FIG. 1

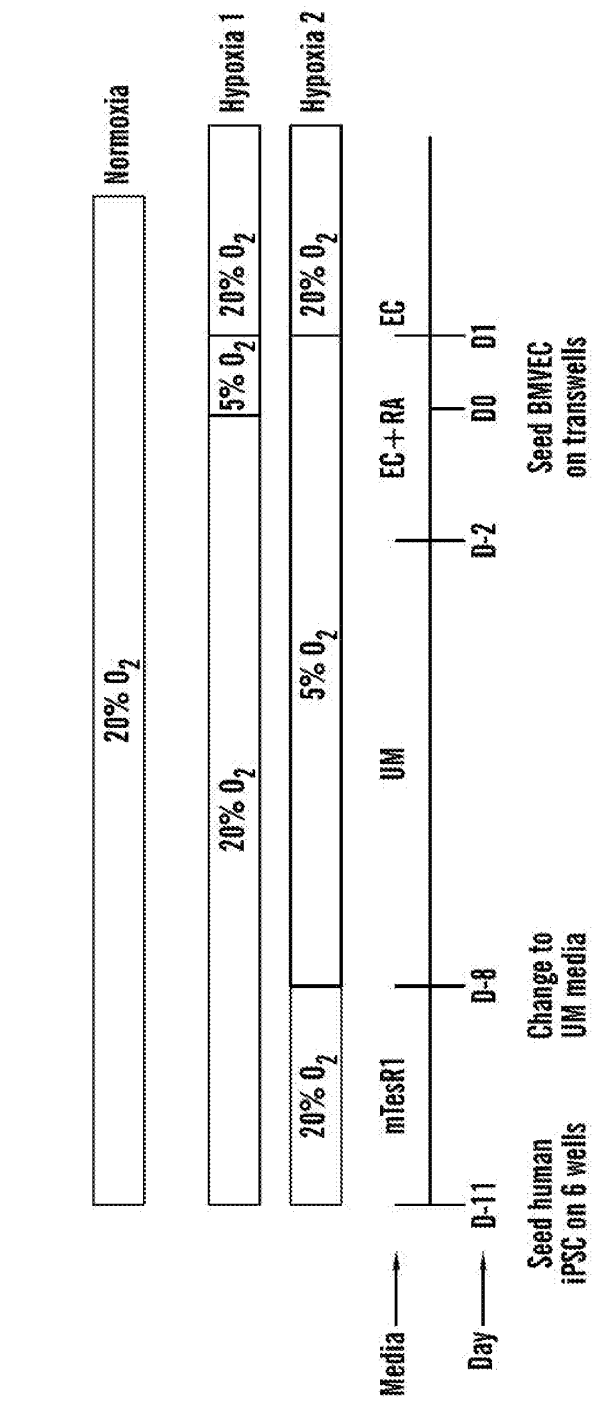

Normoxia
Hypoxia 1
Hypoxia 2
20% O_2
5% O_2
20% O_2
20% O_2
5% O_2
20% O_2
20% O_2
mTesR1
UM
EC+RA
EC
Media
Day
D-11
D-8
D-2
D0
D1
Seed human iPSC on 6 wells
Change to UM media
Seed BMVEC on transwells

FIG. 2B

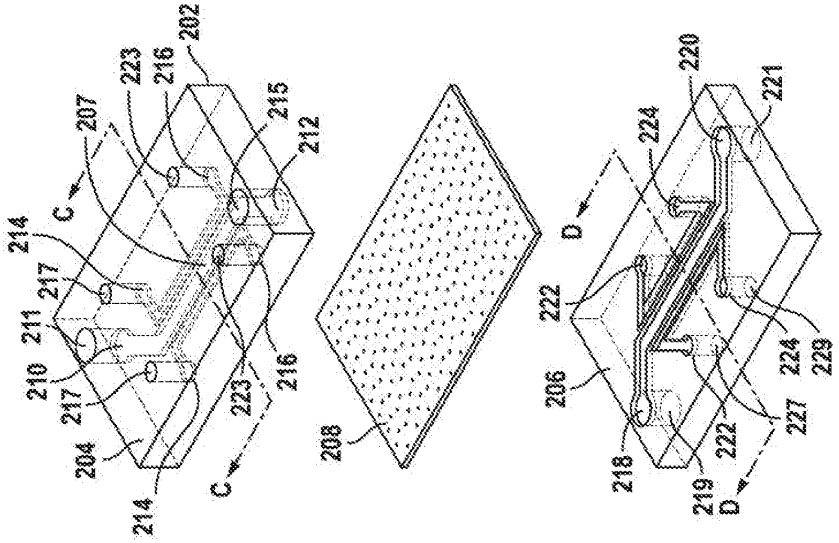

202
223
216
207
215
212
214
C
217
211
210
217
204
214
223
216
C
208
220
221
224
D
222
206
224
229
227
222
218
219
D

FIG. 2A

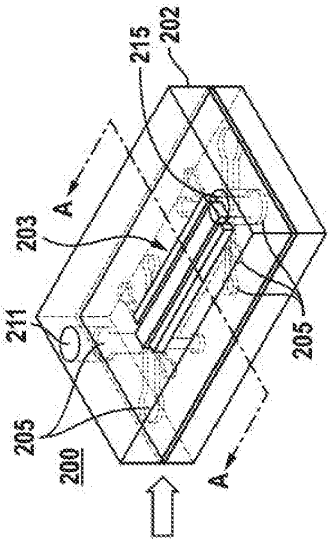

215
202
A
203
211
205
205
200
A

FIG. 3

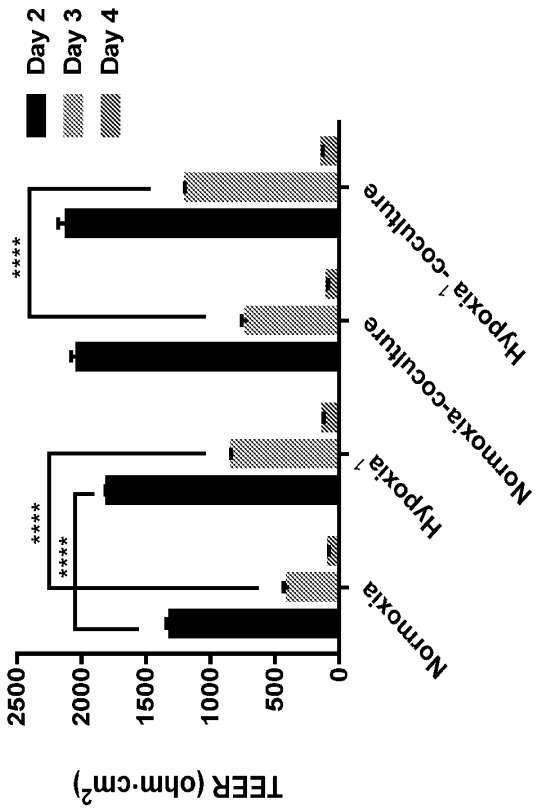

Day 2
Day 3
Day 4
TEER (ohm·cm²)
2500
2000
1500
1000
500
0
****
****
****
Normoxia
Hypoxia 7
Normoxia-coculture
Hypoxia 7 -coculture

FIG. 4B

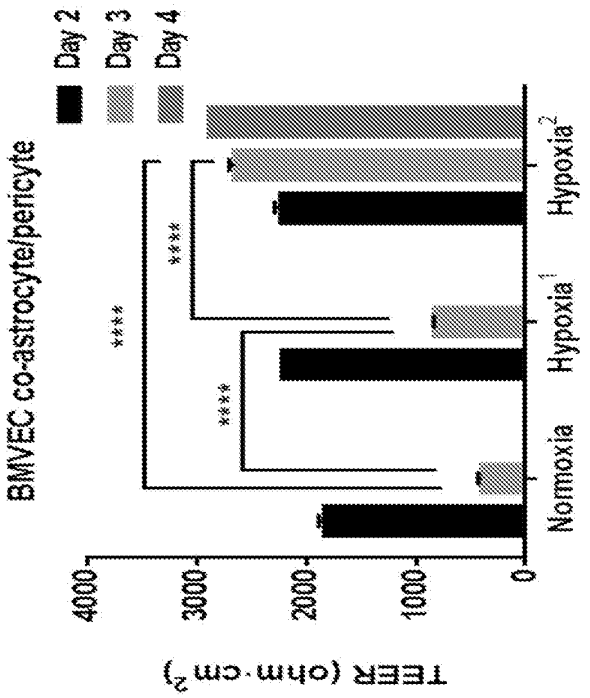
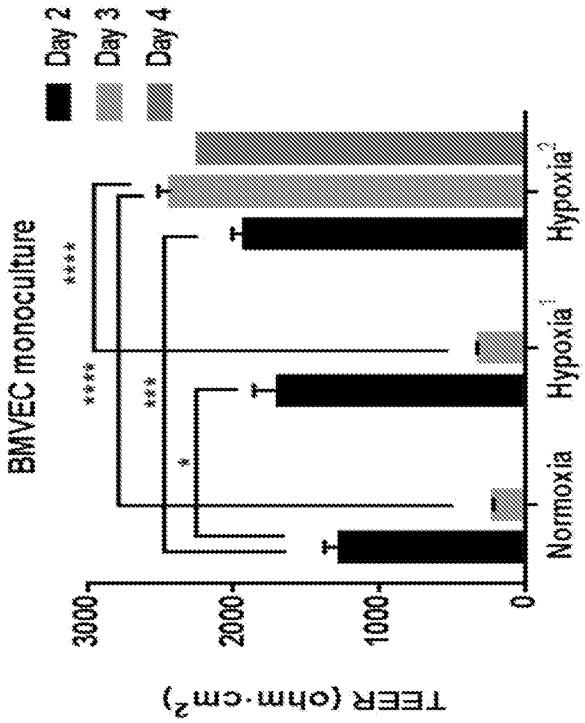
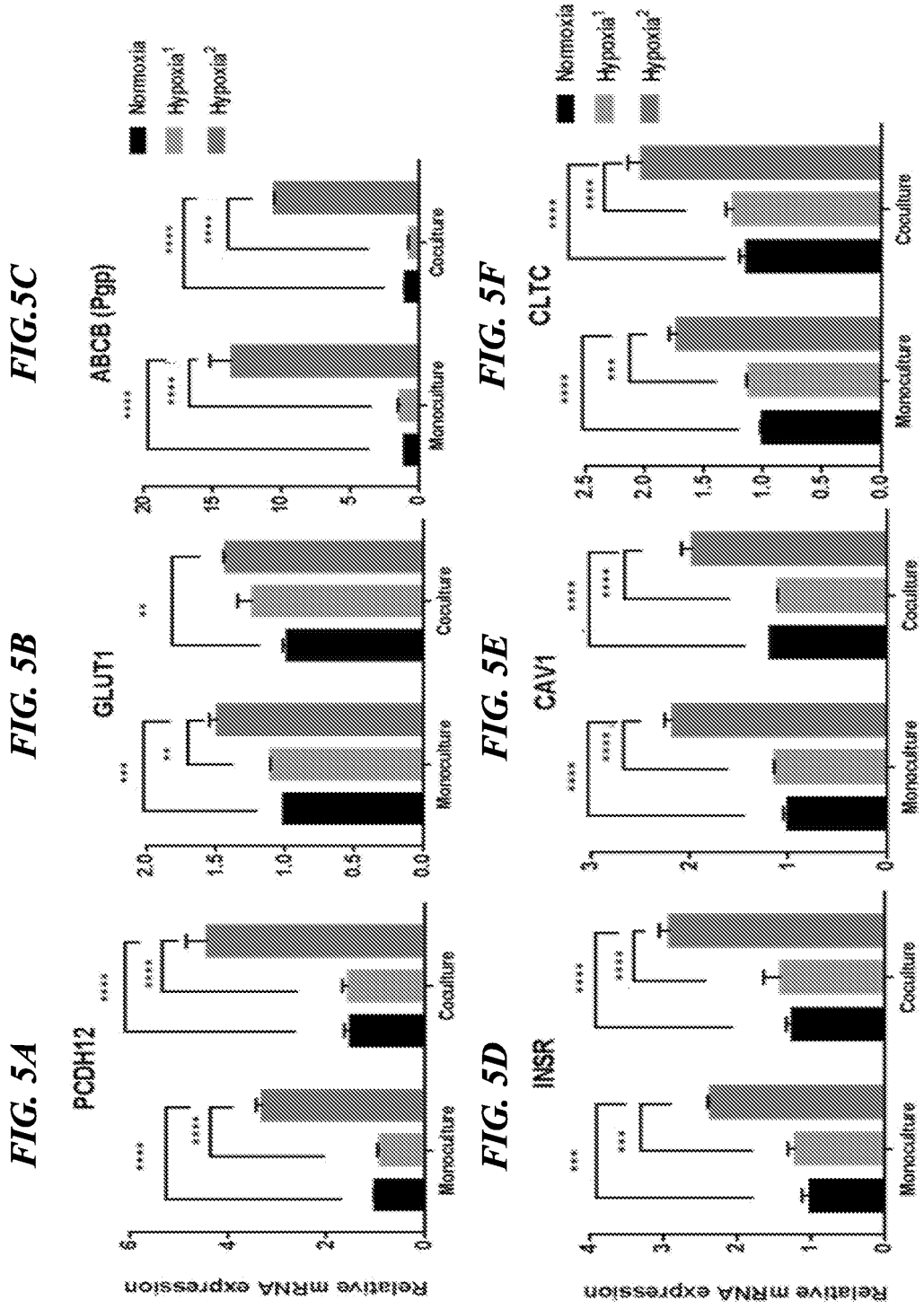

BMVEC co-astrocyte/pericyte
Day 2
Day 3
Day 4
TEER (ohm·cm²)
4000
3000
2000
1000
0
****
****
****
Normoxia
Hypoxia¹
Hypoxia²

FIG. 4A


BMVEC monoculture
Day 2
Day 3
Day 4
TEER (ohm·cm²)
3000
2000
1000
0
****
****
***
*
Normoxia
Hypoxia¹
Hypoxia²


FIG. 5A
FIG. 5B
FIG.5C
FIG. 5D
FIG. 5E
FIG. 5F
PCDH12
GLUT1
ABCB (Pgp)
INSR
CAV1
CLTC
Normoxia
Hypoxia1
Hypoxia2
Relative mRNA expression
Monoculture
Coculture

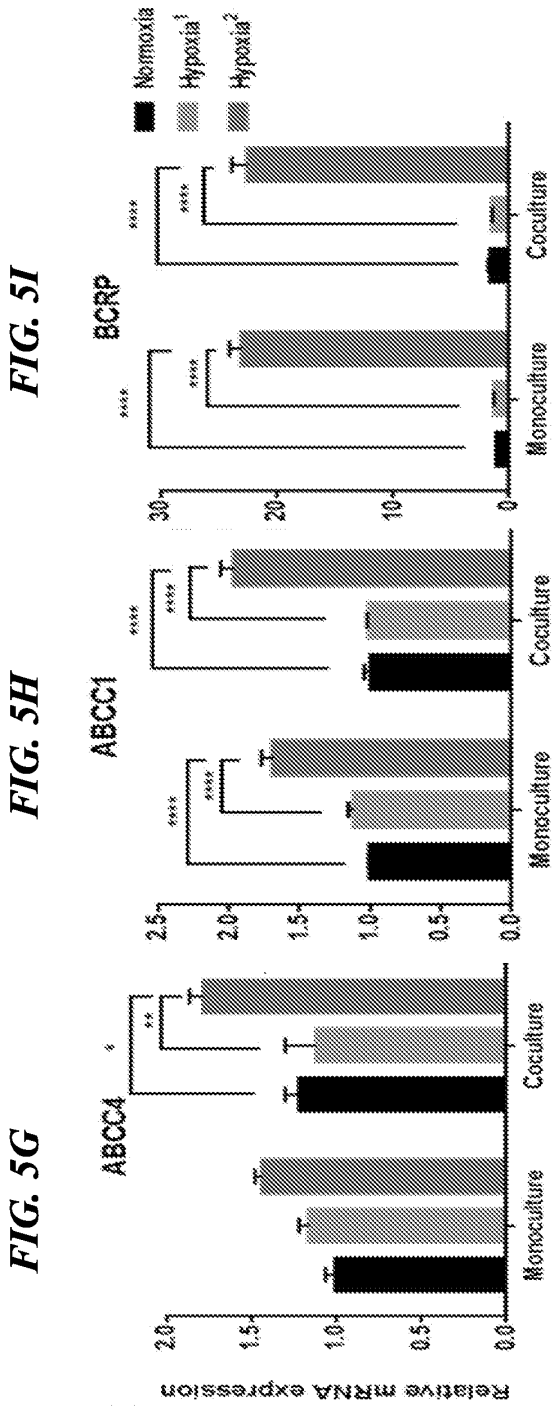


FIG. 5G

FIG. 5H

FIG. 5I

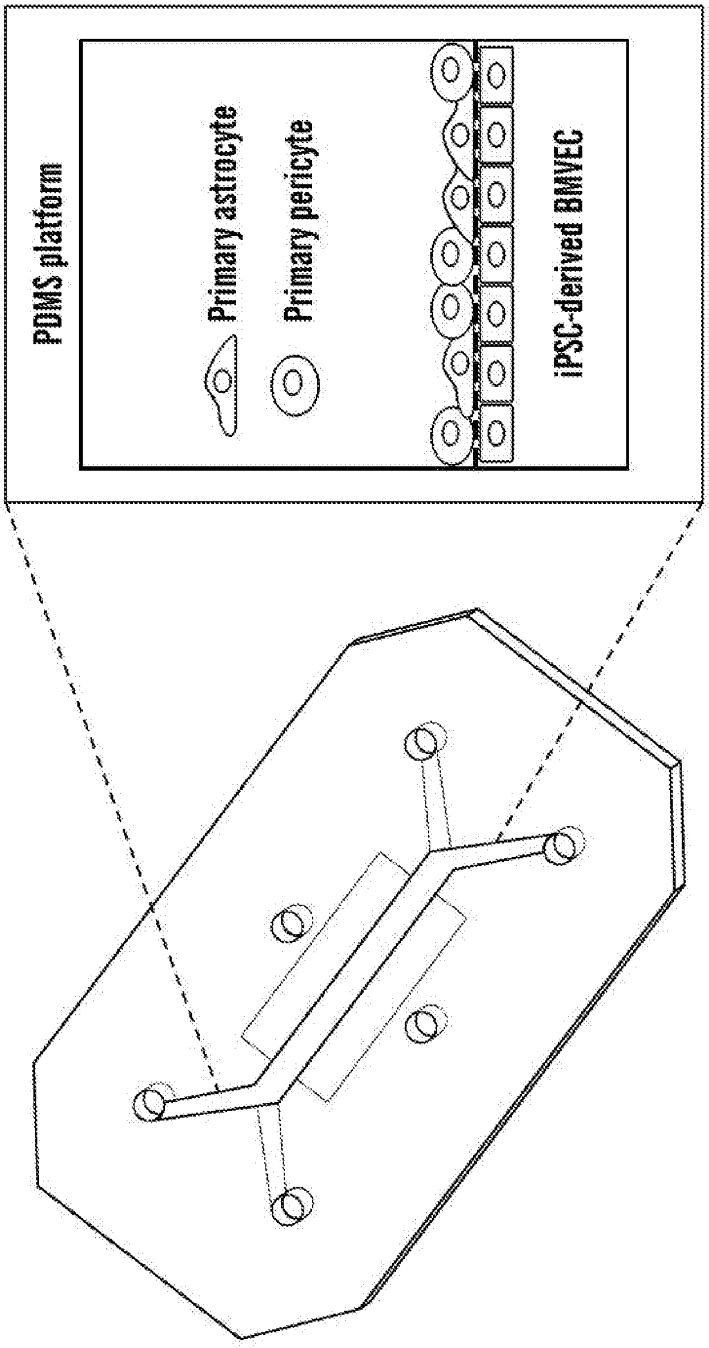

PDMS platform
Primary astrocyte
Primary pericyte
iPSC-derived BMVEC

FIG. 6

FIG. 7

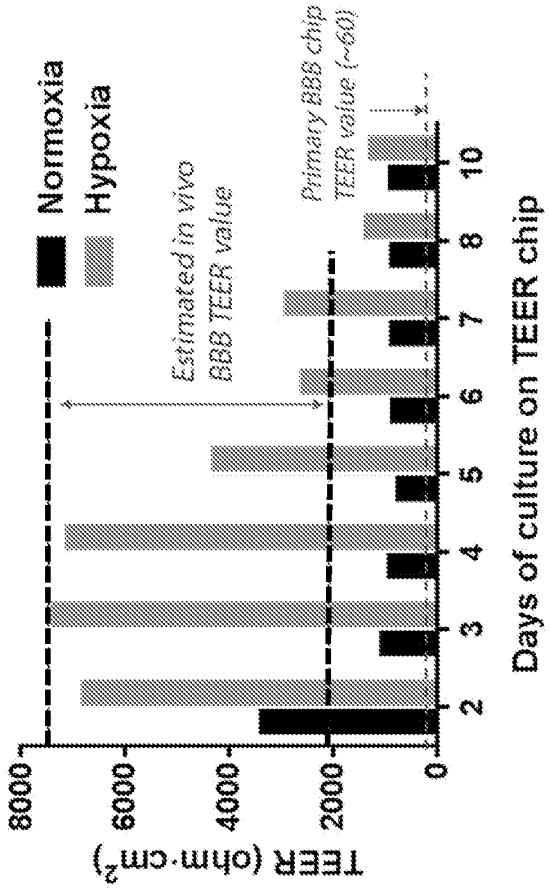

Normoxia
Hypoxia
Estimated in vivo
BBB TEER value
Primary BBB chip
TEER value (~60)
TEER (ohm·cm²)
8000
6000
4000
2000
0
2
3
4
5
6
7
8
10
Days of culture on TEER chip

FIG. 8A

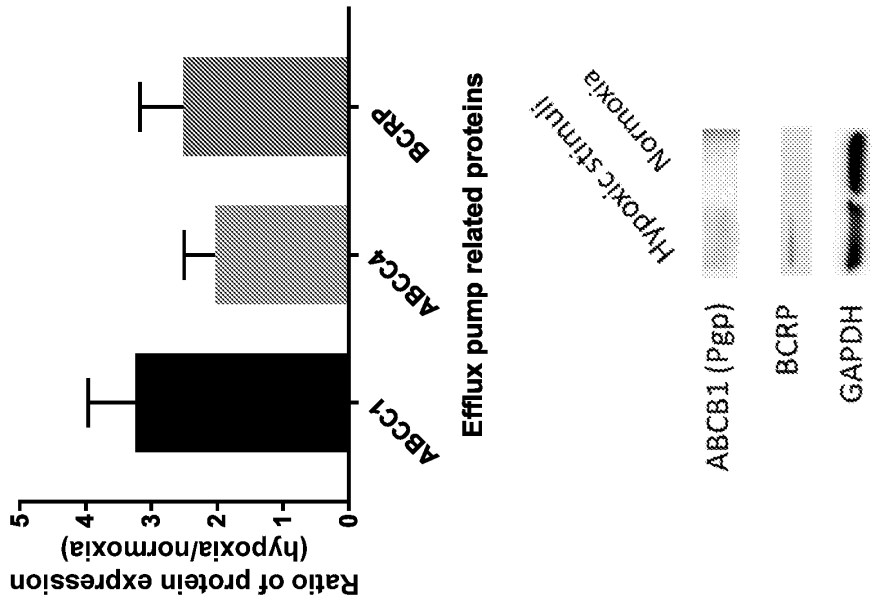

Ratio of protein expression
(hypoxia/normoxia)
0
1
2
3
4
5
ABCC1
ABCC4
BCRP
Efflux pump related proteins
Hypoxic stimuli
Normoxia
ABCB1 (Pgp)
BCRP
GAPDH

FIG. 8B

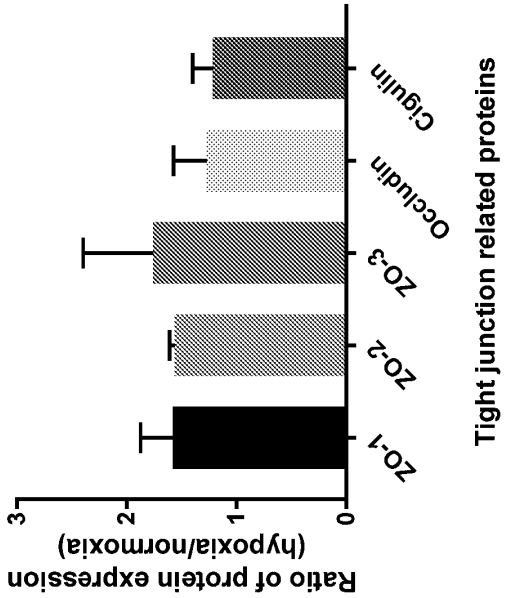

Ratio of protein expression
(hypoxia/normoxia)
0
1
2
3
ZO-1
ZO-2
ZO-3
Occludin
Ciguiin
Tight junction related proteins

FIG. 9B

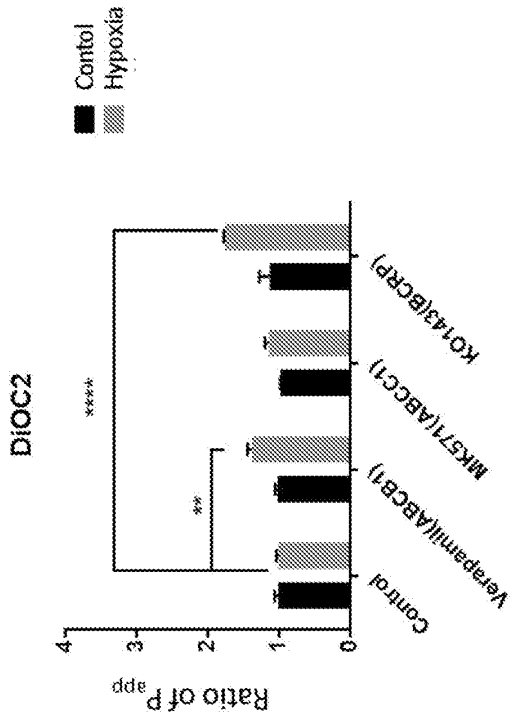
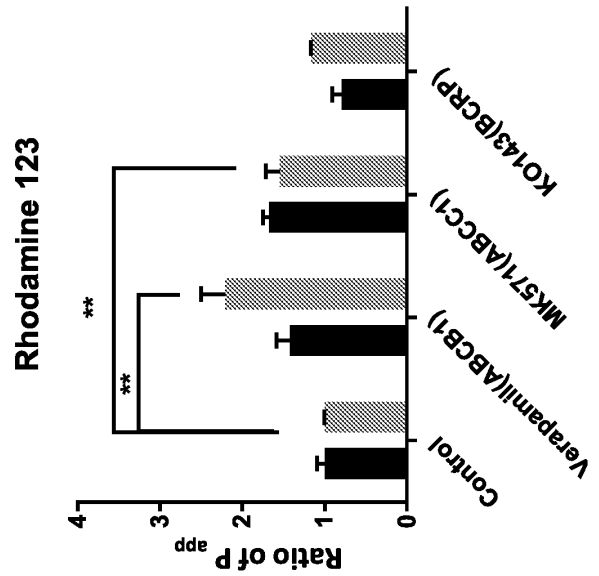

Control
Hypoxia
DiOC2
Ratio of P app
0
1
2
3
4
**
****
Control
Verapamil(ABCB1)
MK571(ABCC1)
KO143(BCRP)

FIG. 9A


Rhodamine 123
Ratio of P app
0
1
2
3
4
**
**
Control
Verapamil(ABCB1)
MK571(ABCC1)
KO143(BCRP)

	Rhodamine 123	DiOC2
ABCB1	+++	+++
ABCC1	++	-
BCRP	-	+

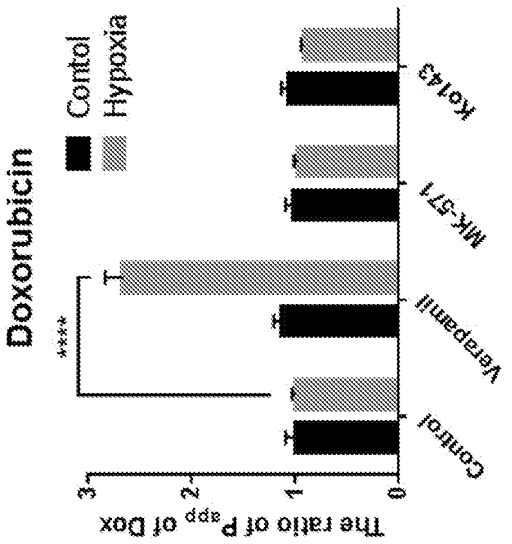


FIG. 9C

FIG. 10B

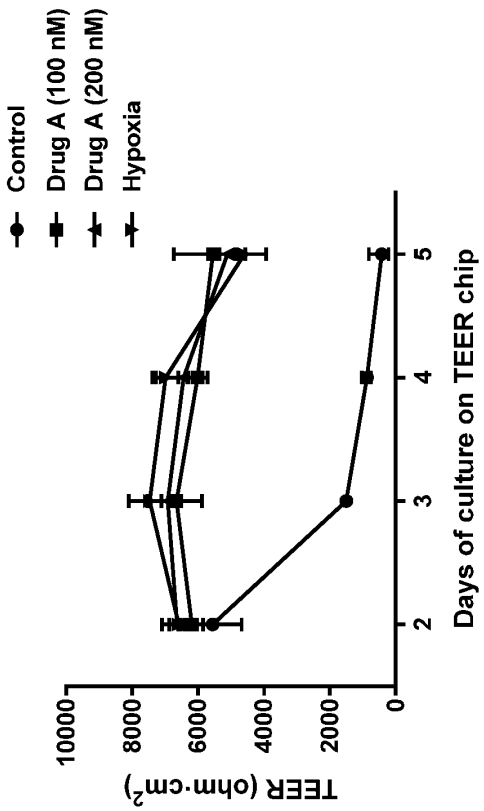


FIG. 10A

