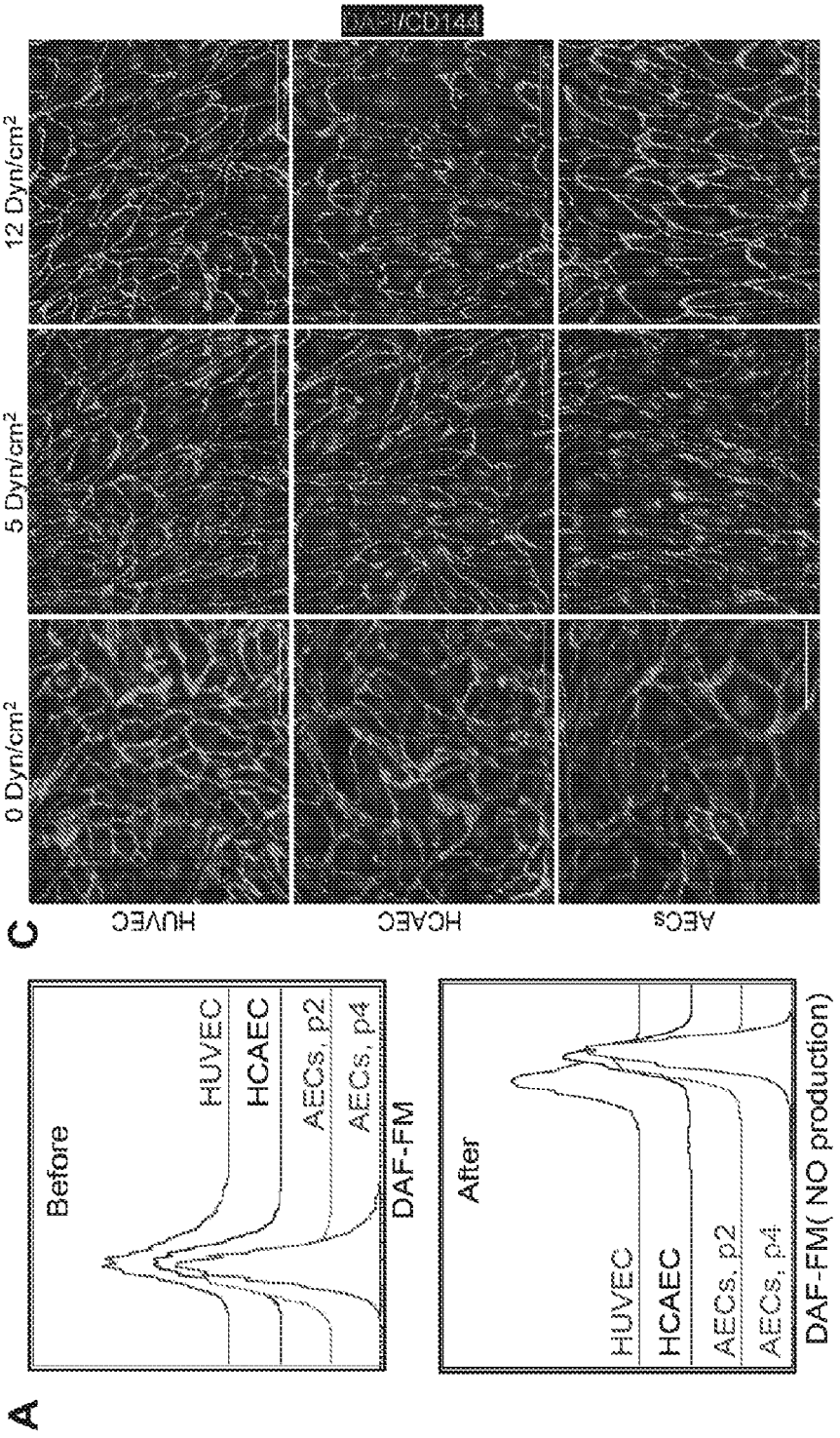
FIGS. 6A-6F


A
Vehicle
AECs
HUVEC
Fibroblasts
B
Vaso-obliteration(%)
30
20
10
0
**
**
Vehicle
AECs
HUVEC
Fibroblasts
C
Vehicle
AECs
HUVEC
Fibroblasts

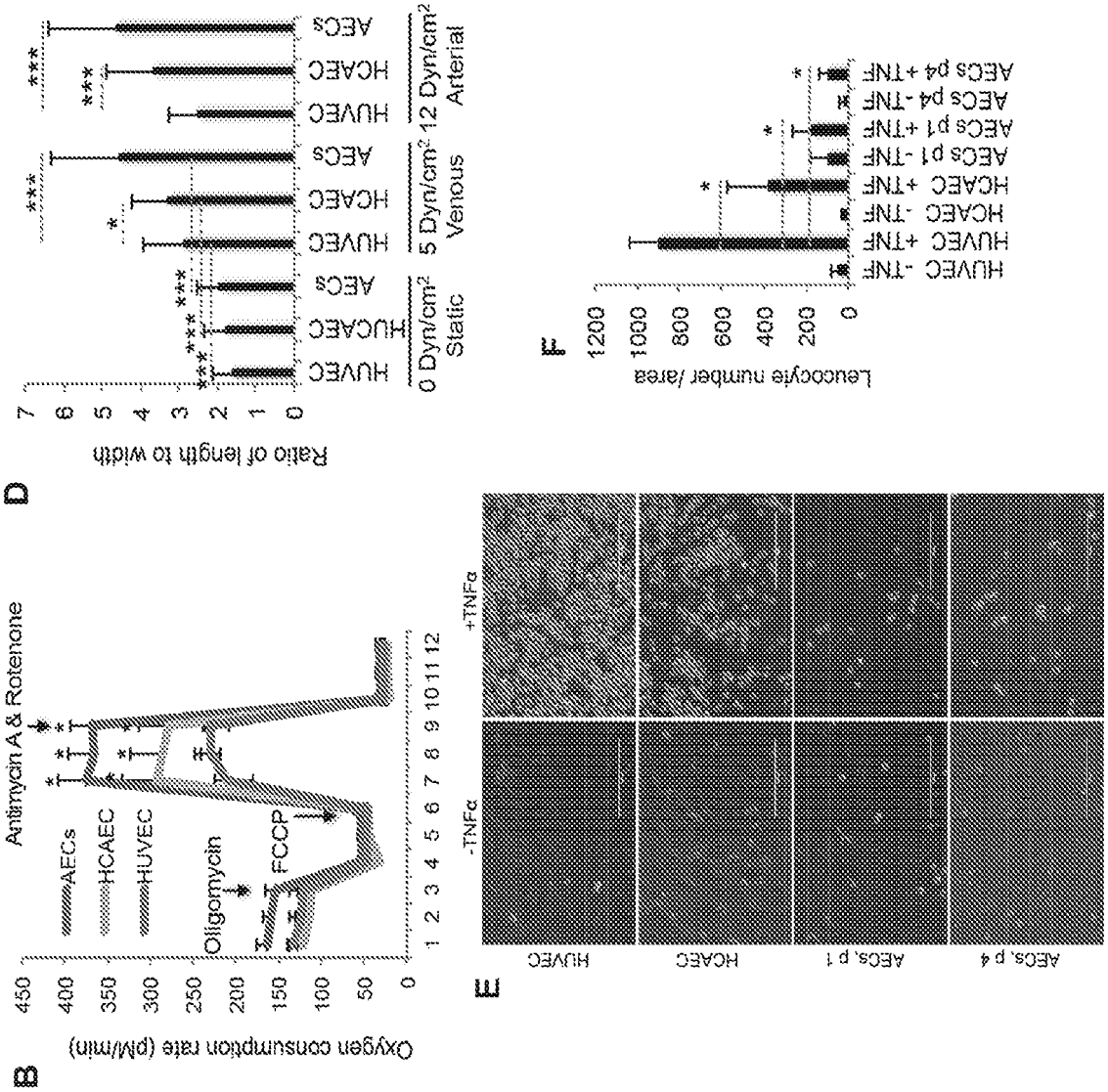
FIGS. 6A-6F, CONTINUED



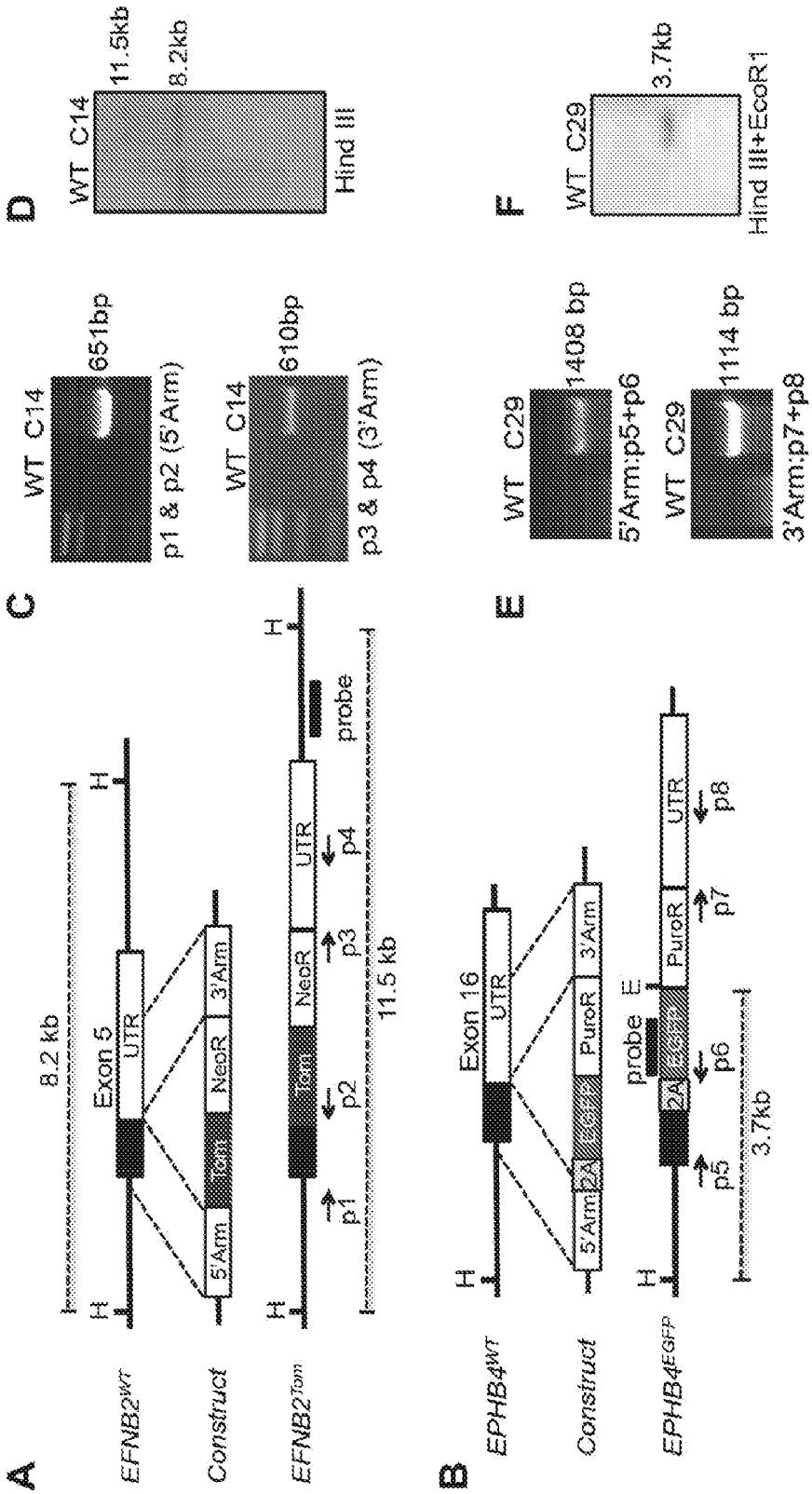
FIGS. 7A-7F


A
Before
HUVEC
HCAEC
AECs, p2
AECs, p4
DAF-FM
After
HUVEC
HCAEC
AECs, p2
AECs, p4
DAF-FM(NO production)
C
HUVEC
HCAEC
AECs
VE-/CD144
0 Dyn/cm²
5 Dyn/cm²
12 Dyn/cm²

FIGS. 7A-7F, CONTINUED



FIGS. 8A-8J


A
EFNB2WT
8.2 kb
H
Exon 5
UTR
H
Construct
5'Arm
Tom
NeoR
3'Arm
EFNB2Tom
H
Tom
NeoR
UTR
H
p1
p2
p3
p4
probe
11.5 kb
B
EPHB4WT
H
Exon 16
UTR
Construct
5'Arm
2A
EGFP
PuroR
3'Arm
EPHB4EGFP
H
probe
E
2A
EGFP
PuroR
UTR
p5
p6
p7
p8
3.7kb
C
WT C14
651bp
p1 & p2 (5'Arm)
WT C14
610bp
p3 & p4 (3'Arm)
D
WT C14
11.5kb
8.2kb
Hind III
E
WT C29
1408 bp
5'Arm:p5+p6
WT C29
1114 bp
3'Arm:p7+p8
F
WT C29
3.7kb
Hind III+EcoR1

FIGS. 8A-8J, CONTINUED

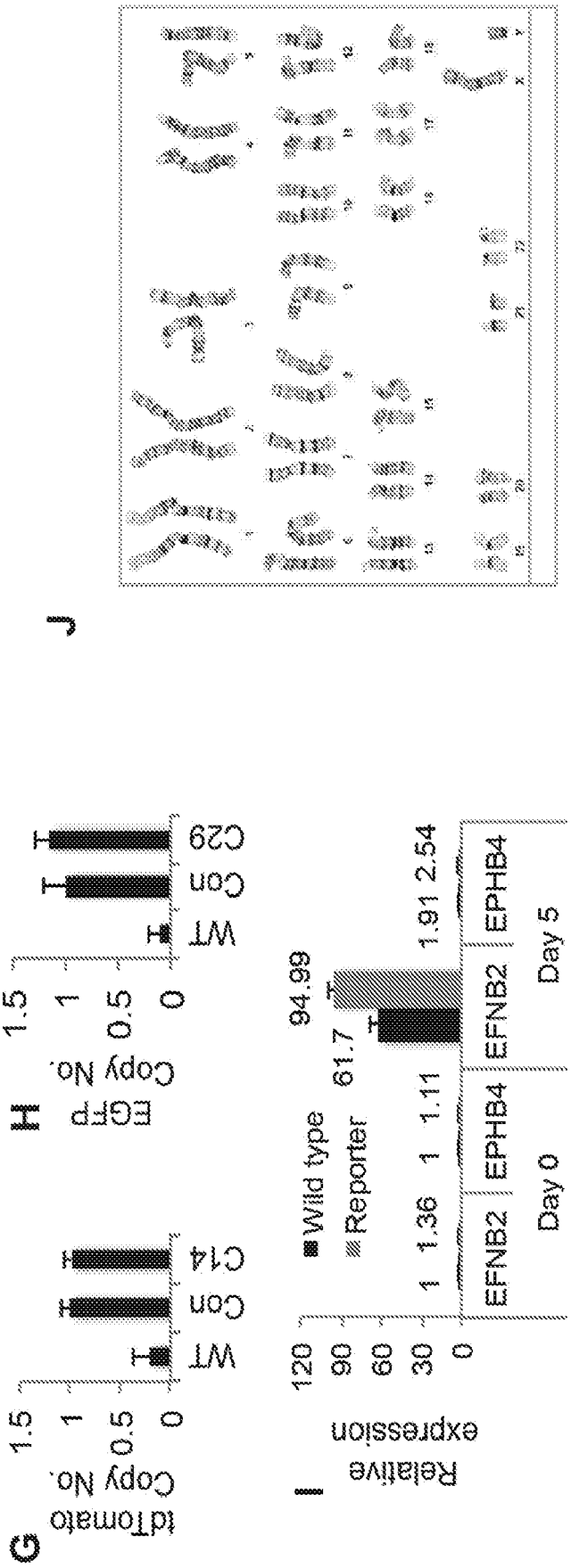


FIG. 9

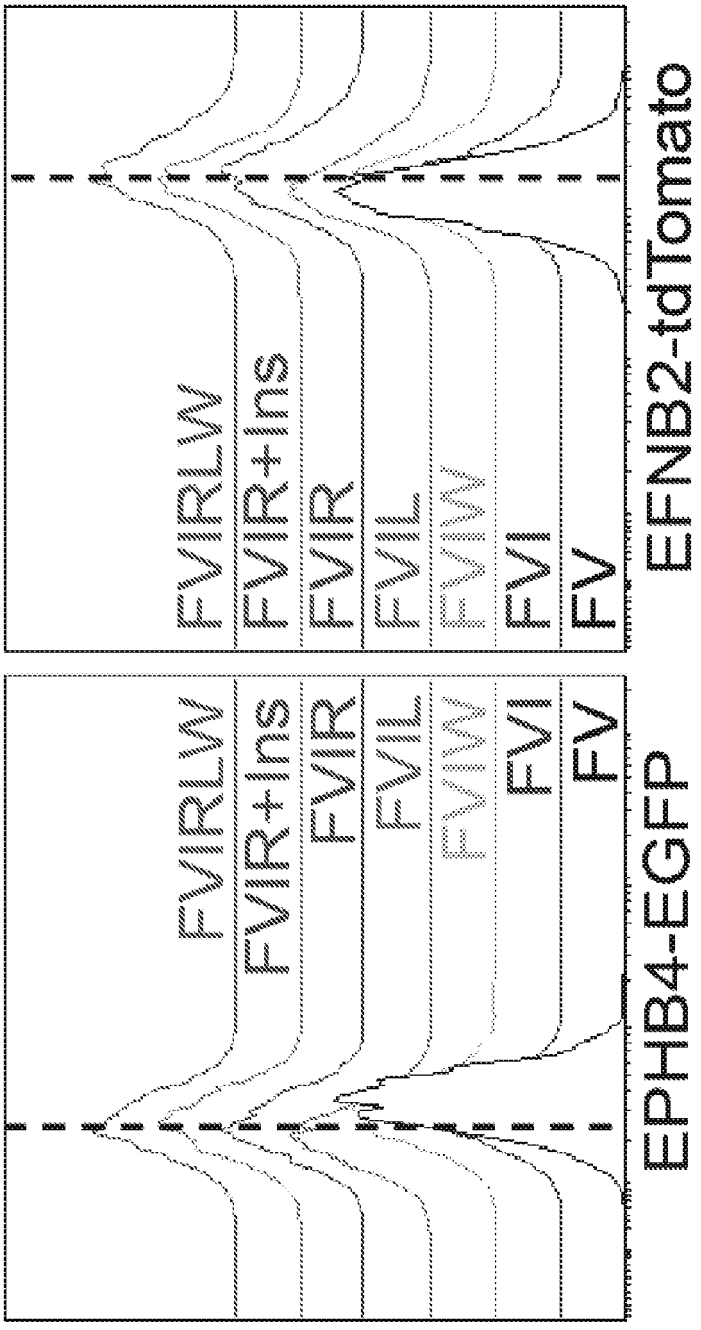
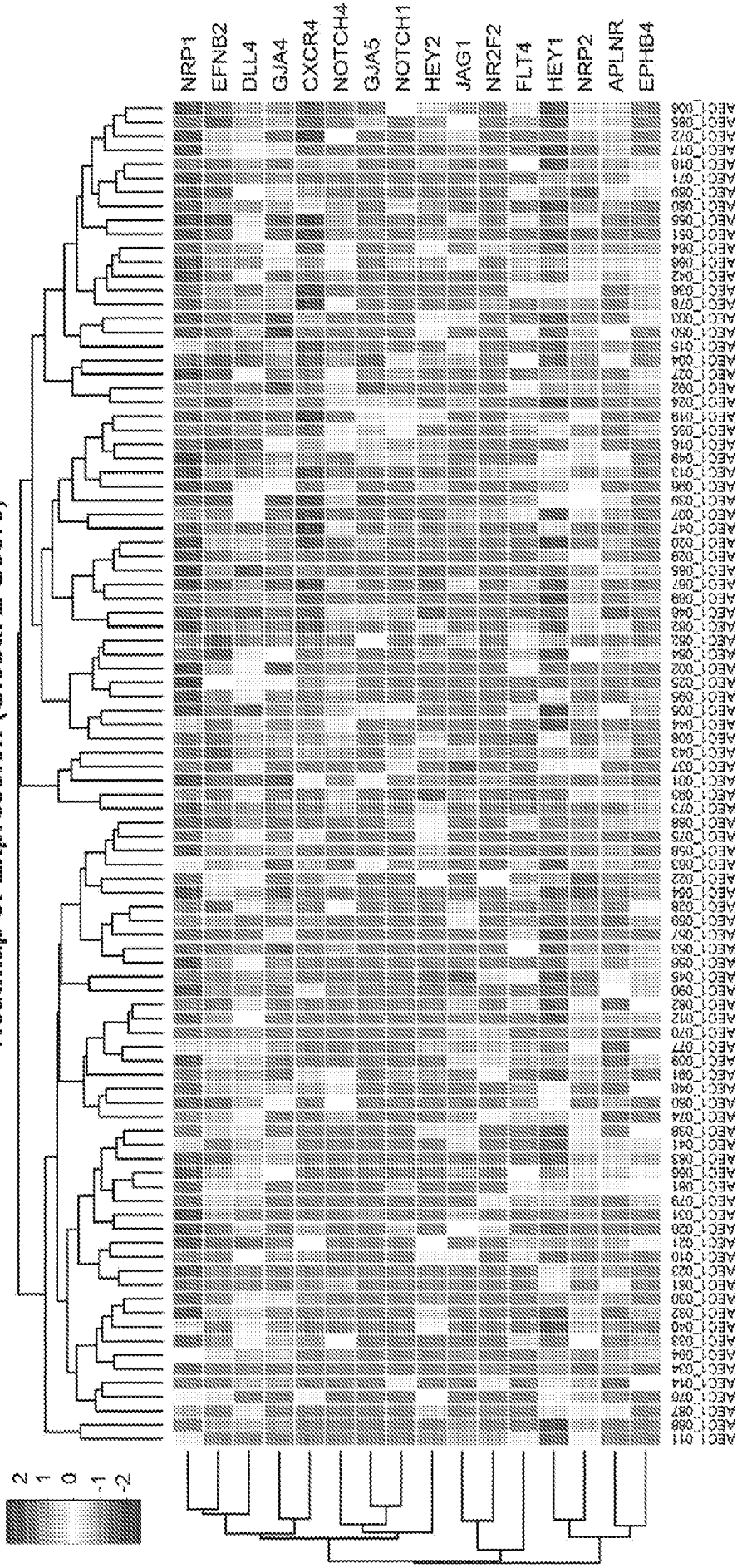
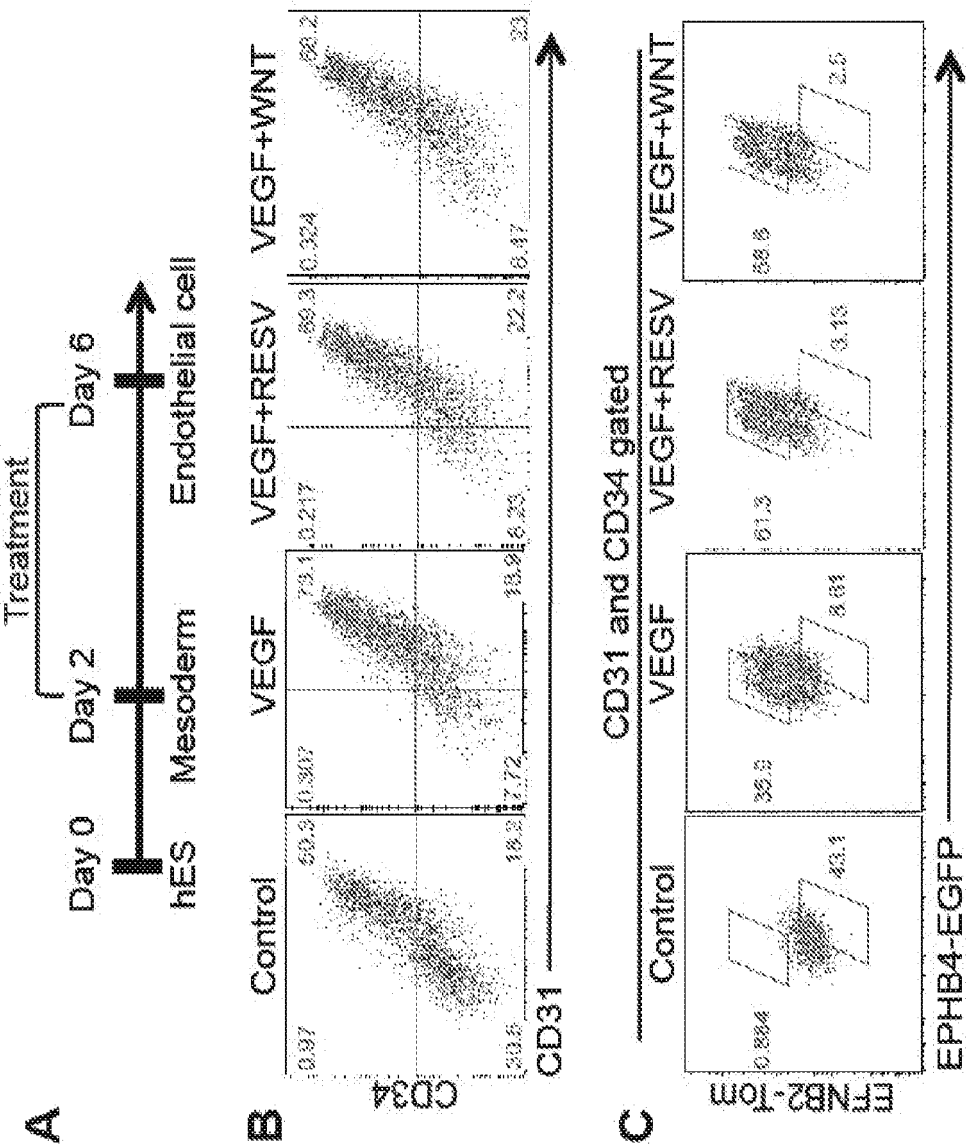

FVIRLW
FVIR+ins
FVIR
FVIL
FVIW
FVI
FV
EFNB2-tdTomato
FVIRLW
FVIR+ins
FVIR
FVIL
FVIW
FVI
FV
EPHB4-EGFP

FIG. 10


Heatmap of Expression (Global Z-Score)
NRP1
EFNB2
DLL4
GJA4
CXCR4
NOTCH4
GJA5
NOTCH1
HEY2
JAG1
NR2F2
FLT4
HEY1
NRP2
APLNR
EPHB4
2
1
0
-1
-2

FIGS. 11A-11C


A
Treatment
Day 0
Day 2
Day 6
hES
Mesoderm
Endothelial cell
B
Control
VEGF
VEGF+RESV
VEGF+WNT
CD34
CD31
C
CD31 and CD34 gated
Control
VEGF
VEGF+RESV
VEGF+WNT
EFNB2-tom
EPHB4-EGFP

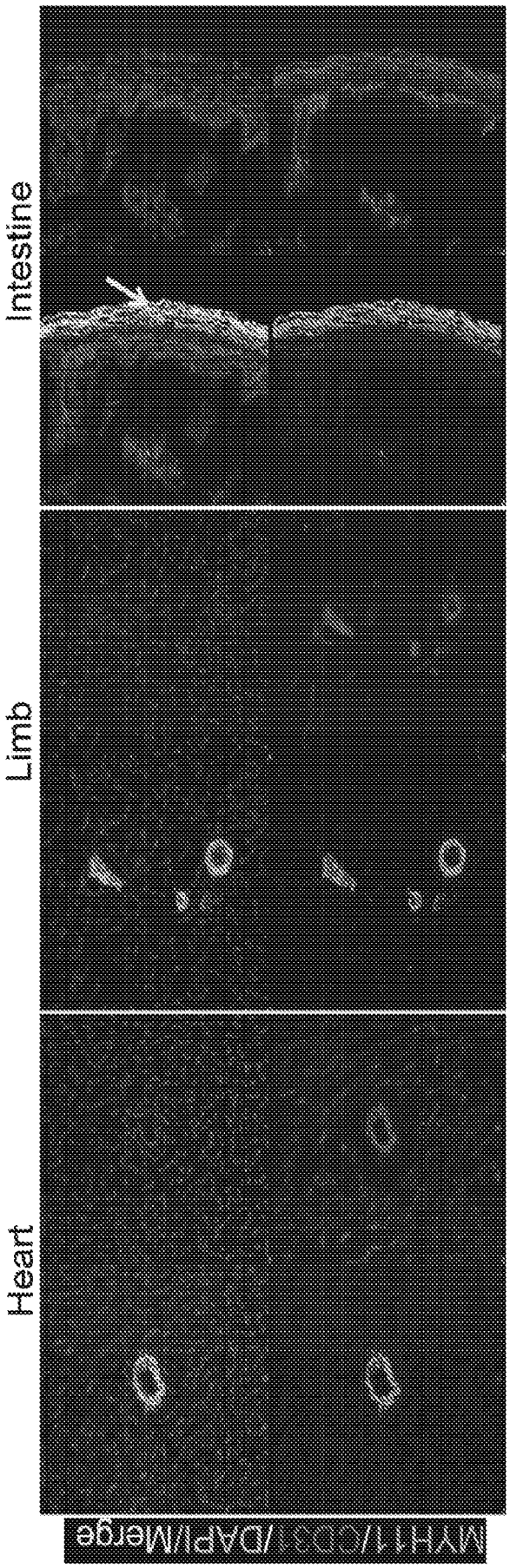


FIG. 12