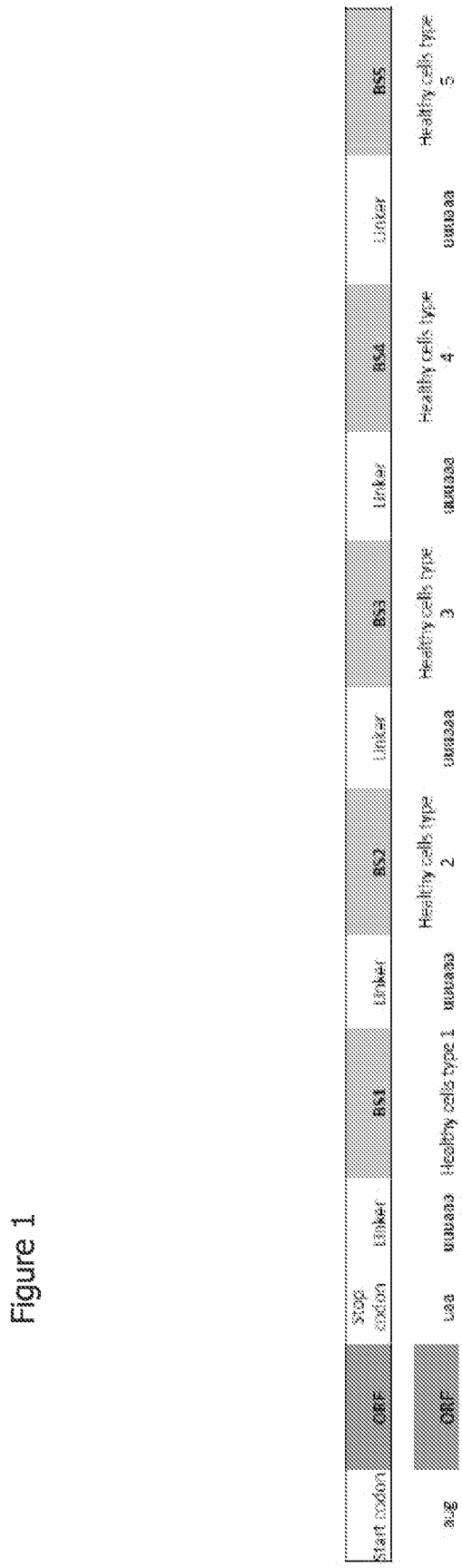
Figure 1


Start codon
ORF
Stop codon
Linker
BS1
Linker
BS2
Linker
BS3
Linker
BS4
Linker
BS5
aug
ORF
uaa
uga
uag
no stop codon
uuuaaa
no linker
Healthy cells type 1
uuuaaa
Healthy cells type 2
uuuaaa
Healthy cells type 3
uuuaaa
Healthy cells type 4
uuuaaa
Healthy cells type 5

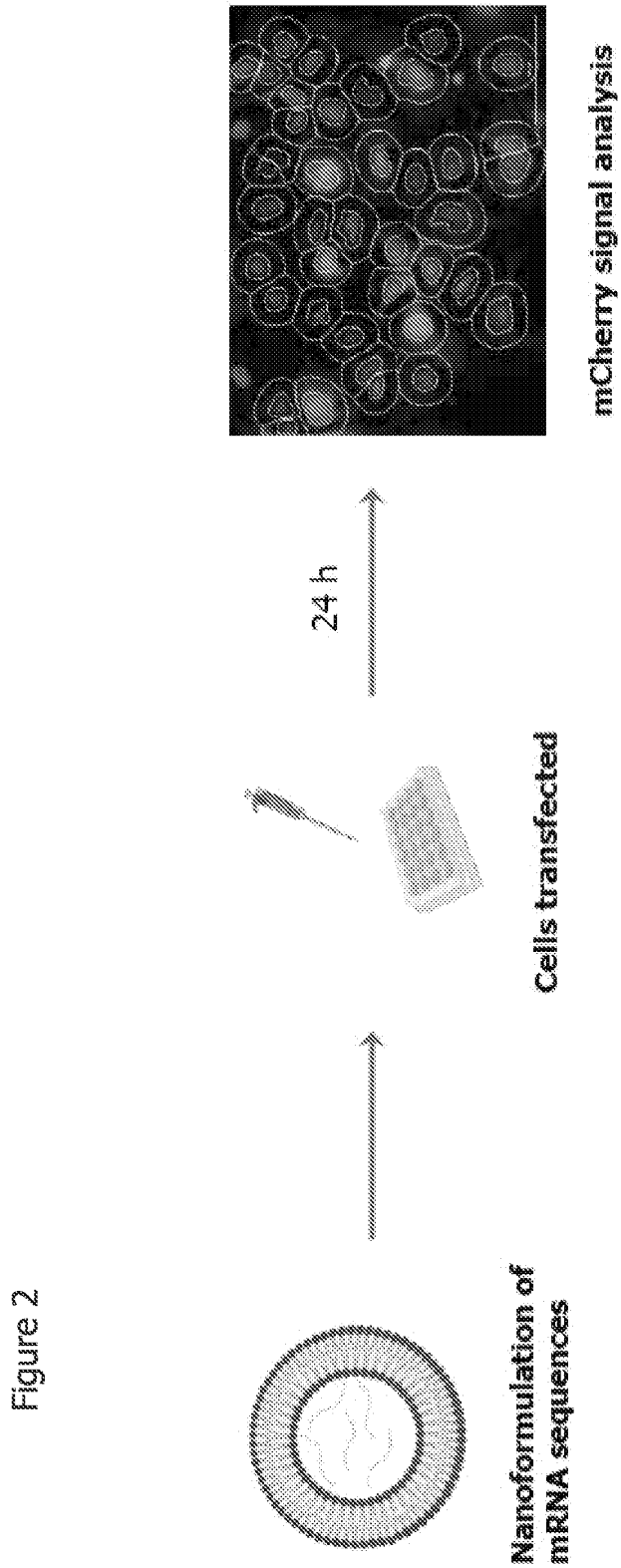

Nanoformulation of mRNA sequences
Cells transfected
24 h
mCherry signal analysis

Figure 2

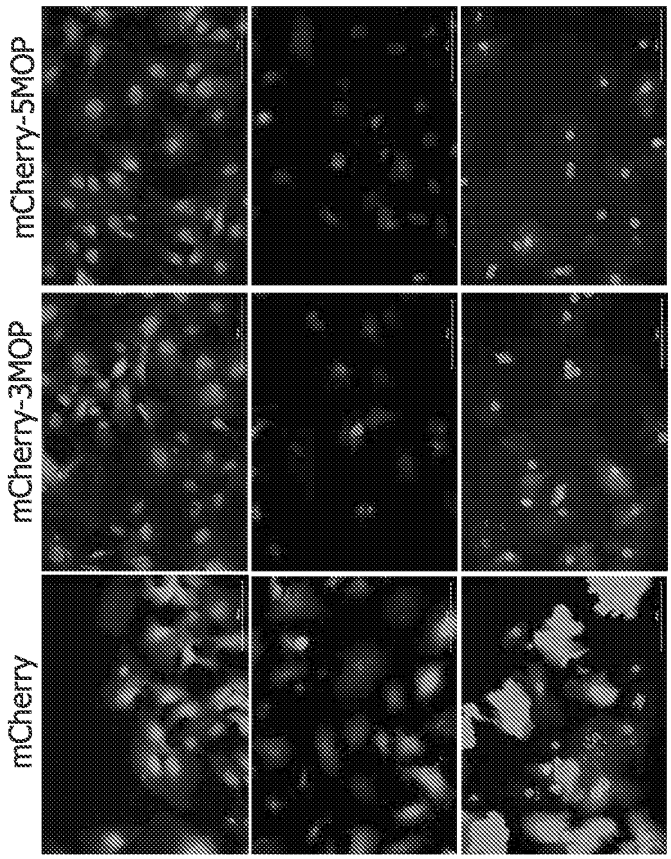
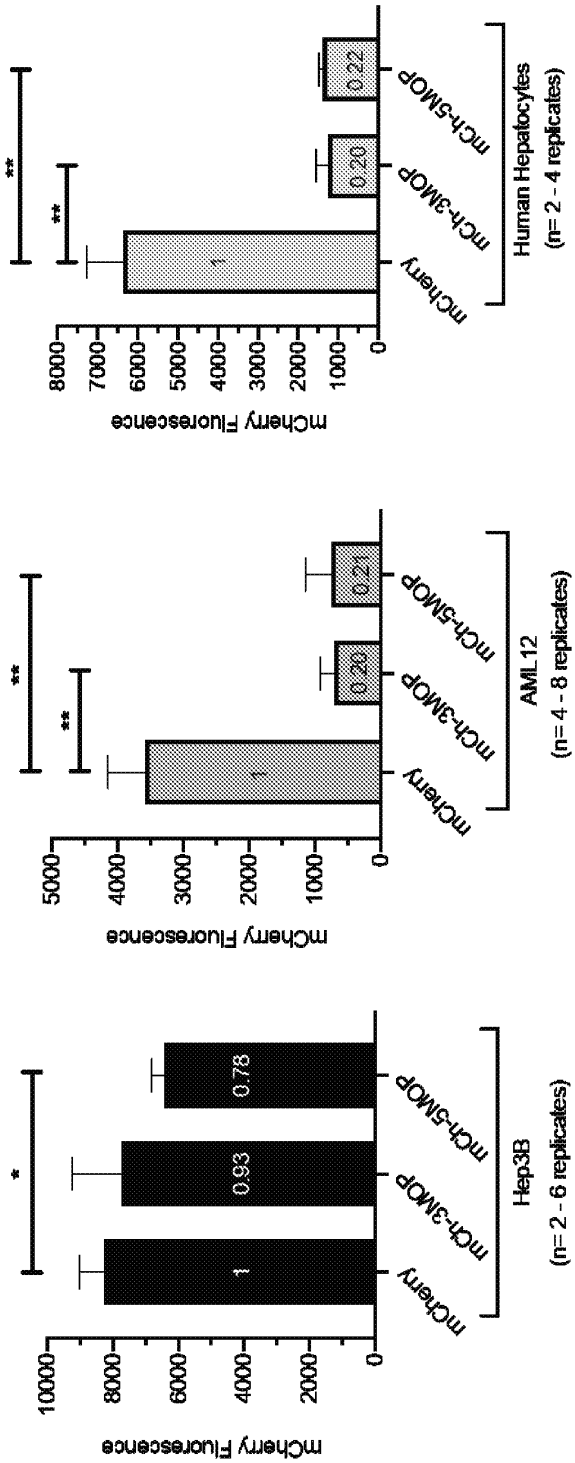

mCherry
mCherry-3MOP
mCherry-5MOP
Human liver cancer cells
Murine normal hepatocytes
Human normal hepatocytes

Figure 3

Figure 4


mCherry Fluorescence
10000
8000
6000
4000
2000
0
*
1
0.93
0.78
mCherry
mCh-3MOP
mCh-5MOP
Hep3B
(n= 2 - 6 replicates)
mCherry Fluorescence
5000
4000
3000
2000
1000
0
**
**
1
0.20
0.21
mCherry
mCh-3MOP
mCh-5MOP
AML12
(n= 4 - 8 replicates)
mCherry Fluorescence
8000
7000
6000
5000
4000
3000
2000
1000
0
**
**
1
0.20
0.22
mCherry
mCh-3MOP
mCh-5MOP
Human Hepatocytes
(n= 2 - 4 replicates)

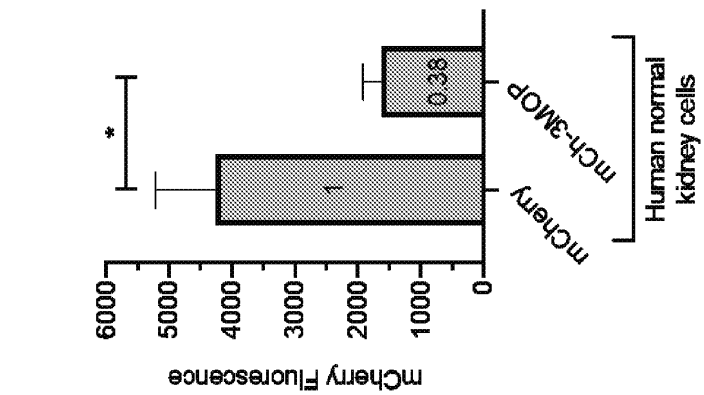
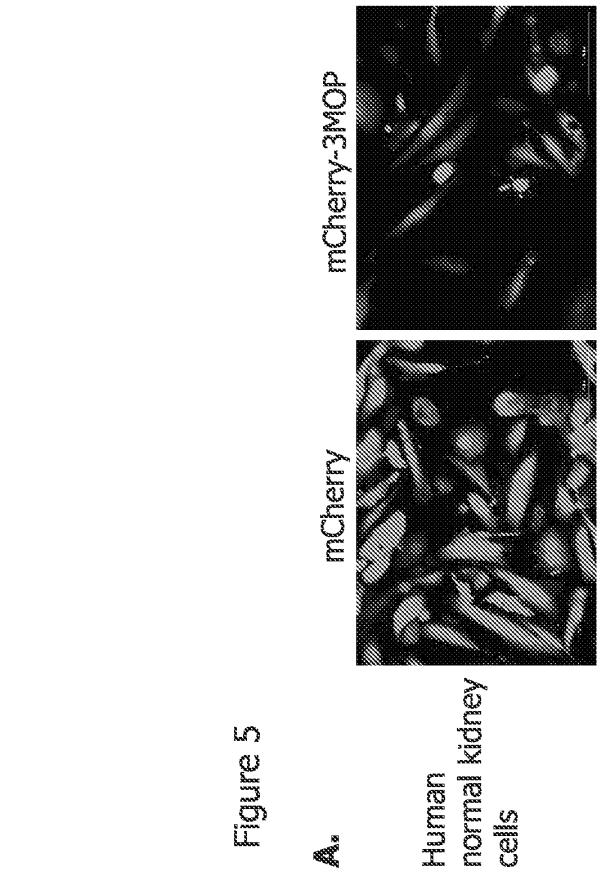

B.
mCherry Fluorescence
6000
5000
4000
3000
2000
1000
0
1
0.38
*
mCherry
mCh-3MOP
Human normal kidney cells

Figure 5


A.
Human normal kidney cells
mCherry
mCherry-3MOP

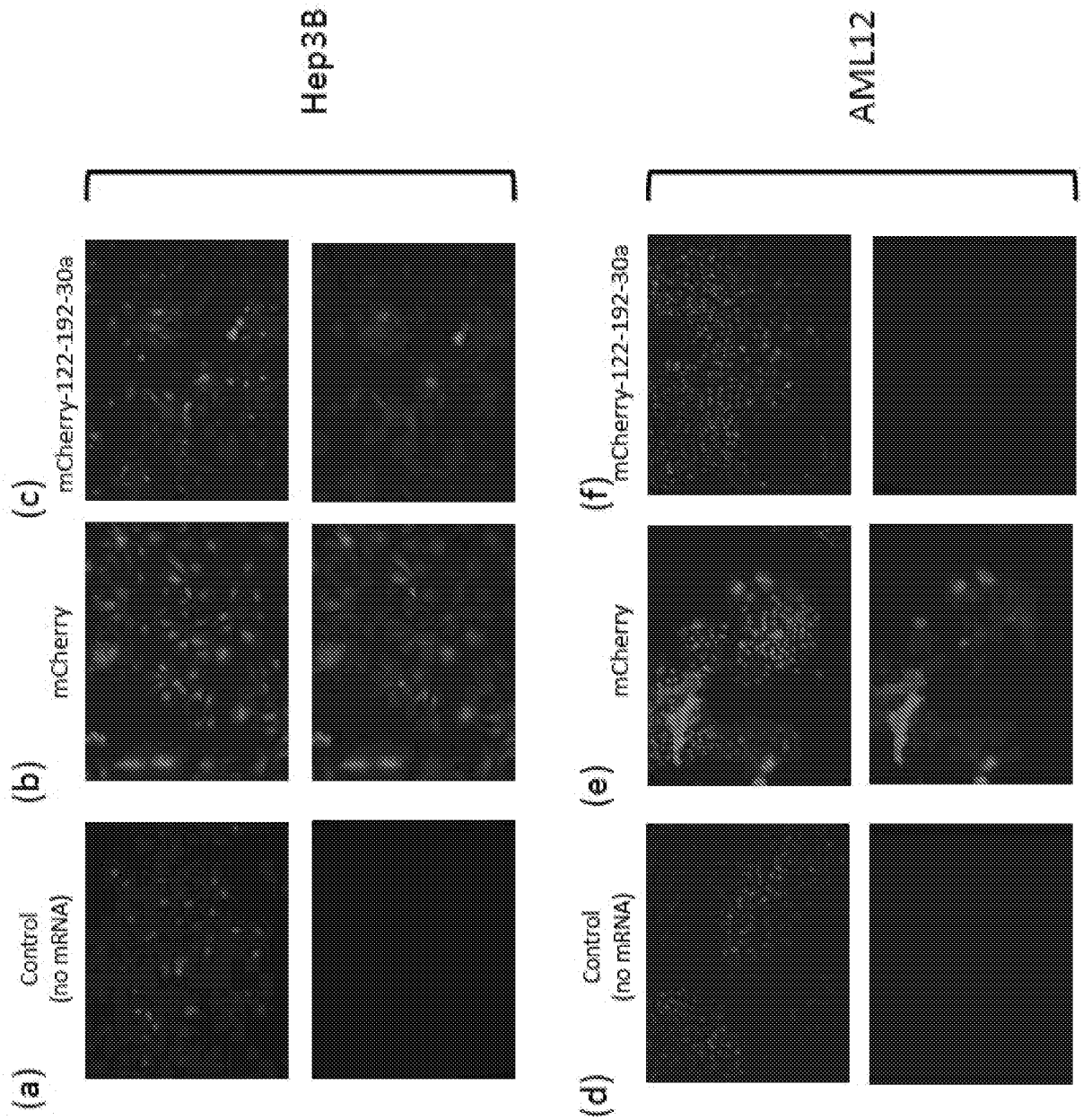

Hep3B
AML12
(a)
Control
(no mRNA)
(b)
mCherry
(c)
mCherry-122-192-30a
(d)
Control
(no mRNA)
(e)
mCherry
(f)
mCherry-122-192-30a

Figure 6

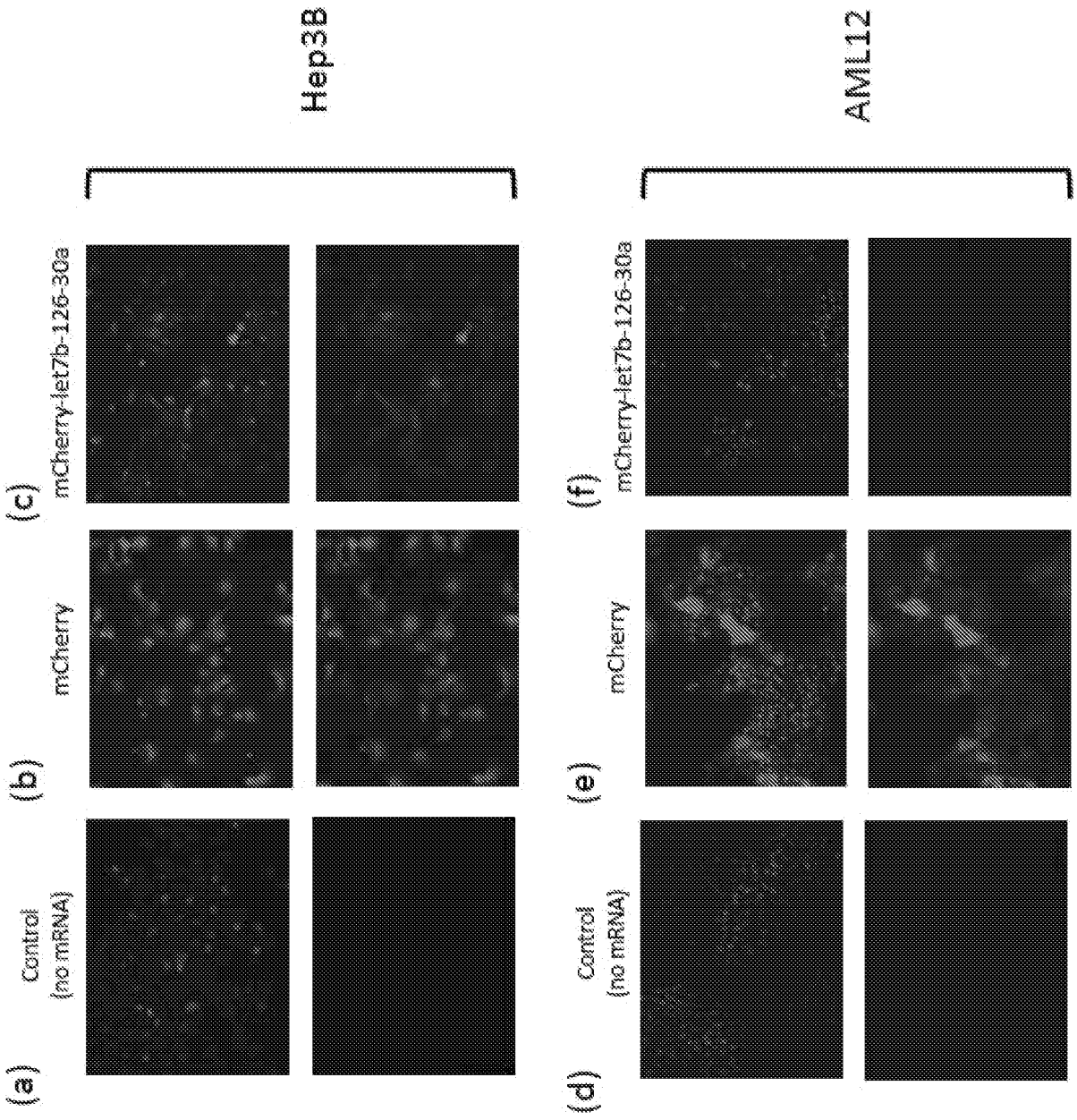

Hep3B
AML12
(a)
Control
(no mRNA)
(b)
mCherry
(c)
mCherry-let7b-126-30a
(d)
Control
(no mRNA)
(e)
mCherry
(f)
mCherry-let7b-126-30a

Figure 7

Figure 8

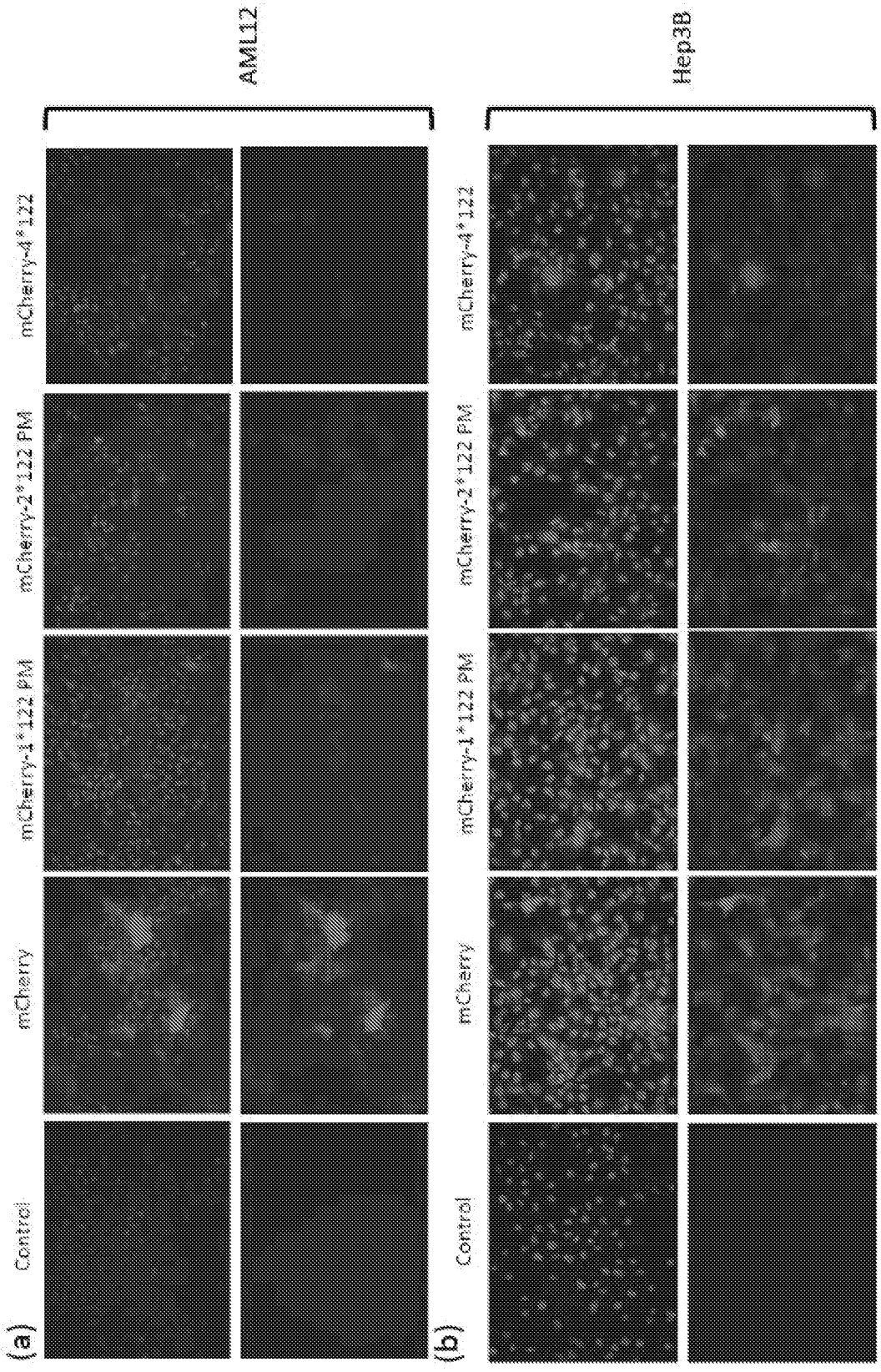
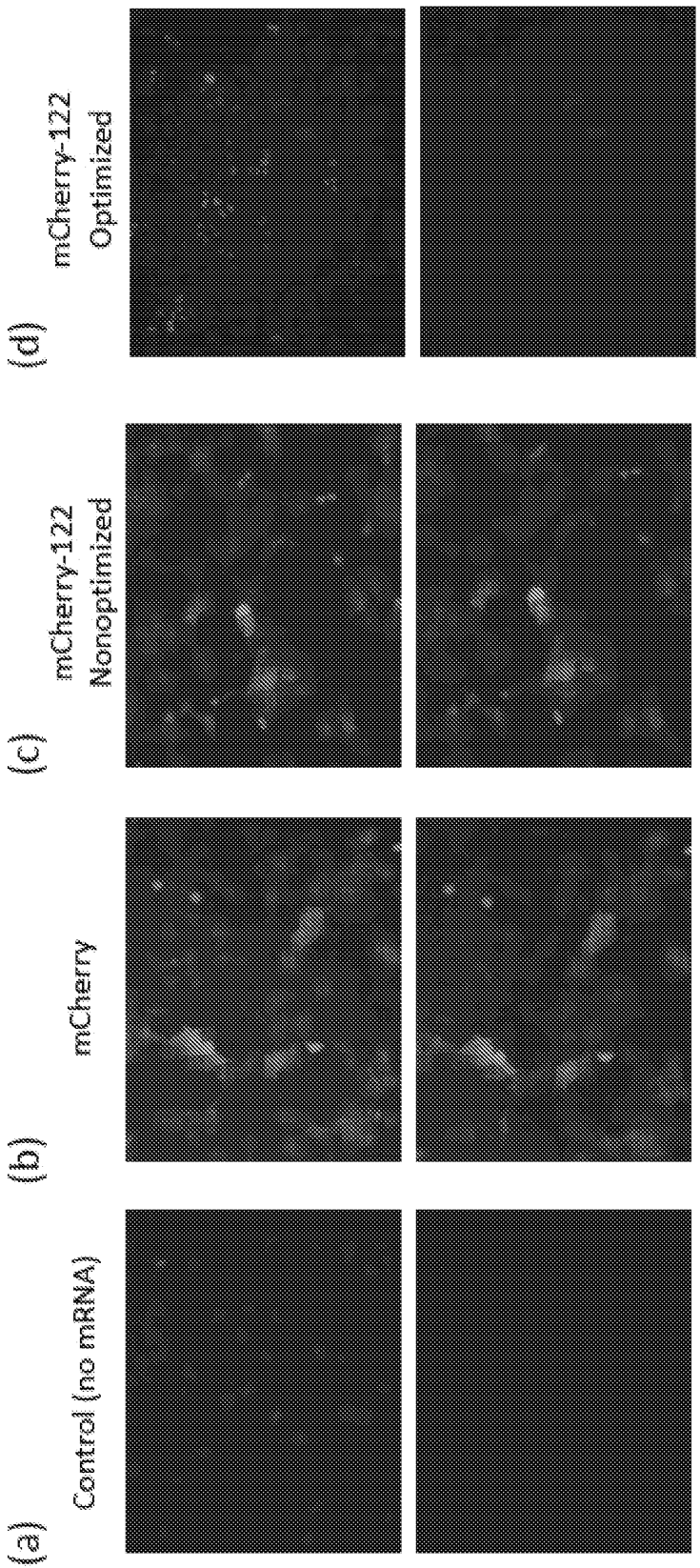

(a)
Control
mCherry
mCherry-1*122 PM
mCherry-2*122 PM
mCherry-4*122
AML12
(b)
Control
mCherry
mCherry-1*122 PM
mCherry-2*122 PM
mCherry-4*122
Hep3B

Figure 9


(a)
Control (no mRNA)
(b)
mCherry
(c)
mCherry-122
Nonoptimized
(d)
mCherry-122
Optimized

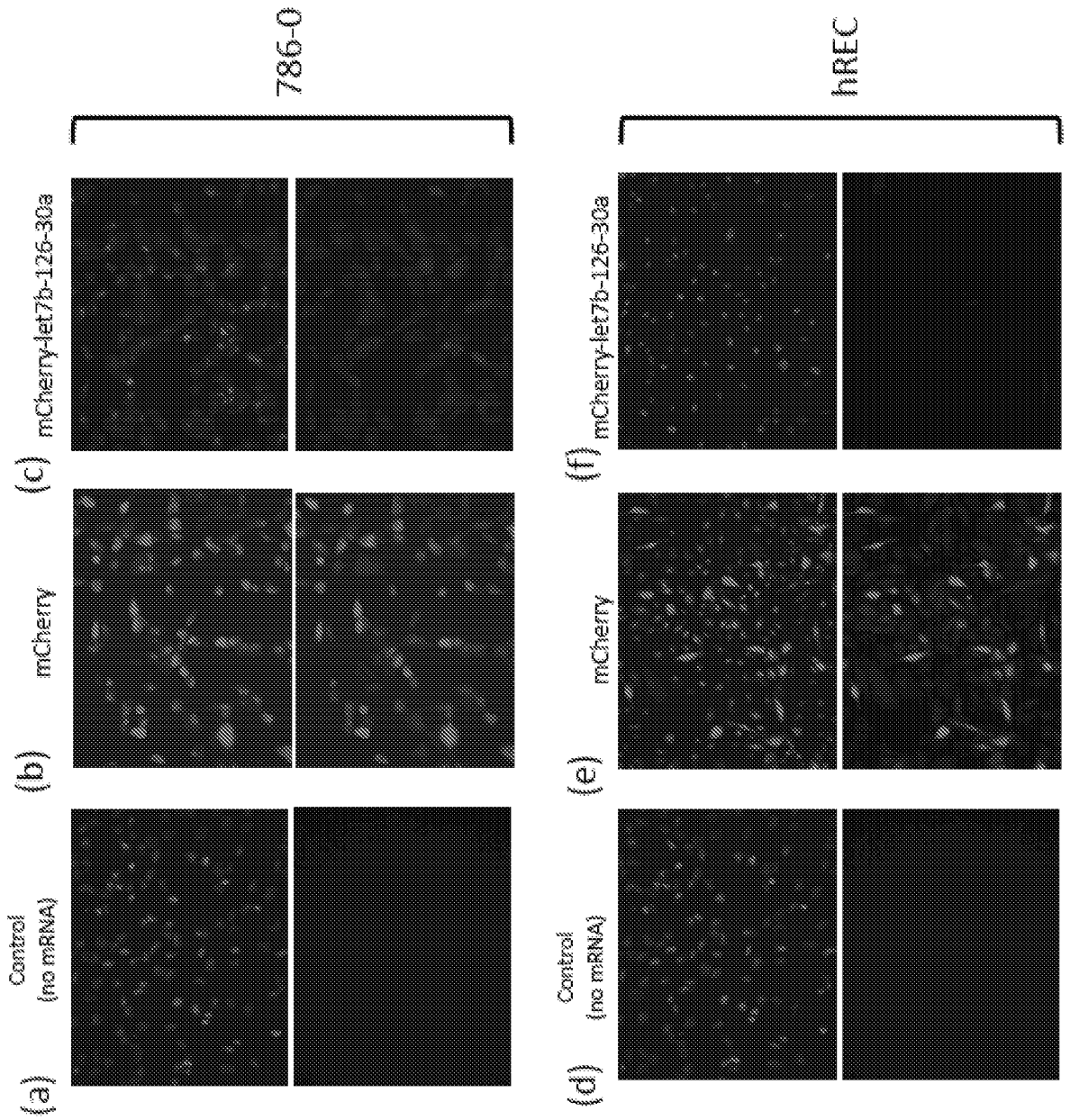

786-0
hREC
(a)
Control
(no mRNA)
(b)
mCherry
(c)
mCherry-let7b-126-30a
(d)
Control
(no mRNA)
(e)
mCherry
(f)
mCherry-let7b-126-30a

Figure 10

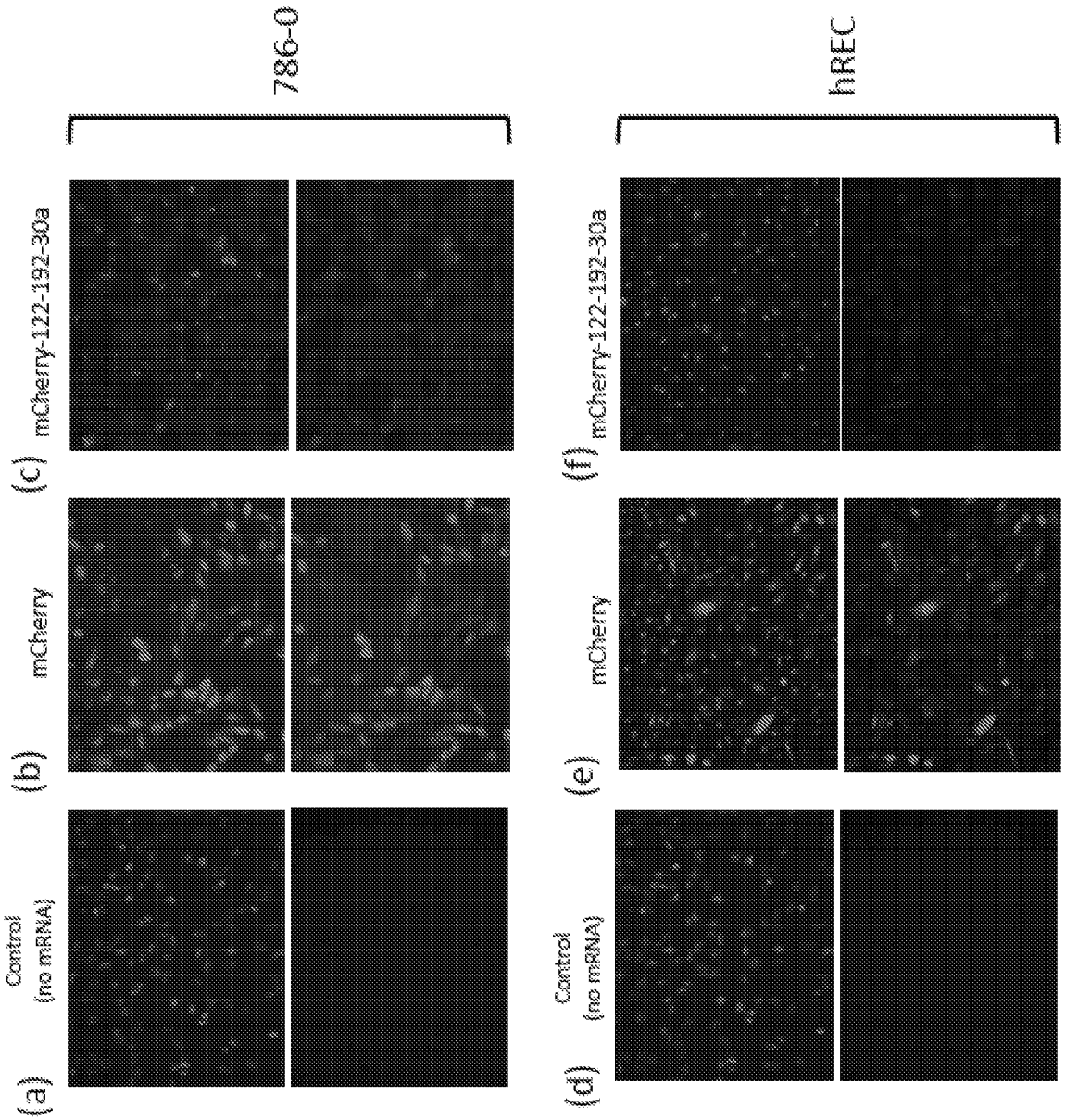

786-0
hREC
(a)
Control (no mRNA)
(b)
mCherry
(c)
mCherry-122-192-30a
(d)
Control (no mRNA)
(e)
mCherry
(f)
mCherry-122-192-30a

Figure 11

Figure 12

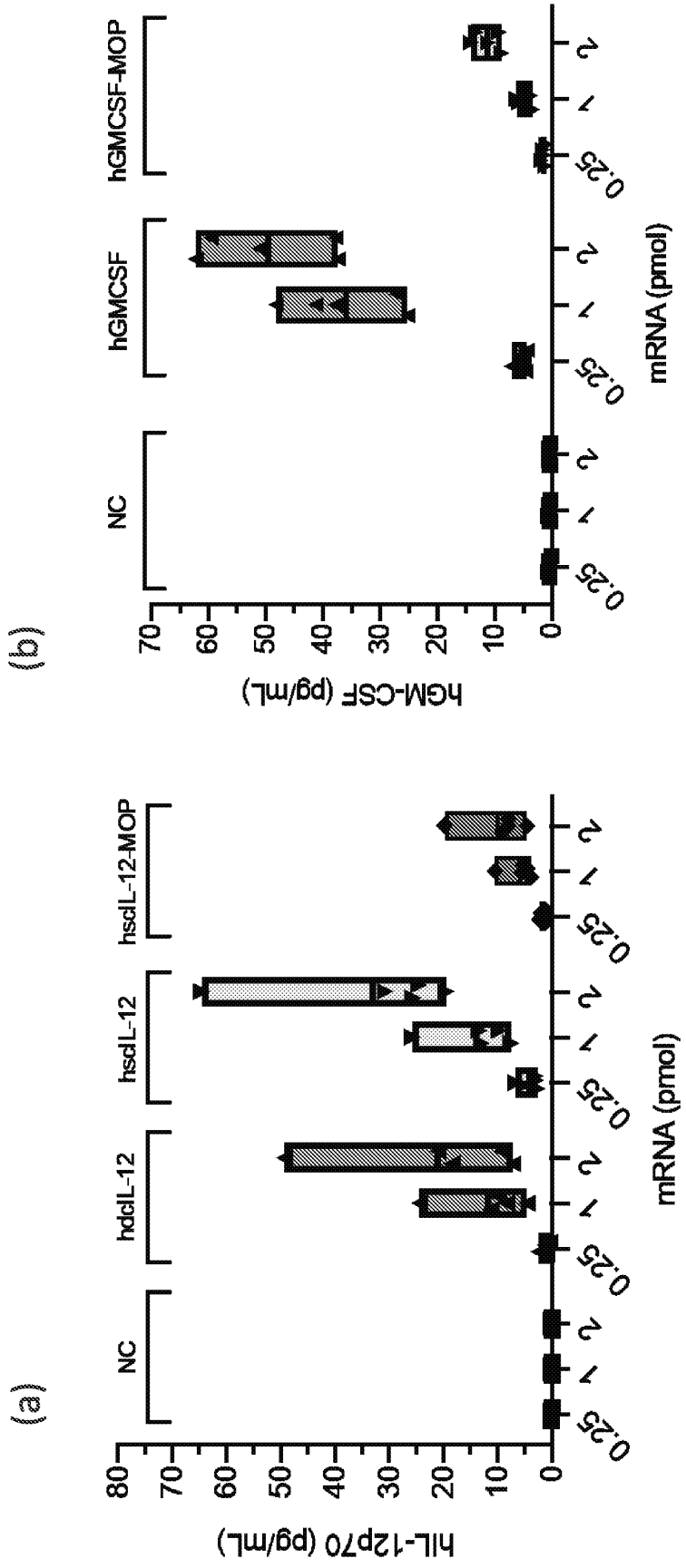

(a)
hIL-12p70 (pg/mL)
0
10
20
30
40
50
60
70
80
NC
hdclL-12
hscIL-12
hscIL-12-MOP
0.25
1
2
mRNA (pmol)
(b)
hGM-CSF (pg/mL)
0
10
20
30
40
50
60
70
NC
hGMCSF
hGMCSF-MOP
0.25
1
2
mRNA (pmol)

Figure 13

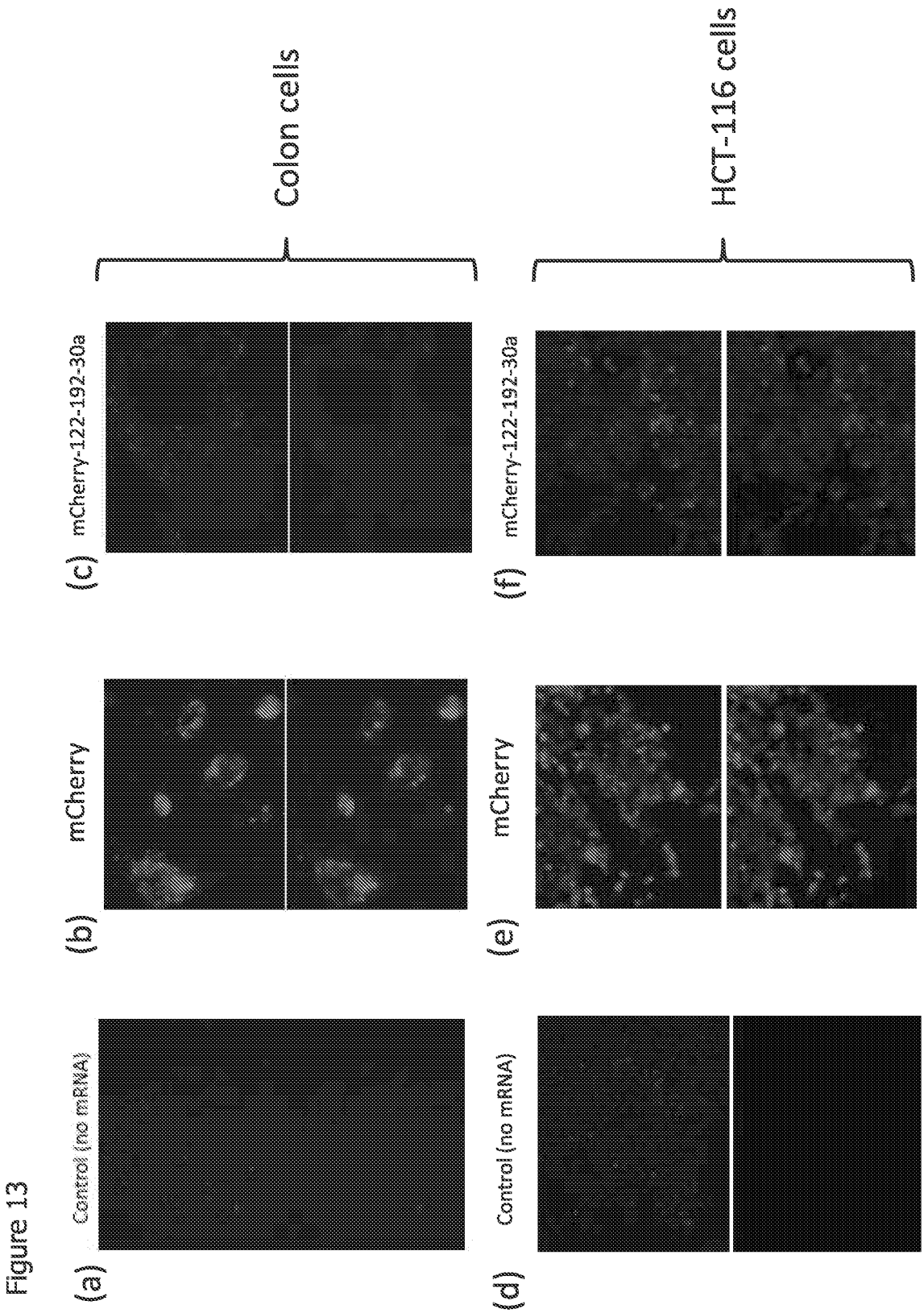
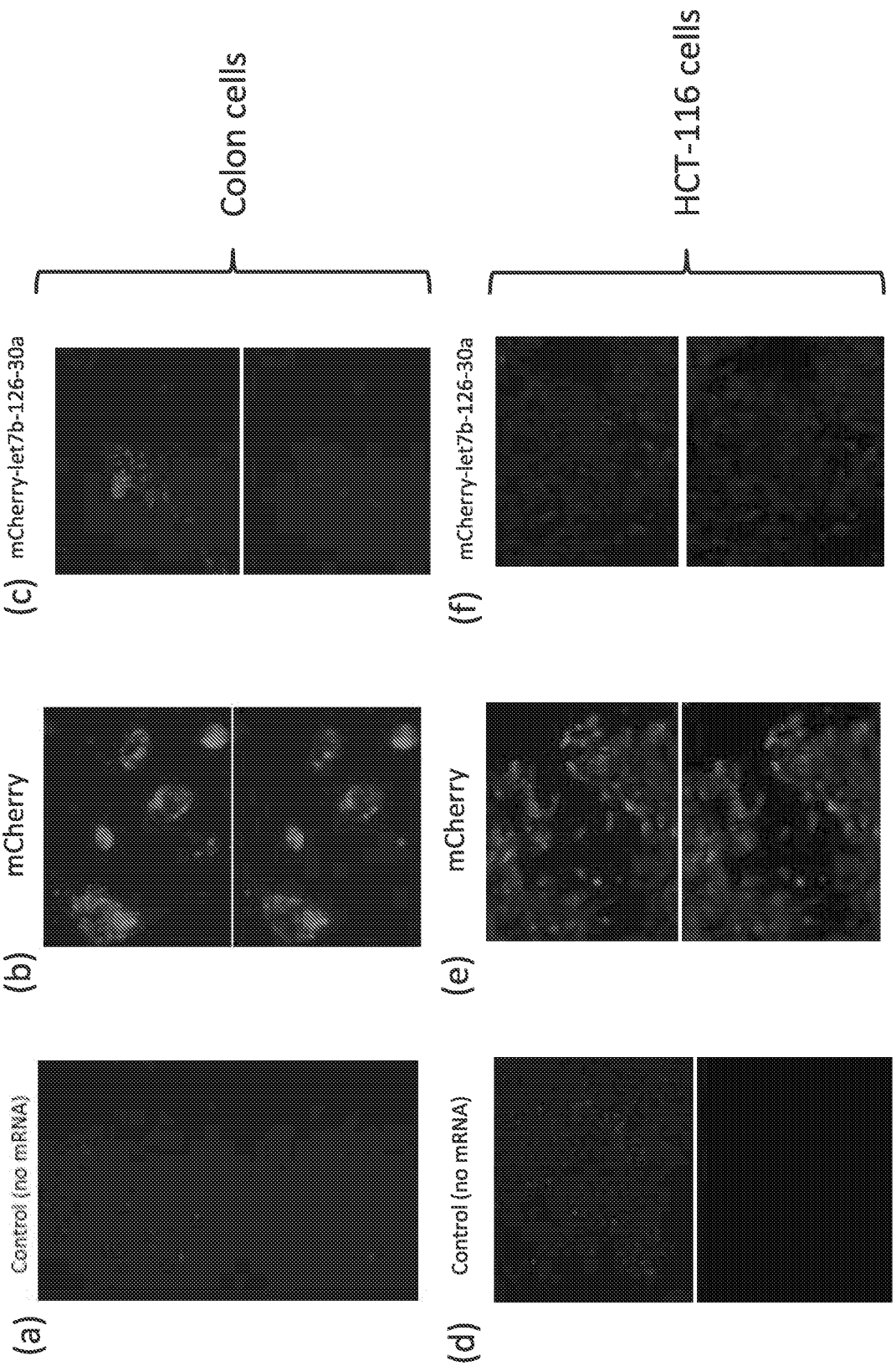

Colon cells
HCT-116 cells
(a)
Control (no mRNA)
(b)
mCherry
(c)
mCherry-122-192-30a
(d)
Control (no mRNA)
(e)
mCherry
(f)
mCherry-122-192-30a

Figure 14


Colon cells
HCT-116 cells
(a)
Control (no mRNA)
(b)
mCherry
(c)
mCherry-let7b-126-30a
(d)
Control (no mRNA)
(e)
mCherry
(f)
mCherry-let7b-126-30a

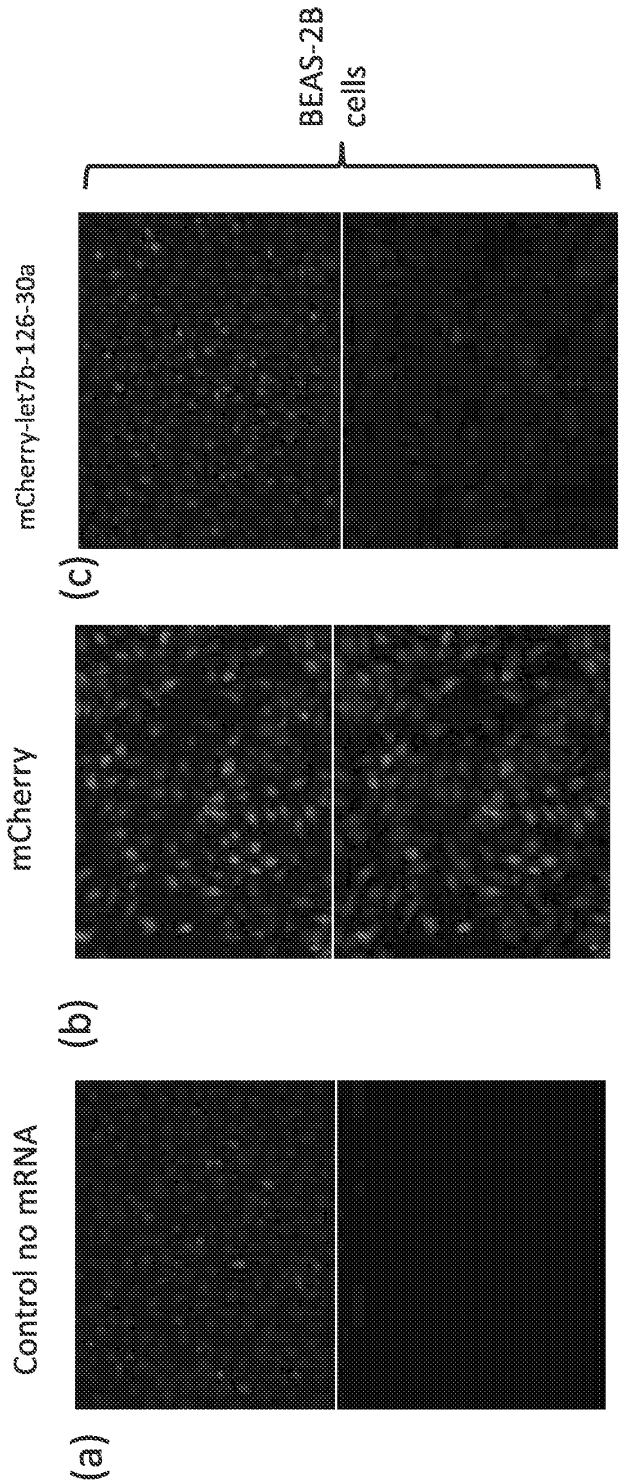
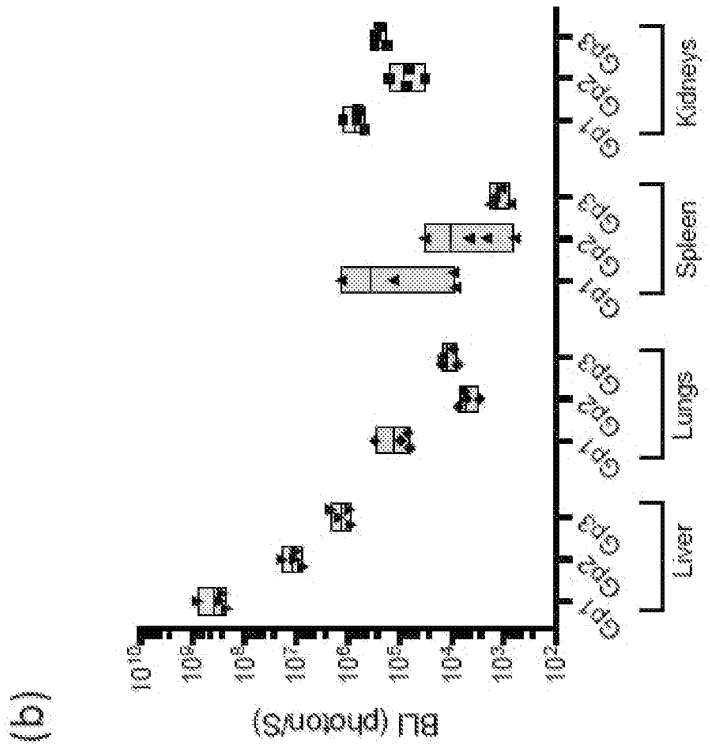

BEAS-2B cells
mCherry-let7b-126-30a
(c)
mCherry
(b)
Control no mRNA
(a)

Figure 15


(b)
BLI (photon/S)
Liver
Lungs
Spleen
Kidneys
Gp1 Gp2 Gp3

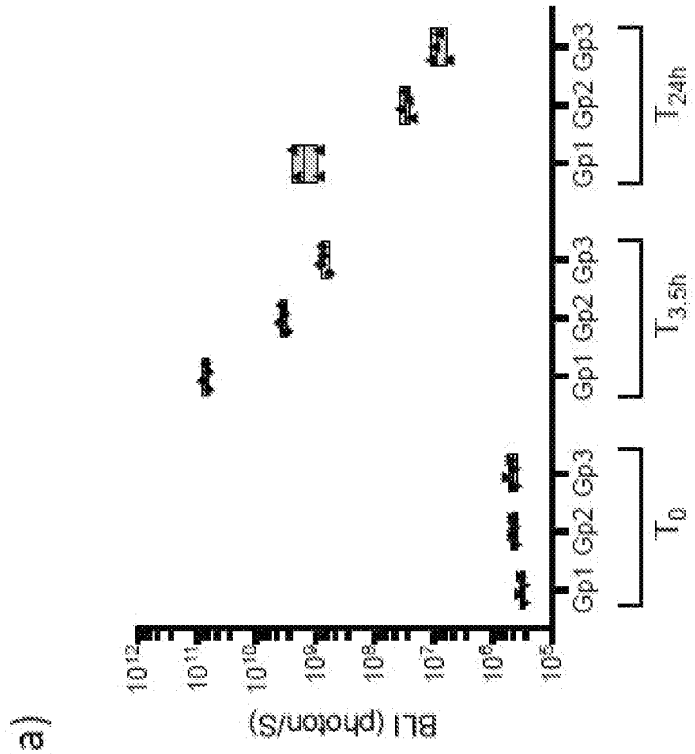

(a)
BLI (photon/S)
Gp1 Gp2 Gp3
T0
T3.5h
T24h

Figure 16