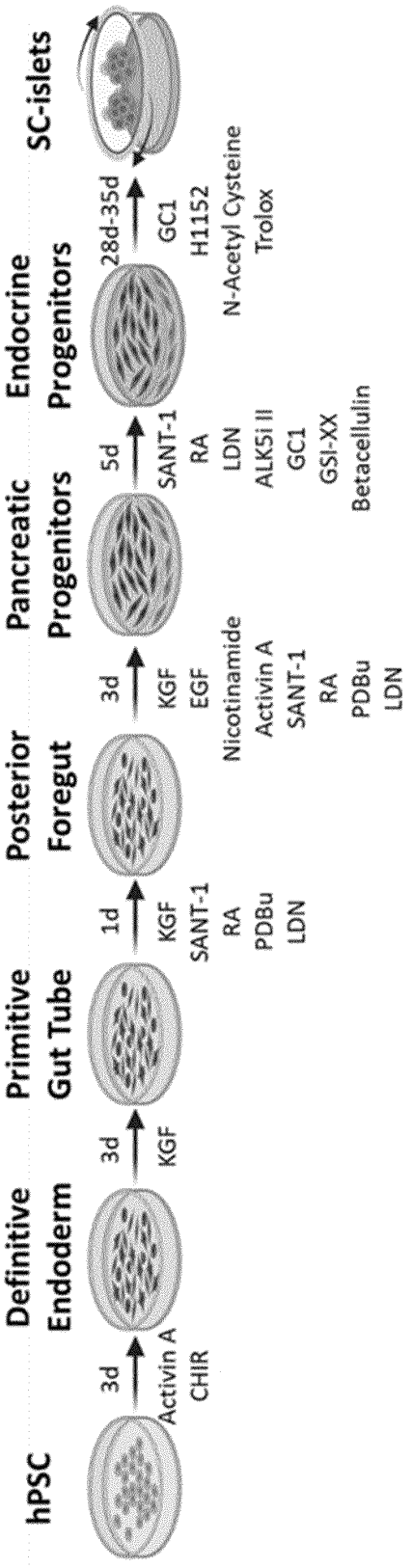

hPSC
3d
Activin A
CHIR
Definitive Endoderm
3d
KGF
Primitive Gut Tube
1d
KGF
SANT-1
RA
PDBu
LDN
Posterior Foregut
3d
KGF
EGF
Nicotinamide
Activin A
SANT-1
RA
PDBu
LDN
Pancreatic Progenitors
5d
SANT-1
RA
LDN
ALK5i II
GC1
GSI-XX
Betacellulin
Endocrine Progenitors
28d-35d
GC1
H1152
N-Acetyl Cysteine
Trolox
SC-islets

Fig 1A

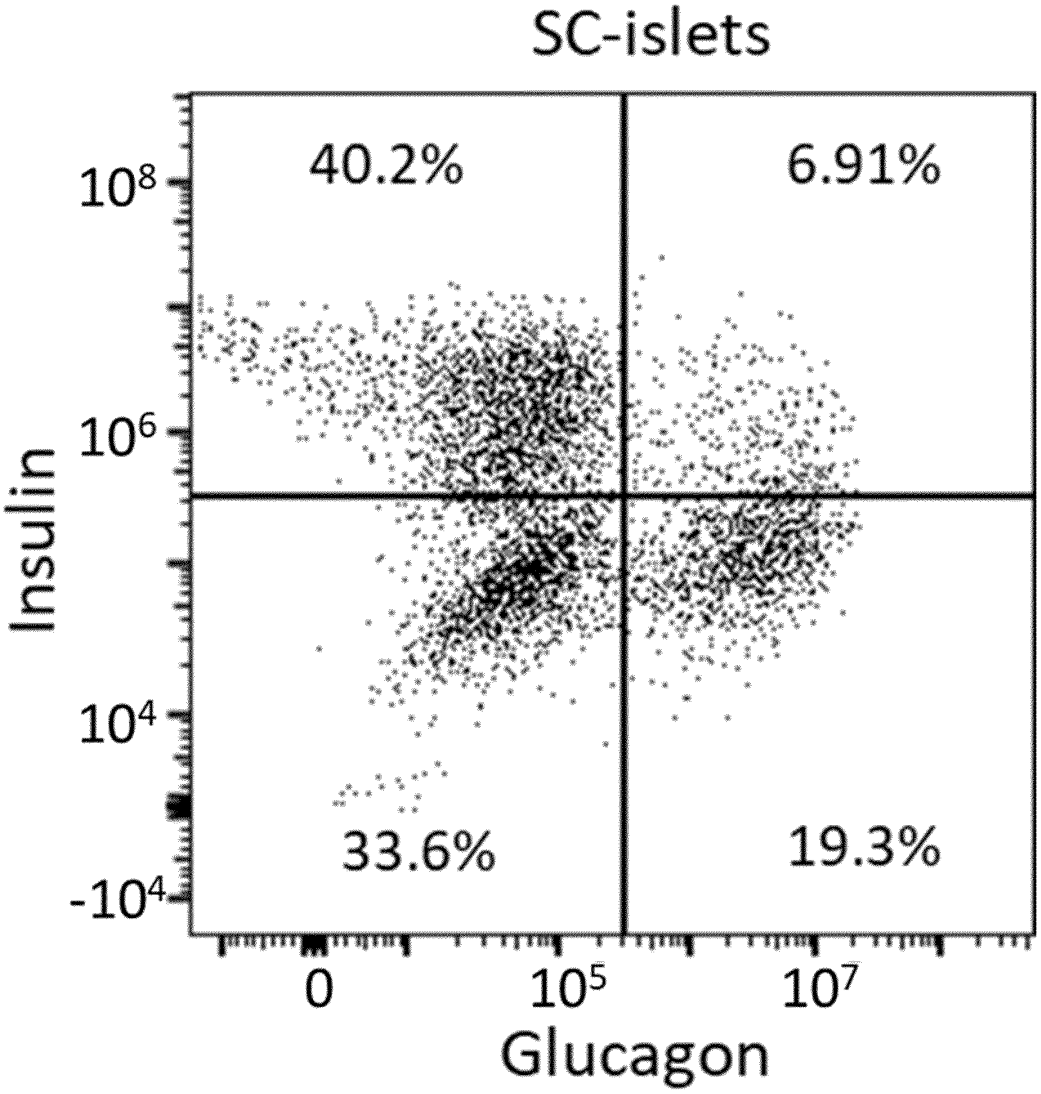

SC-islets
40.2%
6.91%
33.6%
19.3%
10^8
10^6
10^4
-10^4
Insulin
0
10^5
10^7
Glucagon

Fig 1B

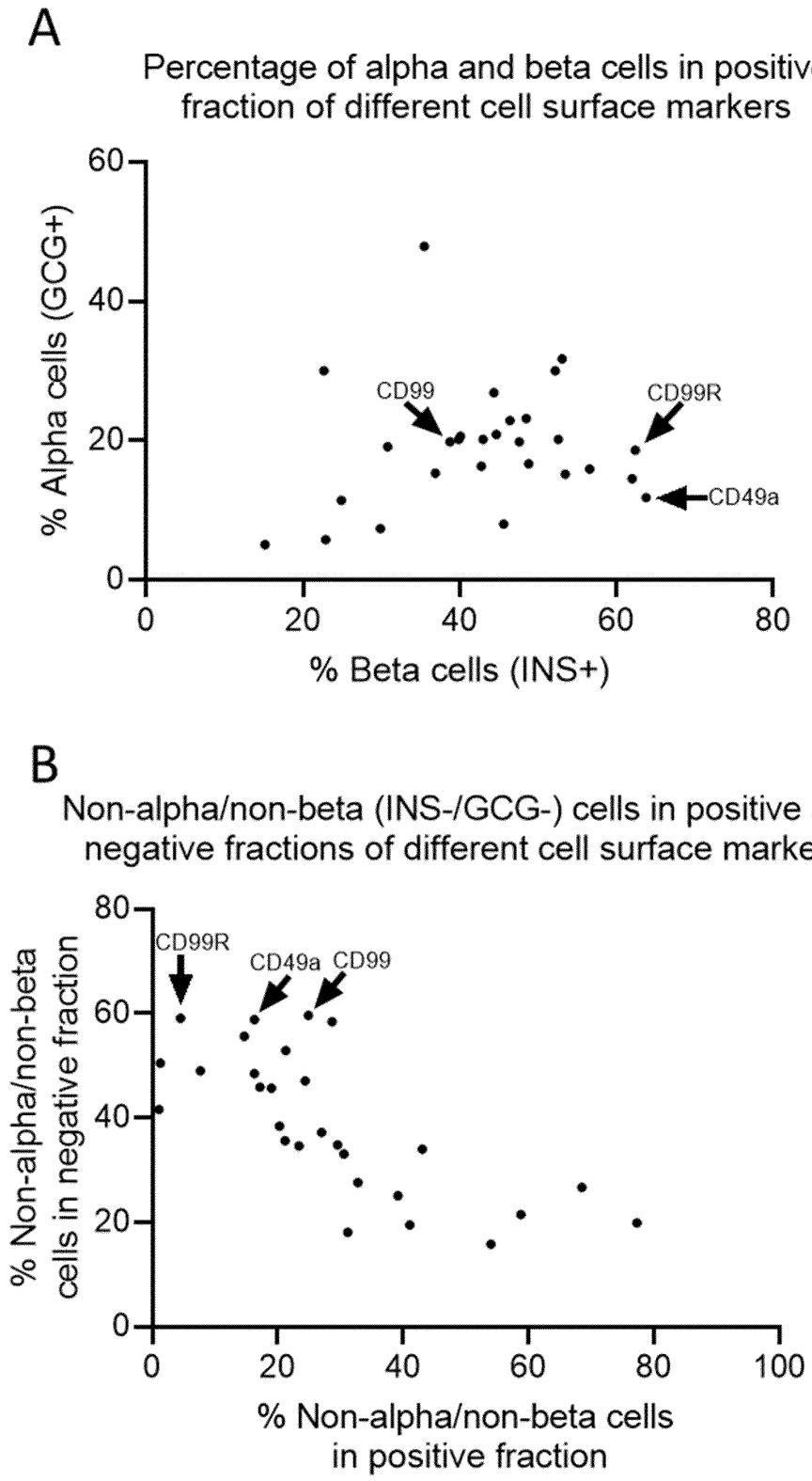

A
Percentage of alpha and beta cells in positive fraction of different cell surface markers
% Alpha cells (GCG+)
% Beta cells (INS+)
CD99
CD99R
CD49a
0
20
40
60
80
B
Non-alpha/non-beta (INS-/GCG-) cells in positive and negative fractions of different cell surface markers
% Non-alpha/non-beta cells in negative fraction
% Non-alpha/non-beta cells in positive fraction
CD99R
CD49a
CD99
0
20
40
60
80
100

Fig 2

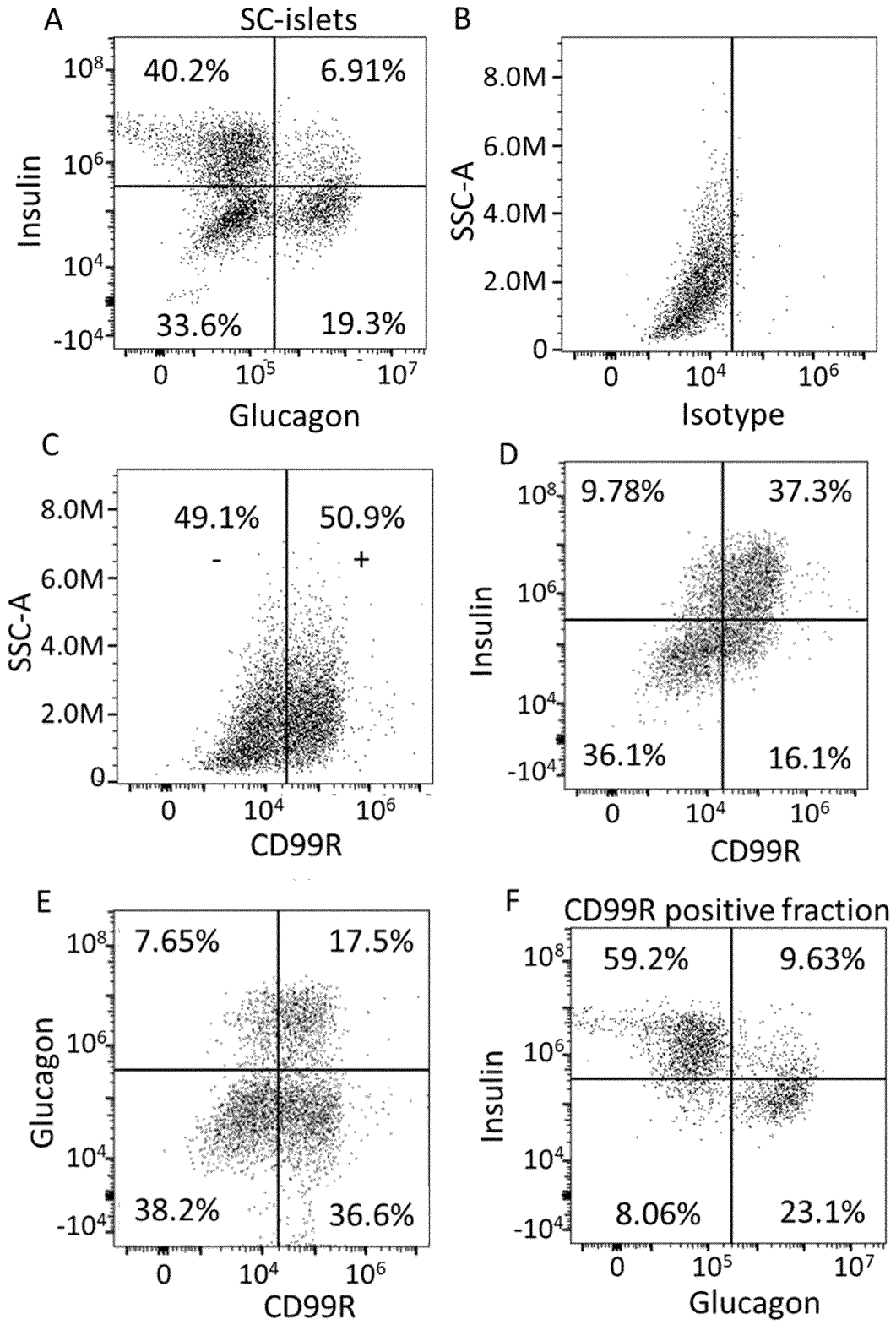

A
SC-islets
40.2%
6.91%
33.6%
19.3%
Insulin
Glucagon
B
SSC-A
Isotype
C
49.1%
50.9%
-
+
SSC-A
CD99R
D
9.78%
37.3%
36.1%
16.1%
Insulin
CD99R
E
7.65%
17.5%
38.2%
36.6%
Glucagon
CD99R
F
CD99R positive fraction
59.2%
9.63%
8.06%
23.1%
Insulin
Glucagon

Fig 3

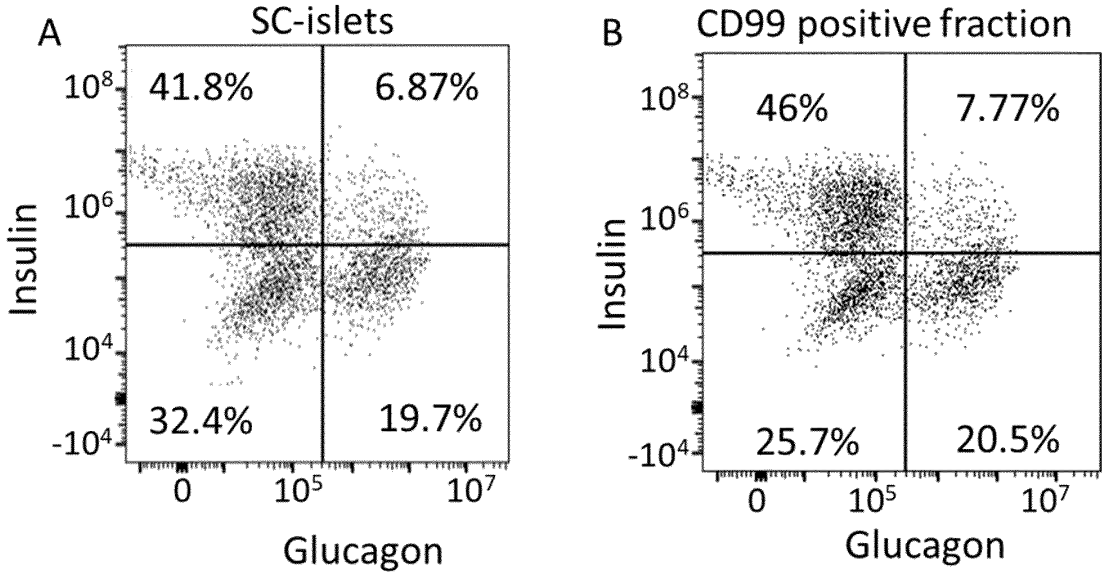

A
SC-islets
41.8%
6.87%
32.4%
19.7%
Insulin
Glucagon
B
CD99 positive fraction
46%
7.77%
25.7%
20.5%
Insulin
Glucagon

Fig 4

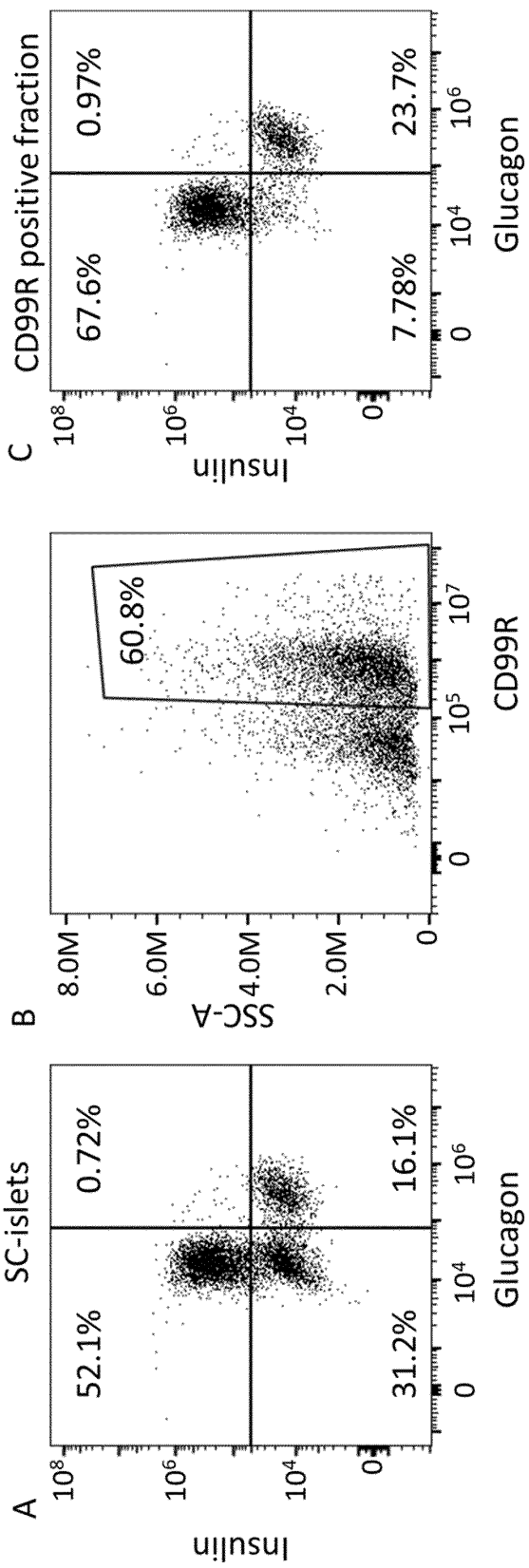

A
SC-islets
Insulin
Glucagon
52.1%
0.72%
31.2%
16.1%
B
SSC-A
CD99R
60.8%
C
CD99R positive fraction
Insulin
Glucagon
67.6%
0.97%
7.78%
23.7%

Fig 5

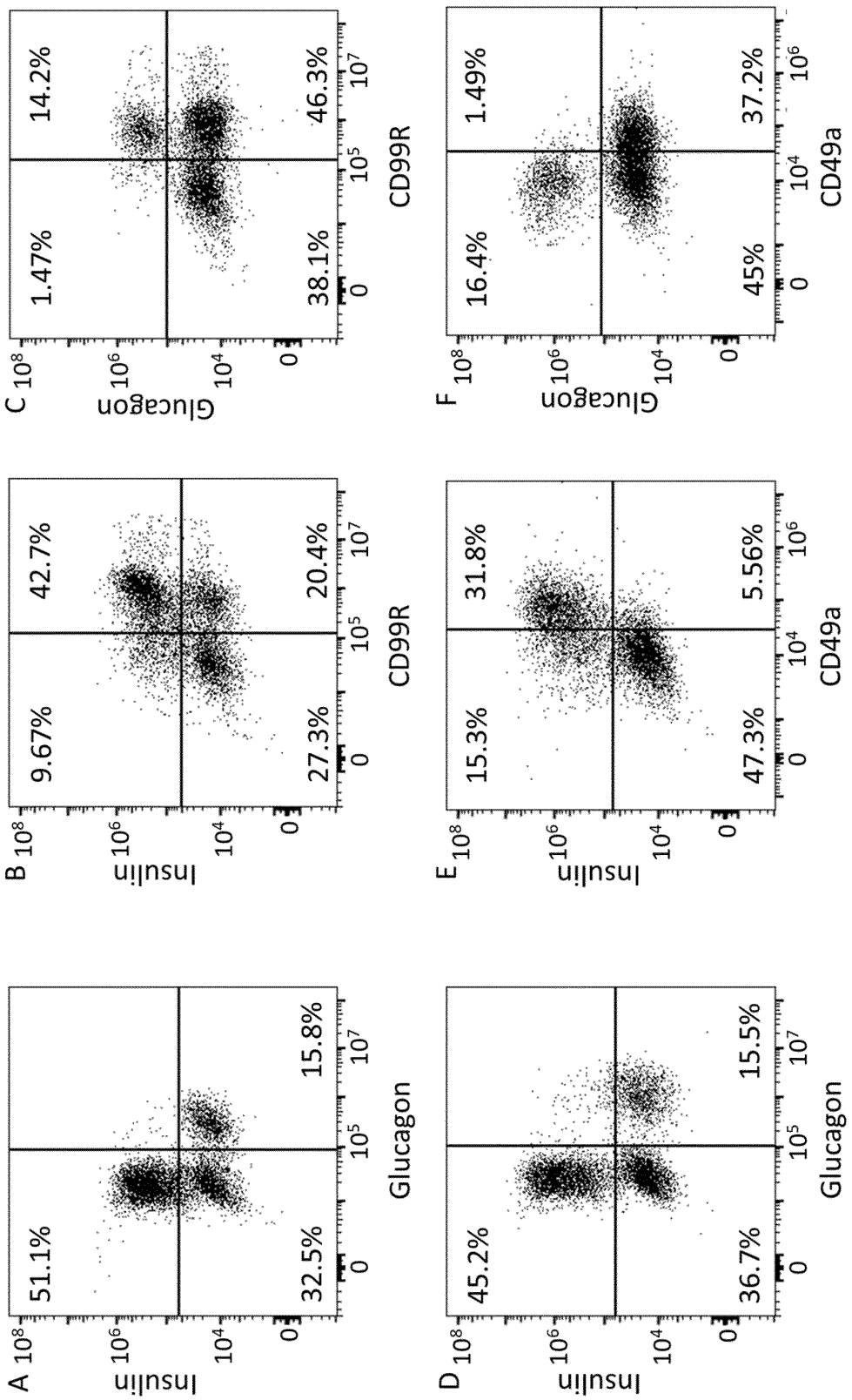

A
Insulin
Glucagon
51.1%
32.5%
15.8%
B
Insulin
CD99R
9.67%
27.3%
42.7%
20.4%
C
Glucagon
CD99R
1.47%
38.1%
14.2%
46.3%
D
Insulin
Glucagon
45.2%
36.7%
15.5%
E
Insulin
CD49a
15.3%
47.3%
31.8%
5.56%
F
Glucagon
CD49a
16.4%
45%
1.49%
37.2%

Fig 6

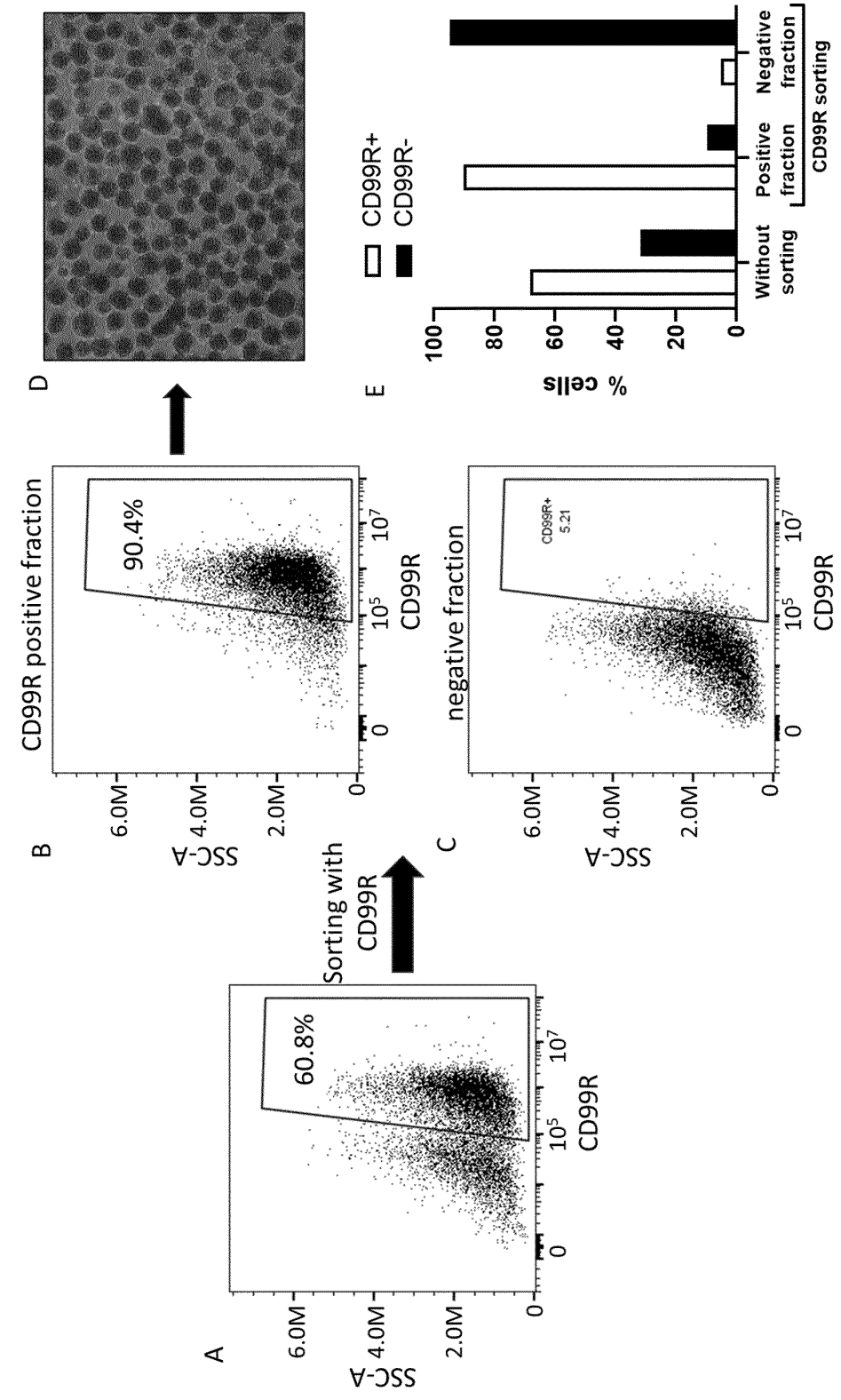

A
SSC-A
6.0M
4.0M
2.0M
0
60.8%
0
10^5
10^7
CD99R
Sorting with CD99R
B
CD99R positive fraction
90.4%
C
negative fraction
CD99R+ 5.21
D
E
CD99R+
CD99R-
% cells
100
80
60
40
20
0
Without sorting
Positive fraction
Negative fraction
CD99R sorting

Fig 7

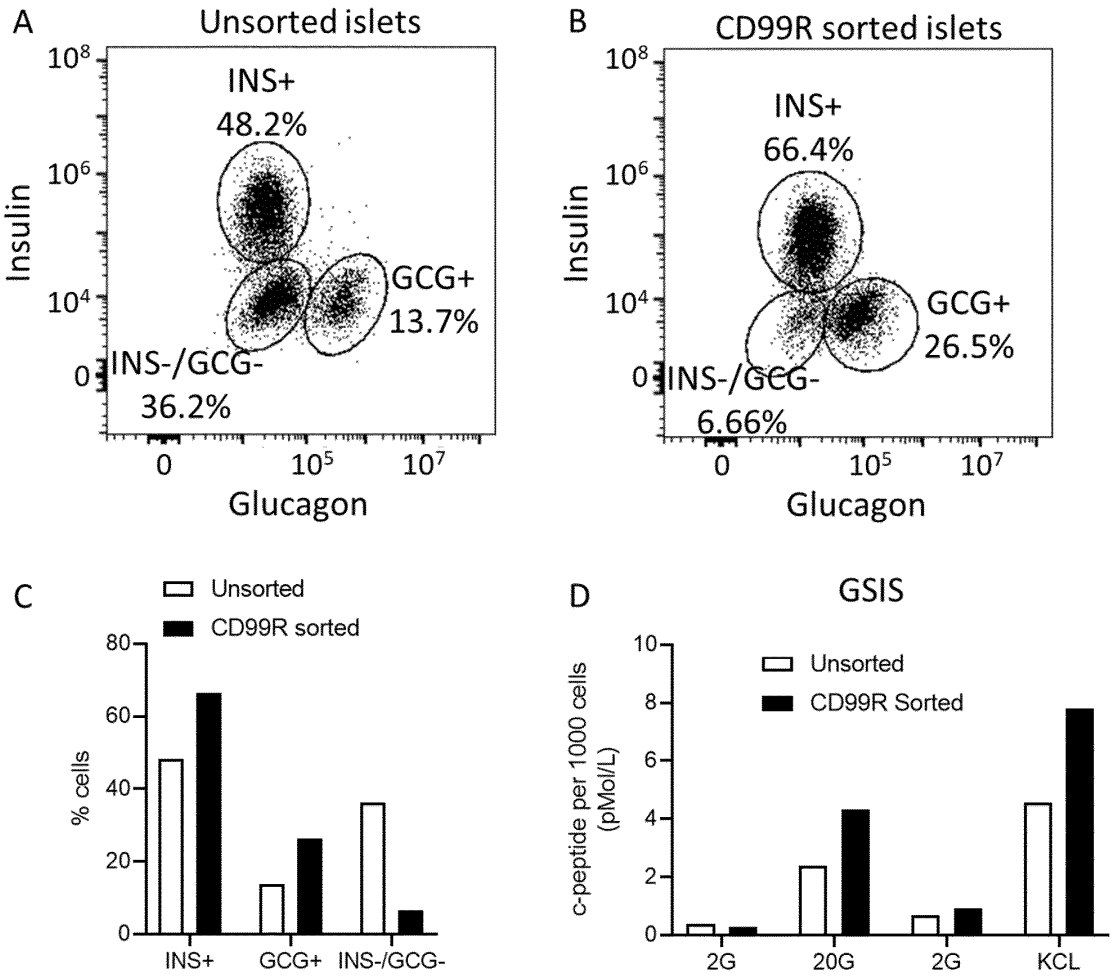

A
Unsorted islets
INS+
48.2%
GCG+
13.7%
INS-/GCG-
36.2%
Insulin
Glucagon
B
CD99R sorted islets
INS+
66.4%
GCG+
26.5%
INS-/GCG-
6.66%
Insulin
Glucagon
C
Unsorted
CD99R sorted
% cells
INS+
GCG+
INS-/GCG-
D
GSIS
Unsorted
CD99R Sorted
c-peptide per 1000 cells (pMol/L)
2G
20G
2G
KCL

Fig 8

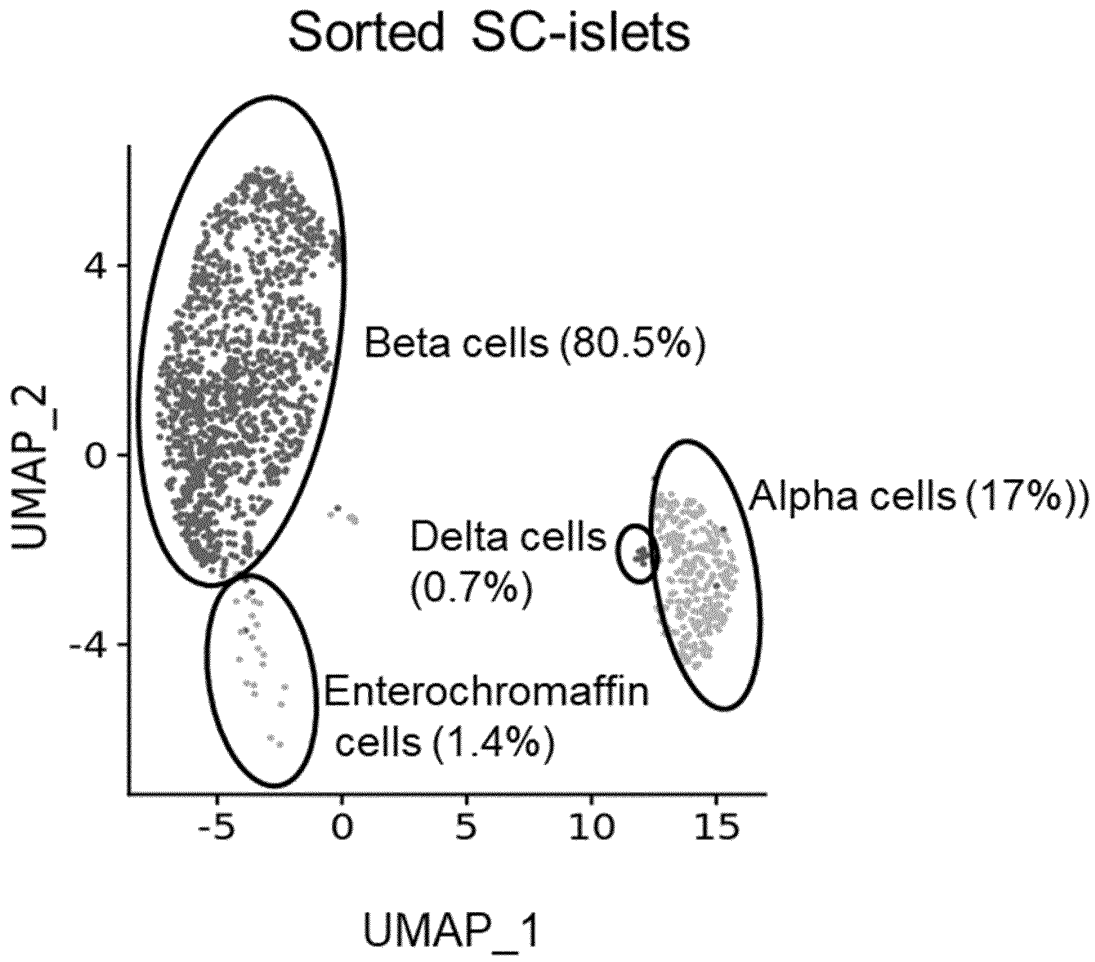
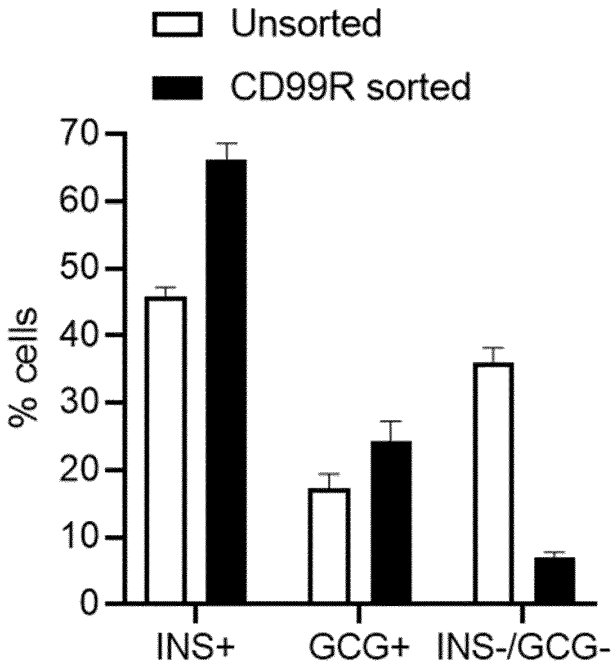

Sorted SC-islets
Beta cells (80.5%)
Alpha cells (17%))
Delta cells
(0.7%)
Enterochromaffin
cells (1.4%)
UMAP_2
UMAP_1
4
0
-4
-5
0
5
10
15

Fig 9

A


Unsorted
CD99R sorted
% cells
70
60
50
40
30
20
10
0
INS+
GCG+
INS-/GCG-

B

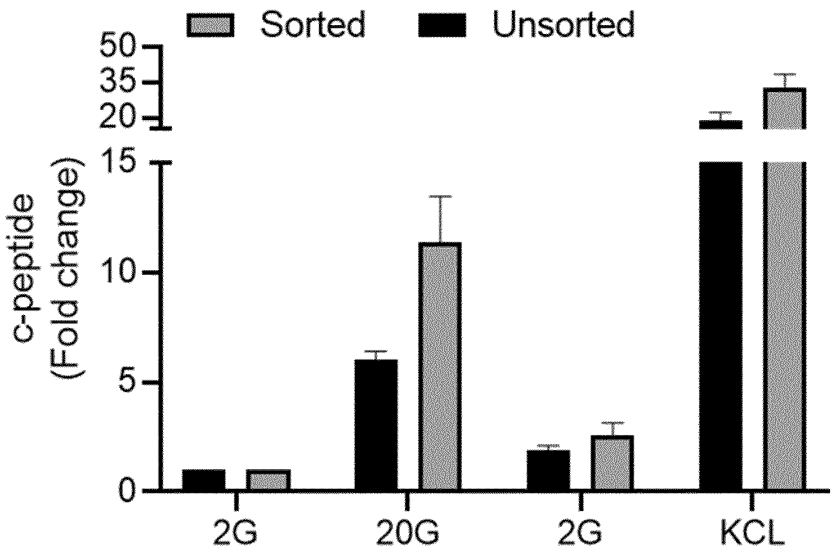

Sorted
Unsorted
c-peptide
(Fold change)
50
35
20
15
10
5
0
2G
20G
2G
KCL

Fig 10

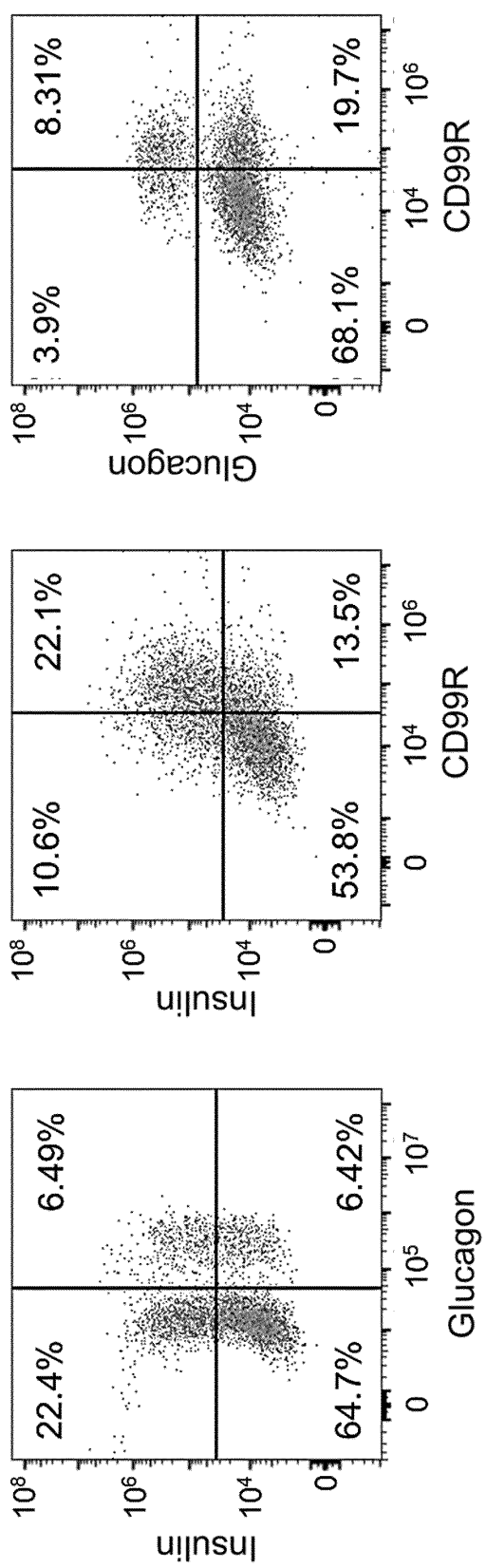

Glucagon
CD99R
3.9%
8.31%
68.1%
19.7%
Insulin
CD99R
10.6%
22.1%
53.8%
13.5%
Insulin
Glucagon
22.4%
6.49%
64.7%
6.42%

Fig 11