Figure 1A

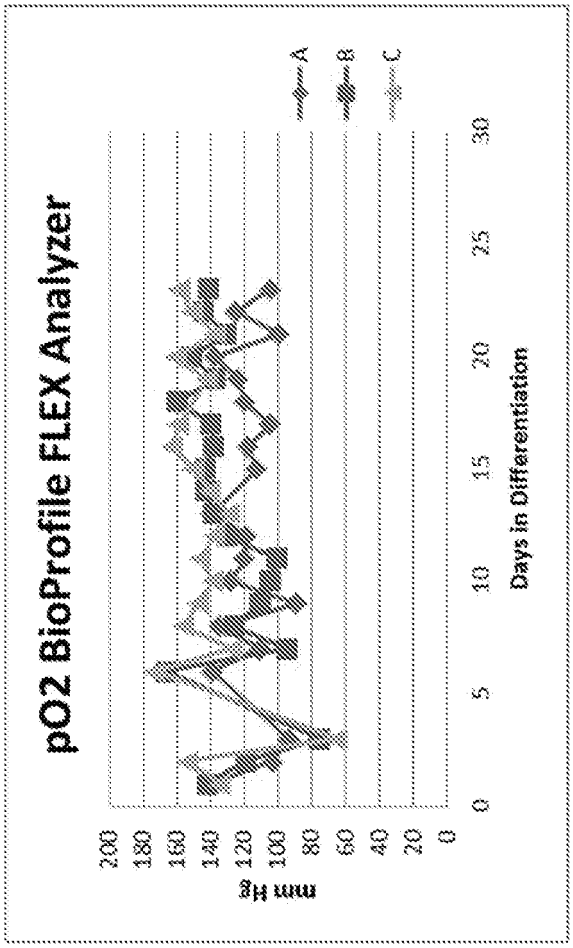

pO2 BioProfile FLEX Analyzer
mm Hg
200
180
160
140
120
100
80
60
40
20
0
0
5
10
15
20
25
30
Days in Differentiation
A
B
C

Figure 1B

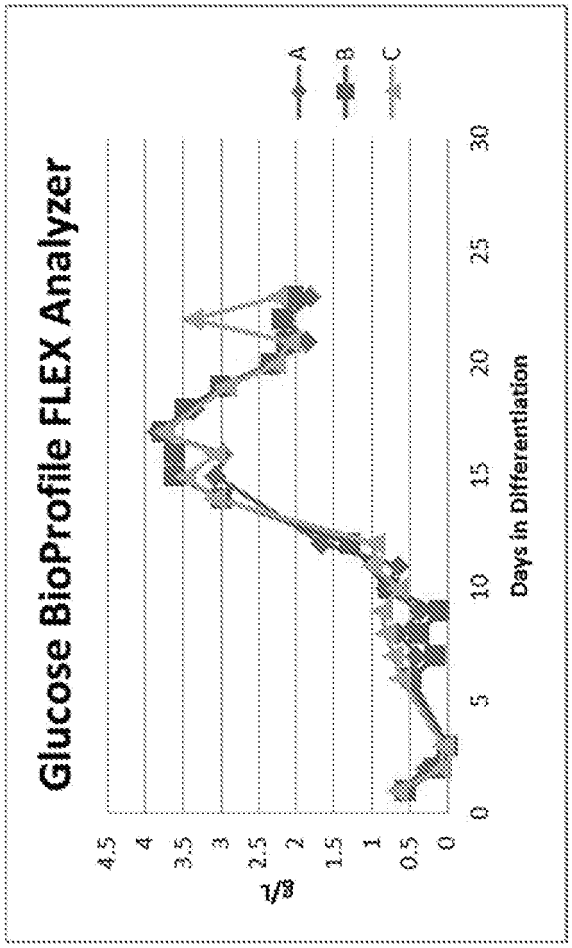

Glucose BioProfile FLEX Analyzer
A
B
C
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
0
5
10
15
20
25
30
Days in Differentiation

Figure 1C

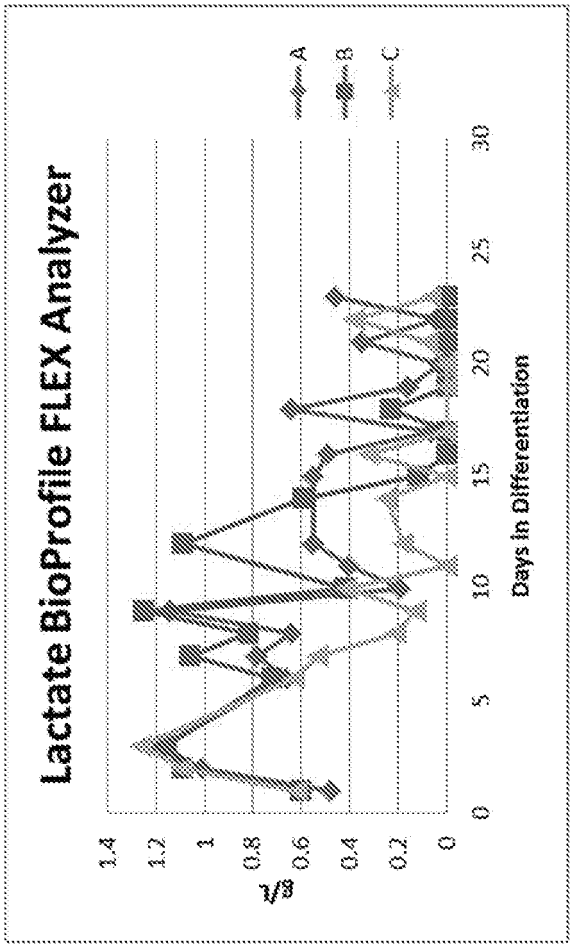

Lactate BioProfile FLEX Analyzer
A
B
C
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
5
10
15
20
25
30
Days in Differentiation

Figure 1D

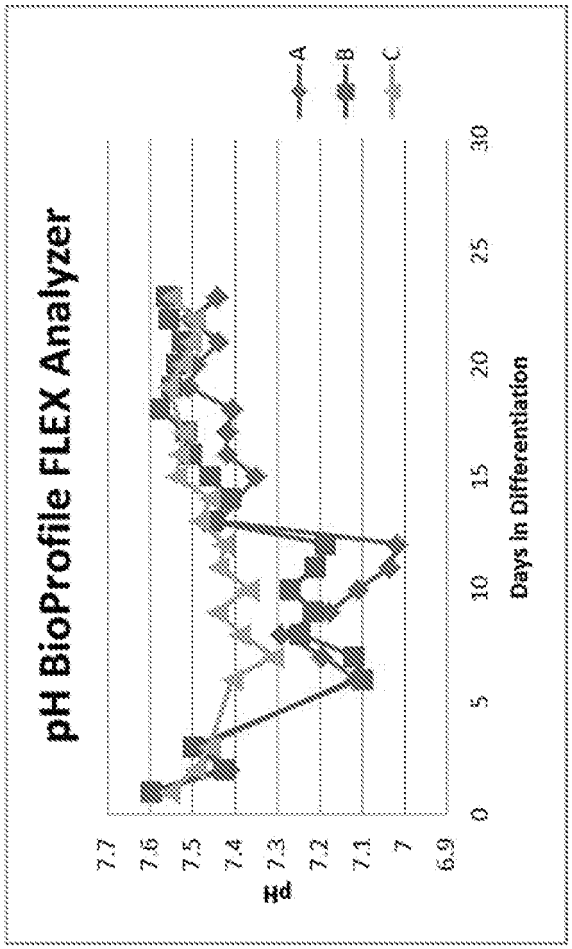

pH BioProfile FLEX Analyzer
pH
7.7
7.6
7.5
7.4
7.3
7.2
7.1
7
6.9
0
5
10
15
20
25
30
Days in Differentiation
A
B
C

Figure 2A

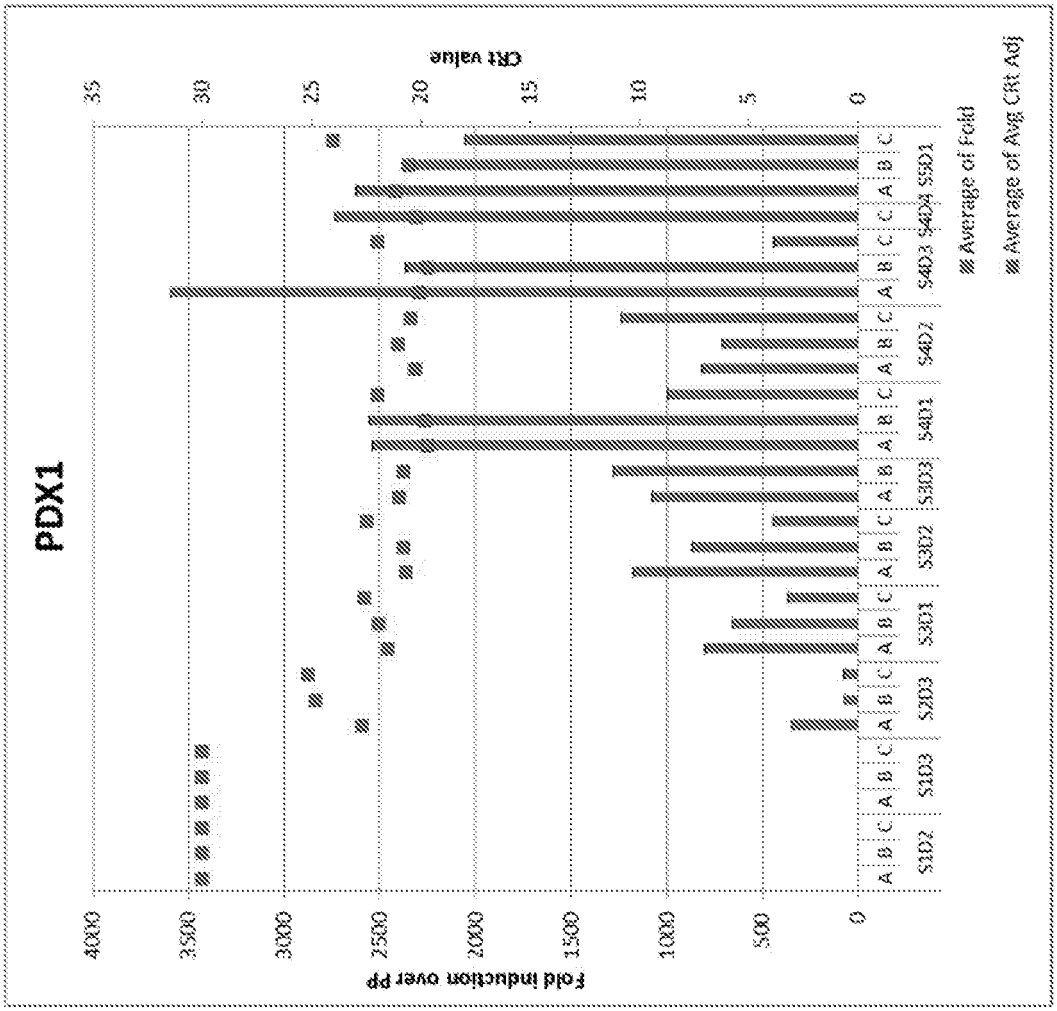

PDX1
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S1D2
S1D3
S2D3
S3D1
S3D2
S3D3
S4D1
S4D2
S4D3
S4D4
S5D1

Figure 2B

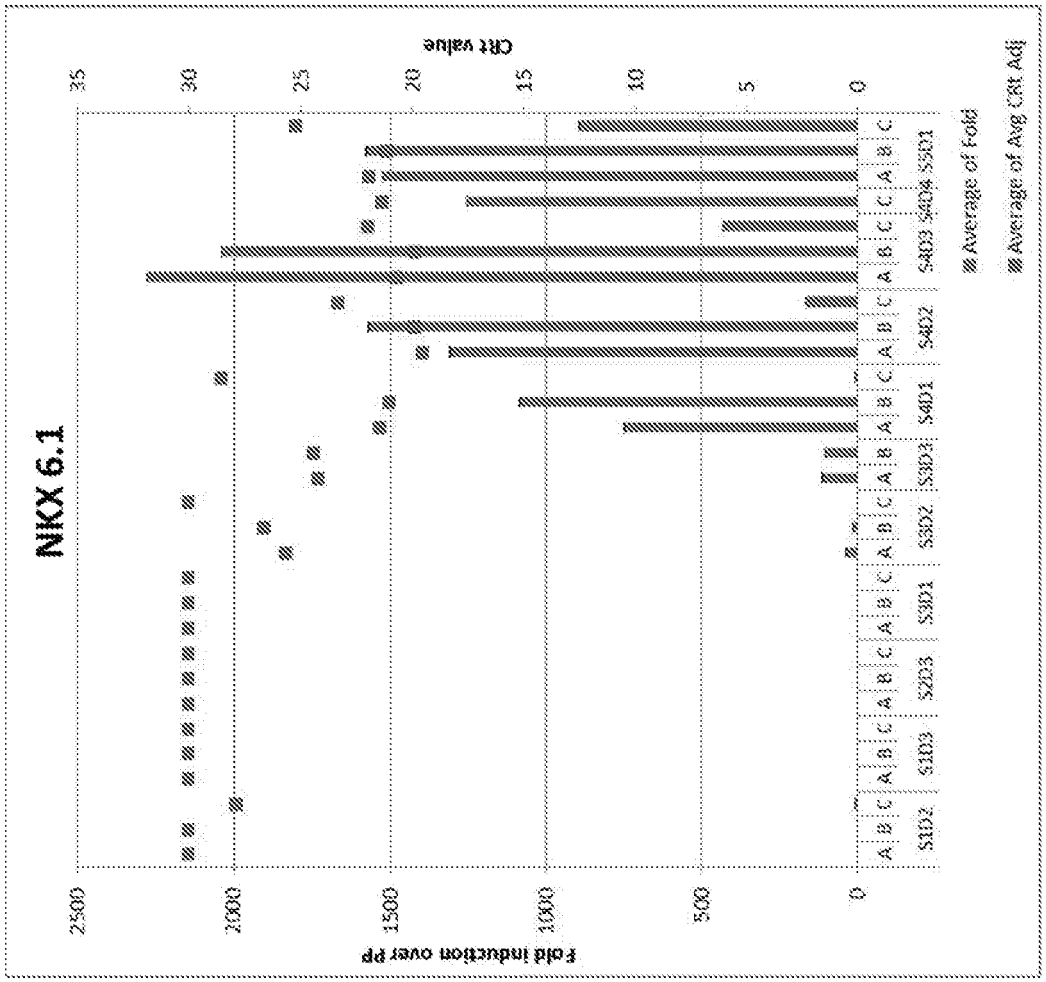

NKX 6.1
Fold induction over PP
CRt value
2500
2000
1500
1000
500
0
35
30
25
20
15
10
5
0
S1D2
S1D3
S2D3
S3D1
S3D2
S3D3
S4D1
S4D2
S4D3
S4D4
S5D1
A
B
C
Average of Fold
Average of Avg CRt Adj

Figure 2C

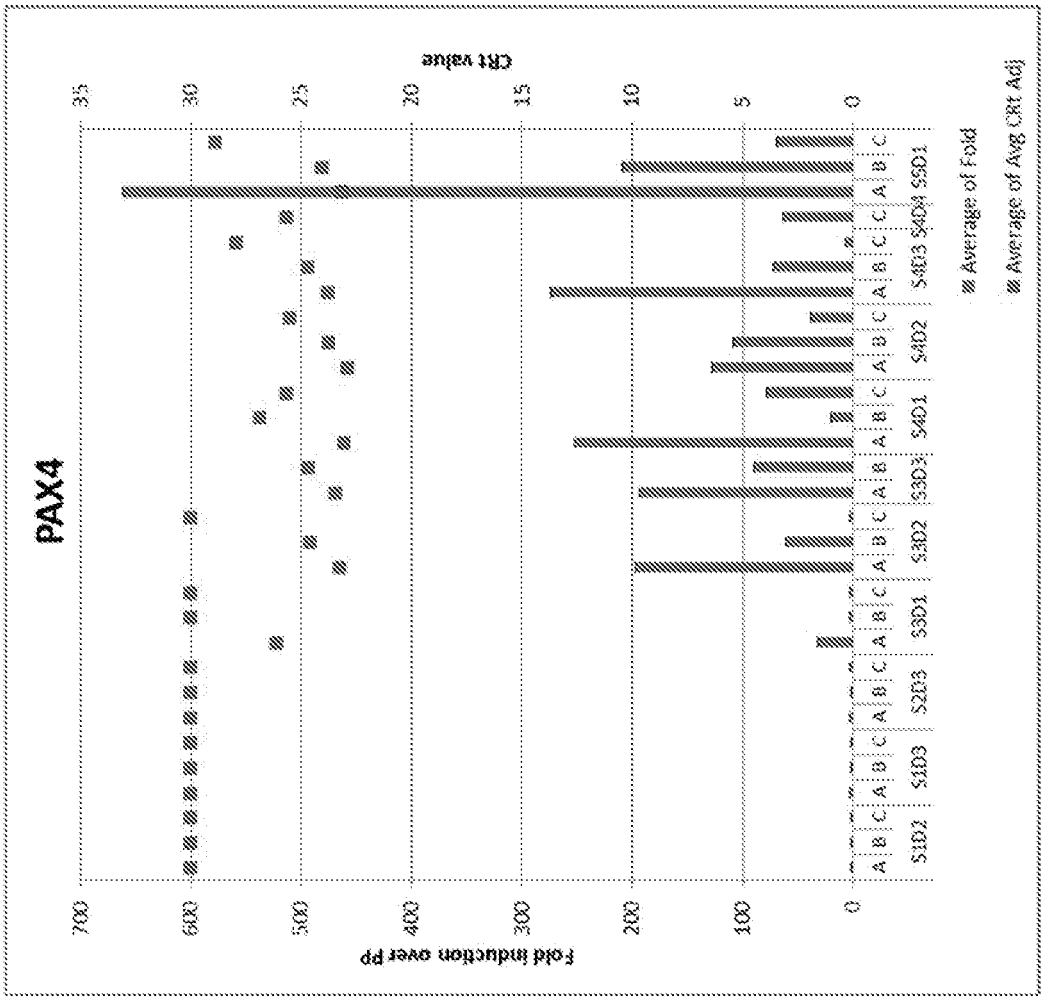

PAX4
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S1D2
S1D3
S2D3
S3D1
S3D2
S3D3
S4D1
S4D2
S4D3
S4D4
S5D1

Figure 2D

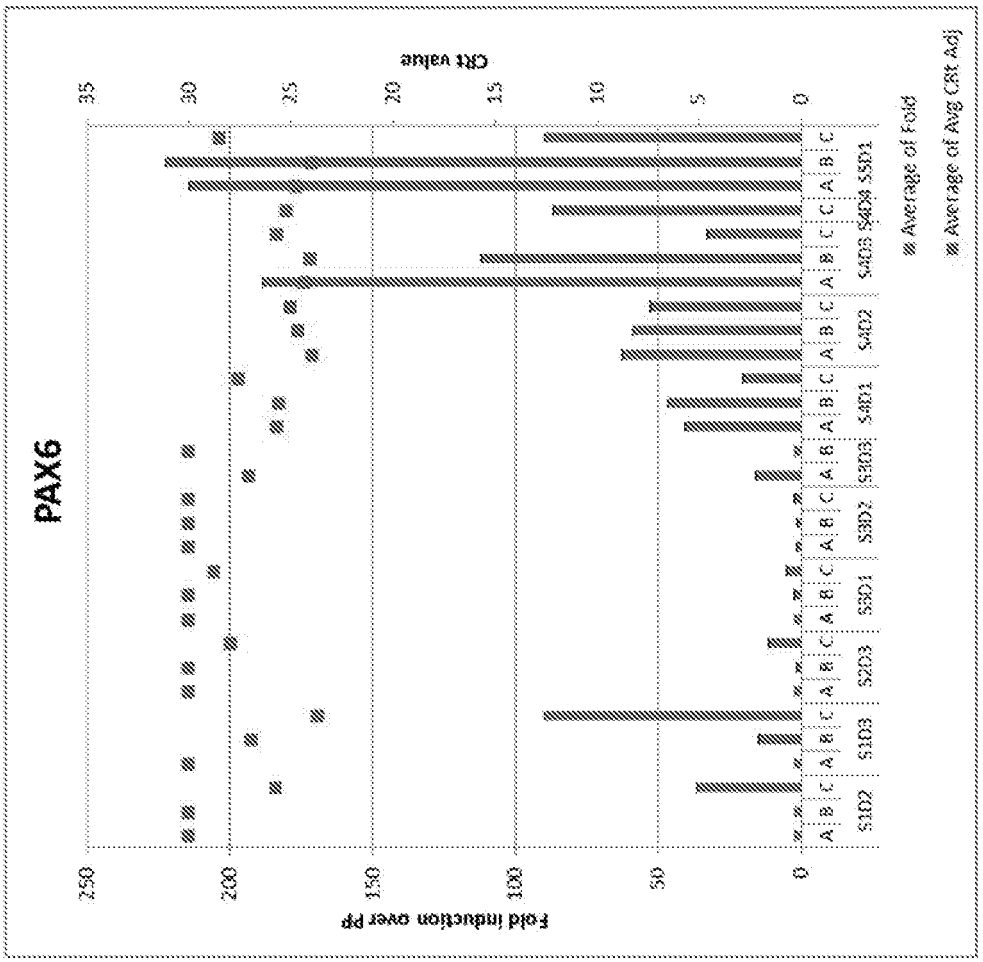

PAX6
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S1D2
S1D3
S2D3
S3D1
S3D2
S3D3
S4D1
S4D2
S4D3
S4D4
S5D1

Figure 2E

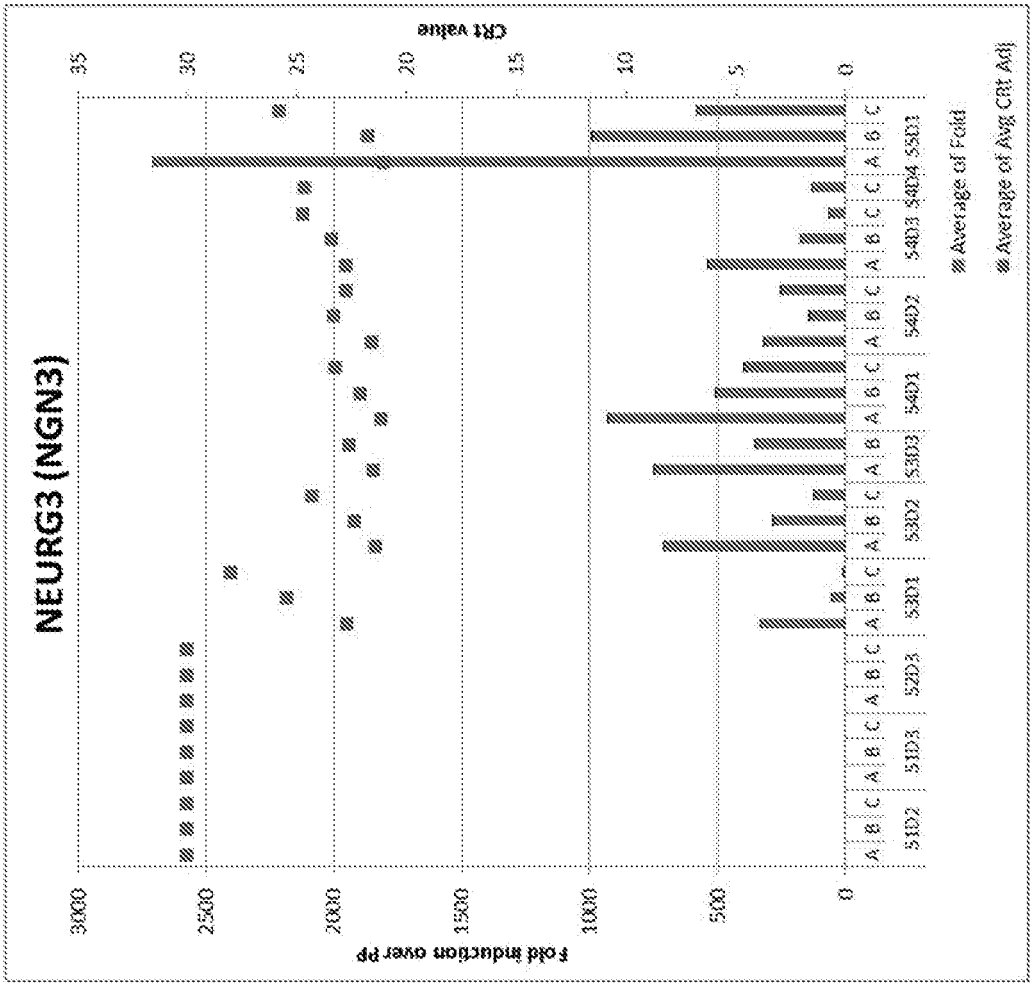

NEURG3 (NGN3)
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
5102
5103
5203
5301
5302
5303
5401
5402
5403
5404
5501

Figure 2F

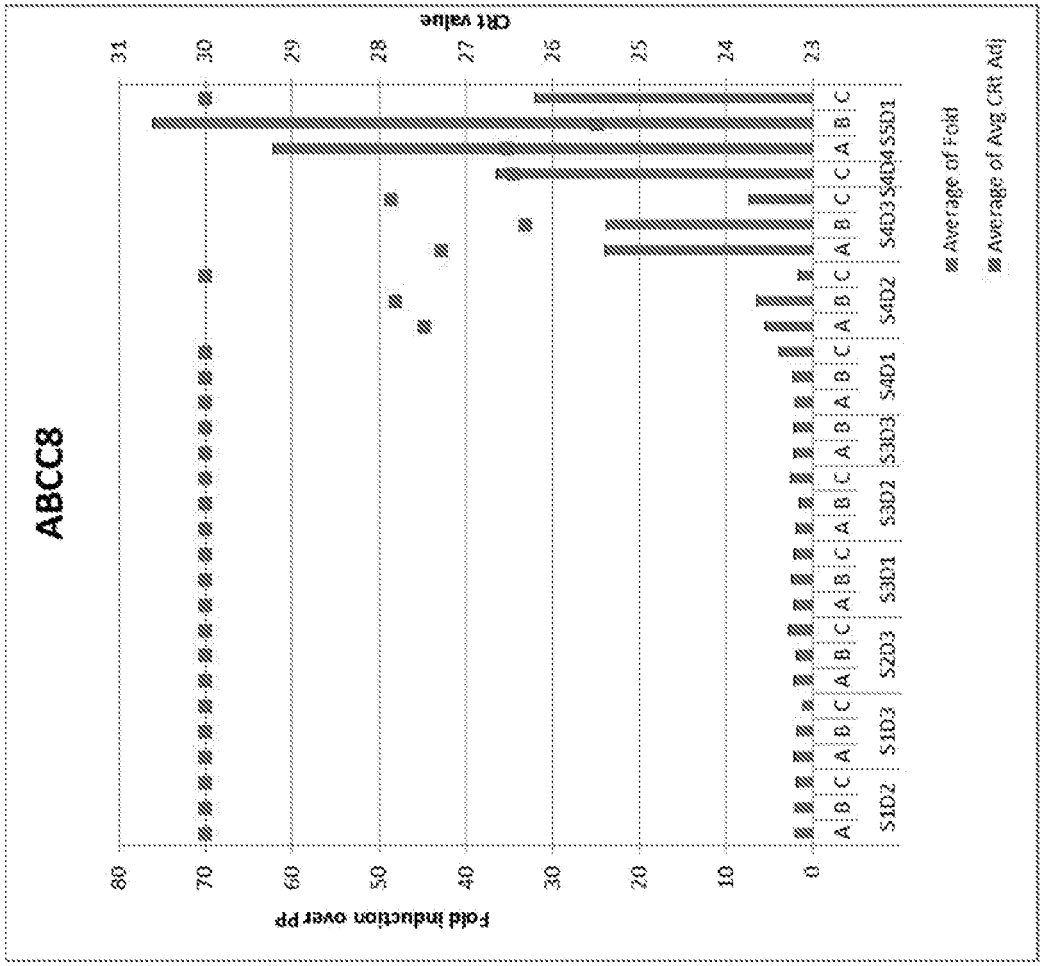

ABCC8
Fold induction over PP
Crt value
Average of Fold
Average of Avg Crt Adj
S1D2
S1D3
S2D3
S3D1
S3D2
S3D3
S4D1
S4D2
S4D3
S4D4
S5D1

Figure 2G

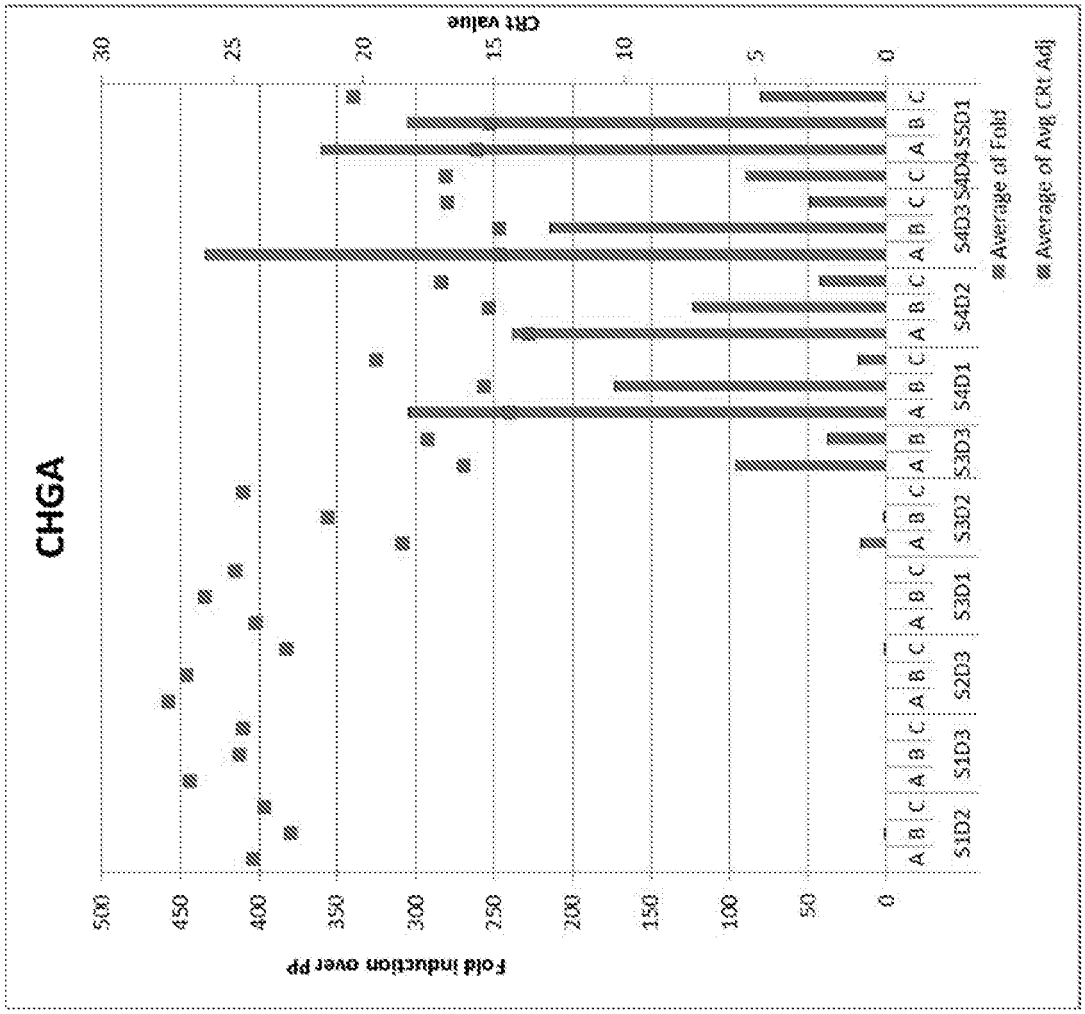

CHGA
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S1D2
S1D3
S2D3
S3D1
S3D2
S3D3
S4D1
S4D2
S4D3
S4D4
S5D1

Figure 2H

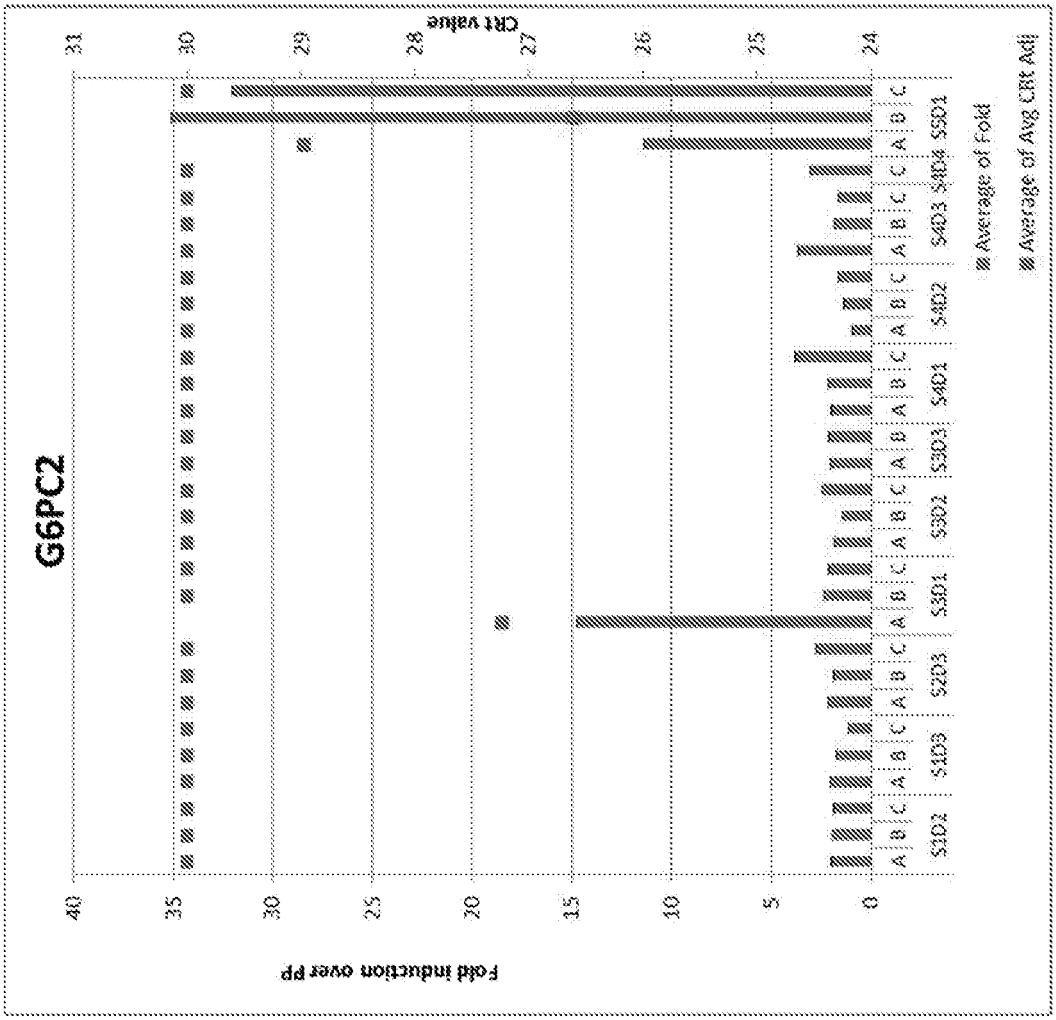

G6PC2
Fold induction over PP
CRT value
Average of Fold
Average of Avg CRt Adj
S1D2
S1D3
S2D3
S3D1
S3D2
S3D3
S4D1
S4D2
S4D3
S4D4
S5D1

Figure 2I

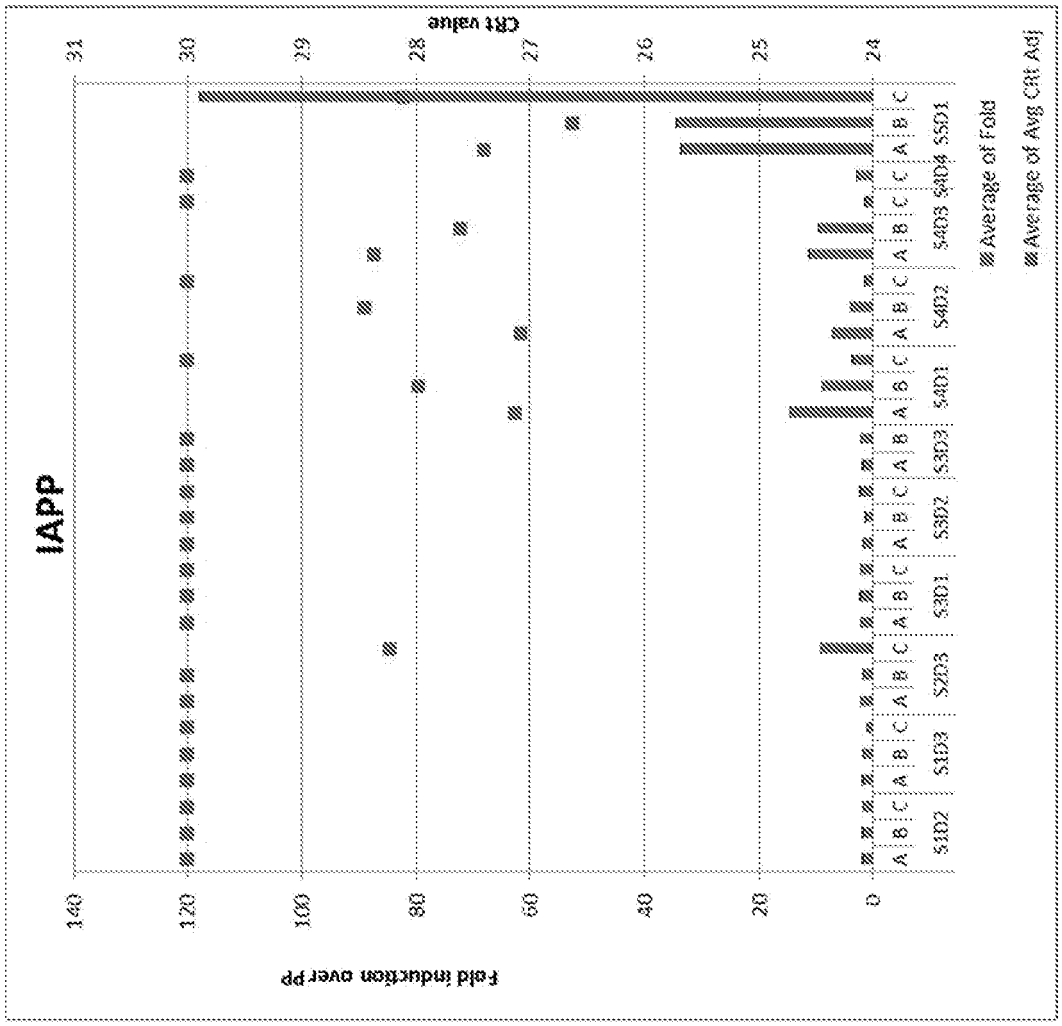

IAPP
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S1D2
S1D3
S2D3
S3D1
S3D2
S3D3
S4D1
S4D2
S4D3
S4D4
SSD1

Figure 2J

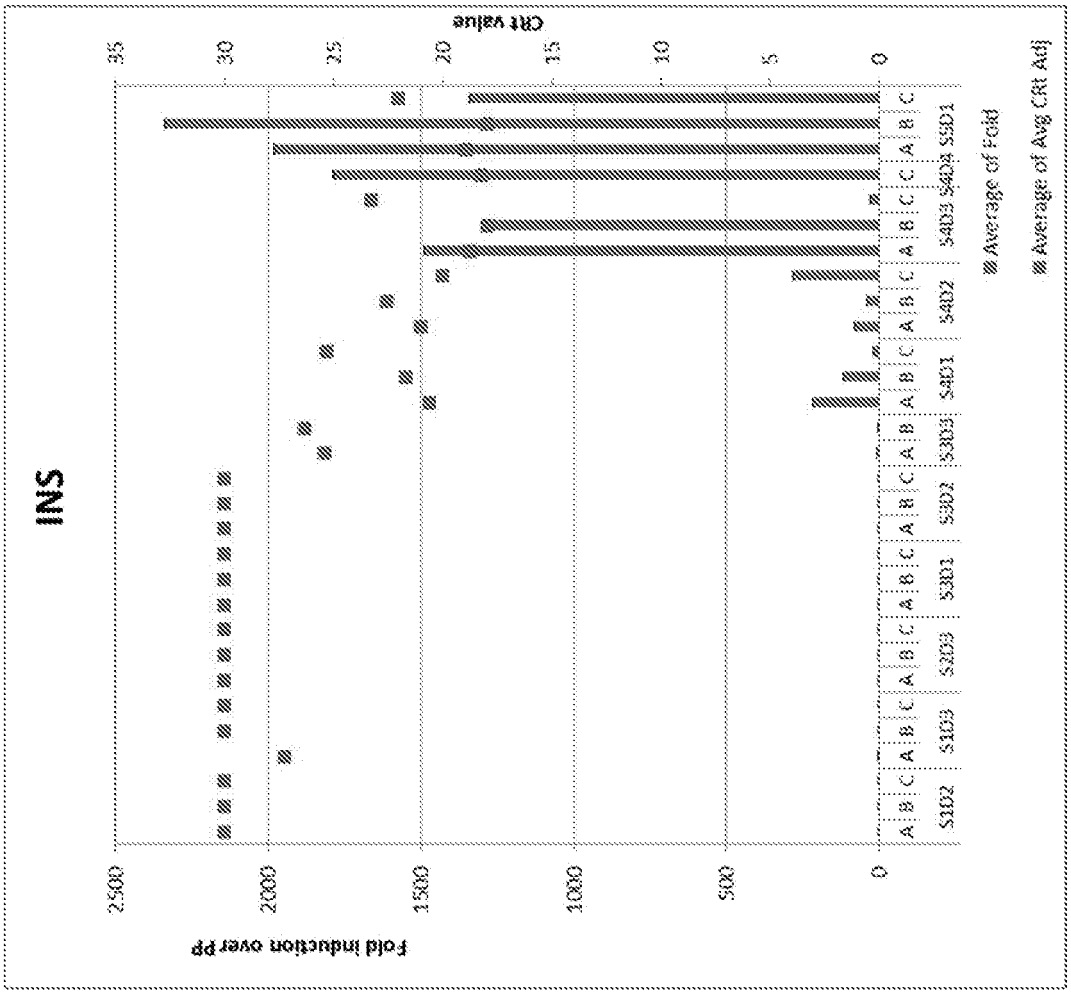

INS
Fold induction over PP
2500
2000
1500
1000
500
0
CRT value
35
30
25
20
15
10
5
0
A B C A B C A B C A B C A B C A B C A B C A B C A B C A B C A B C A B C
S102 S103 S203 S301 S302 S303 S401 S402 S403 S404 SSD1
Average of Fold
Average of Avg CRt Adj

Figure 2K

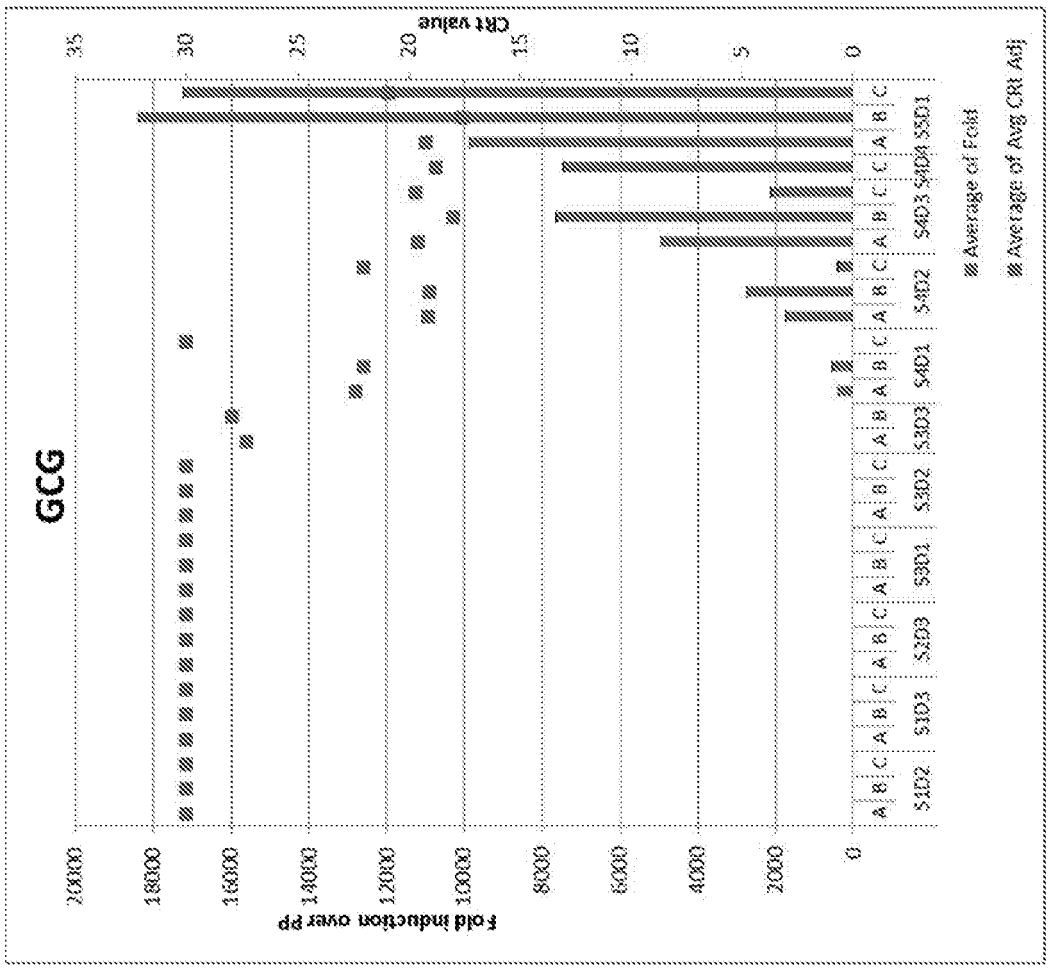

GCG
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S1D2
S1D3
S2D3
S3D1
S3D2
S3D3
S4D1
S4D2
S4D3
S4D4
S5D1

Figure 2L

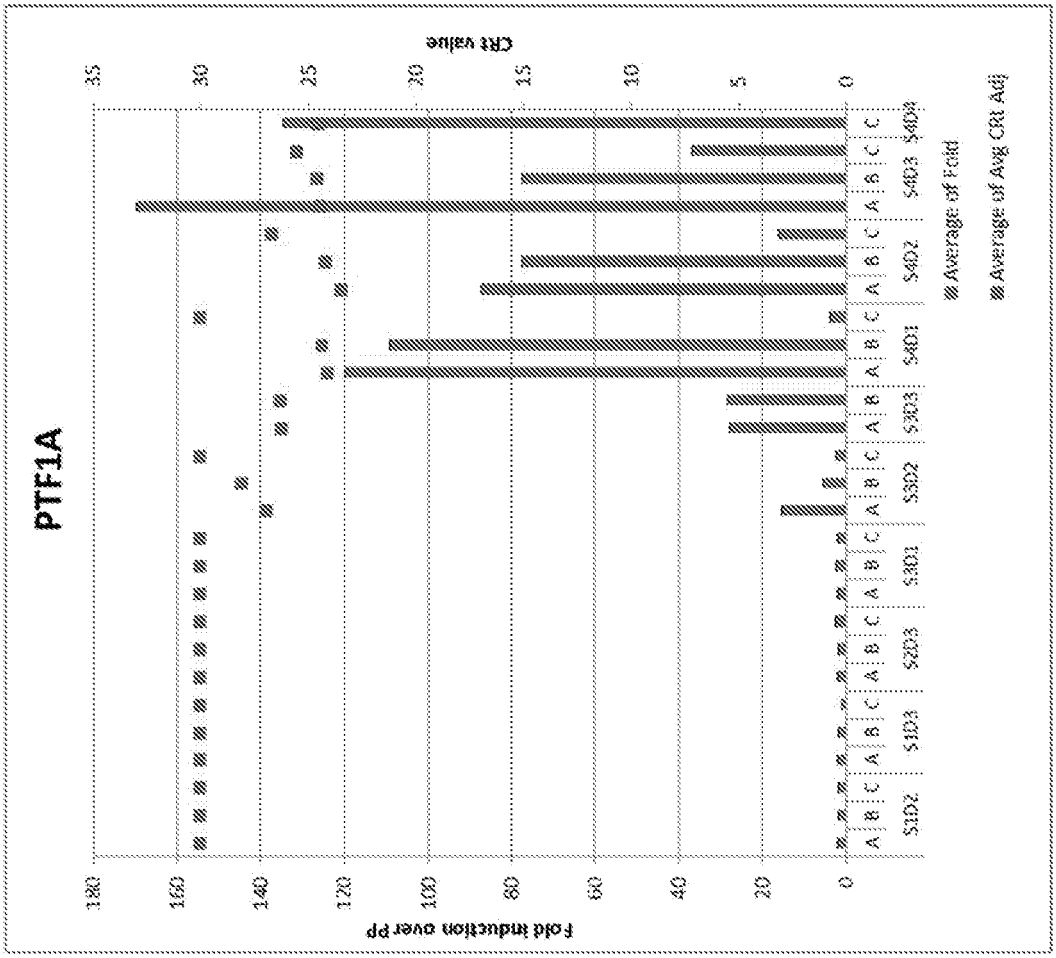

PTF1A
Fold induction over PP
CRI value
Average of Fold
Average of Avg CRI Adj
S1D2
S1D3
S2D3
S3D1
S3D2
S3D3
S4D1
S4D2
S4D3
S4D4

Figure 2M

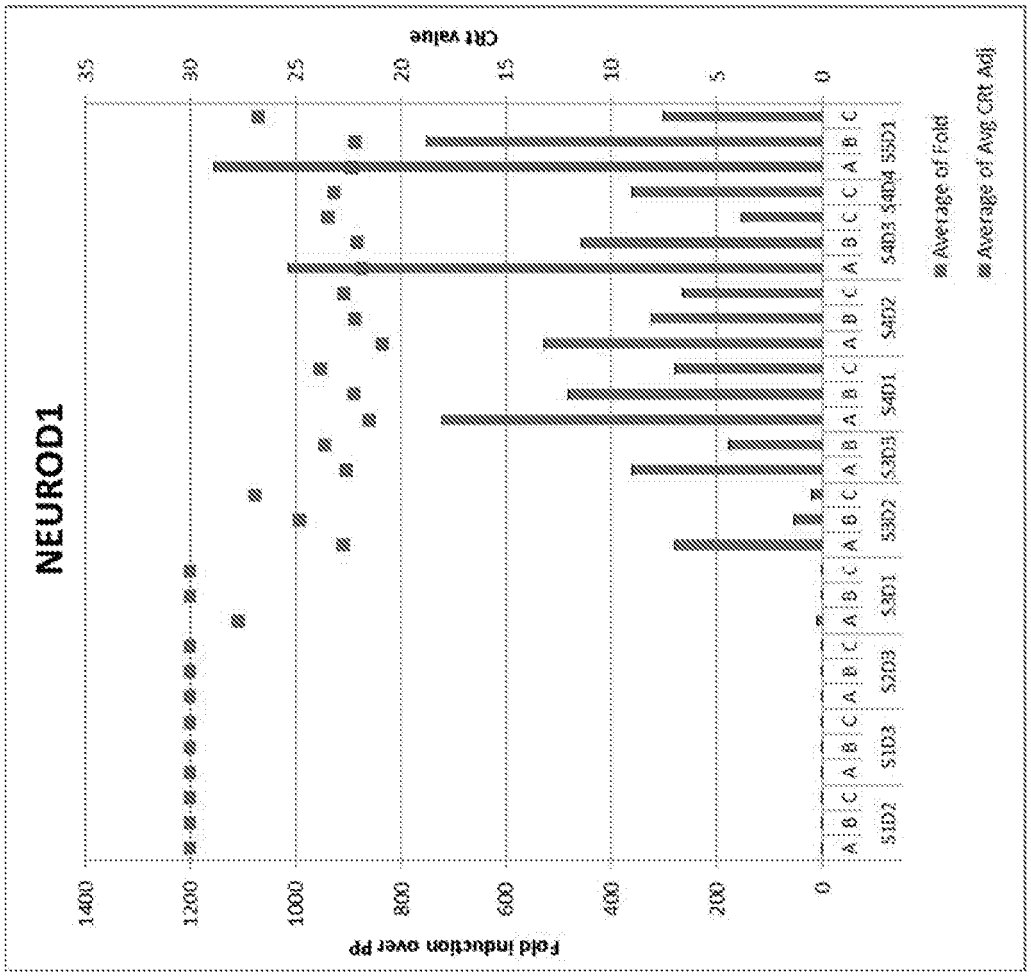

NEUROD1
Fold induction over PP
CRt value
Average of Fold
Average of Avg. Crt Adj
0
200
400
600
800
1000
1200
1400
0
5
10
15
20
25
30
35
S1D2
S1D3
S2D3
S3D1
S3D2
S3D3
S4D1
S4D2
S4D3
S4D4
S5D1

Figure 3A

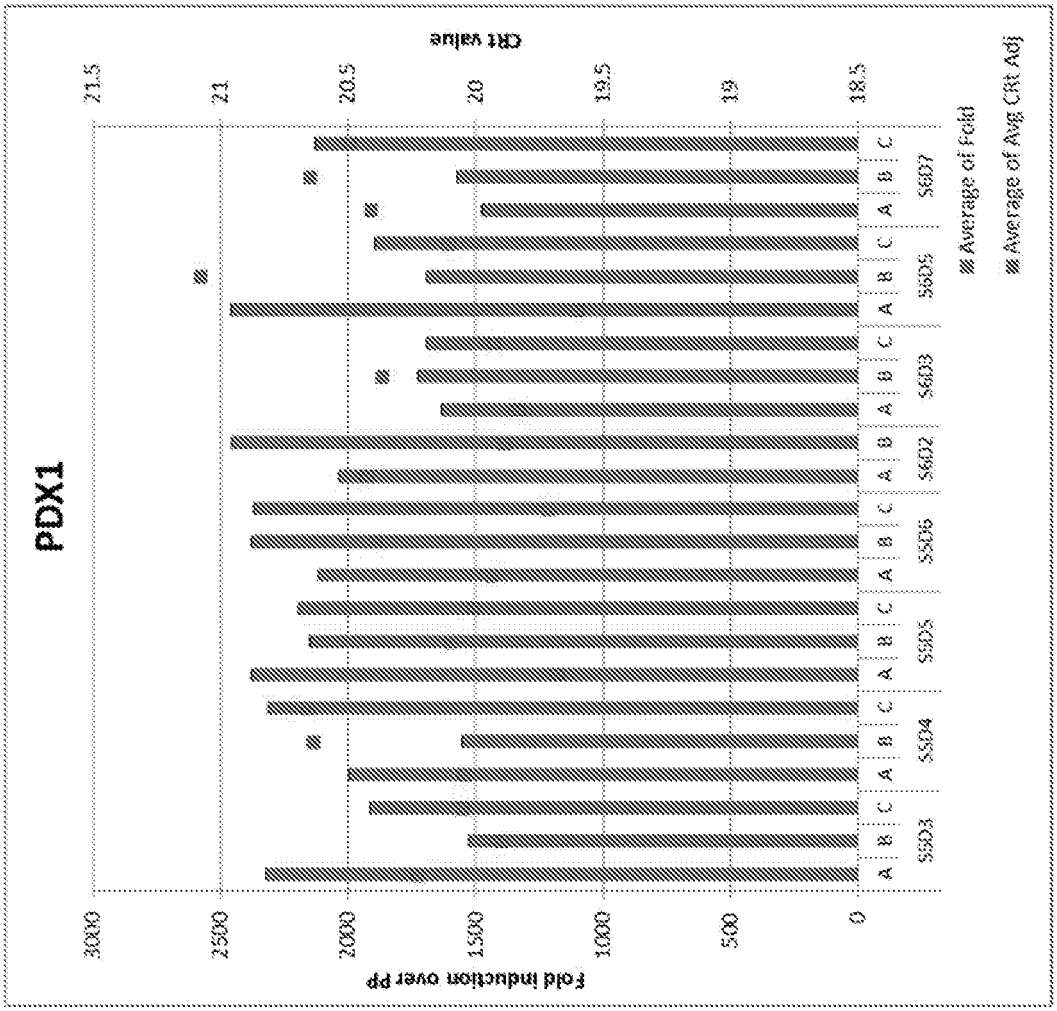

PDX1
Fold induction over PP
CRt value
3000
2500
2000
1500
1000
500
0
21.5
21
20.5
20
19.5
19
18.5
A B C A B C A B C A B C A B C A B C A B C A B C
SS03 SS04 SS05 SS06 S602 S603 S605 S607
Average of Fold
Average of Avg CRt Adj

Figure 3B

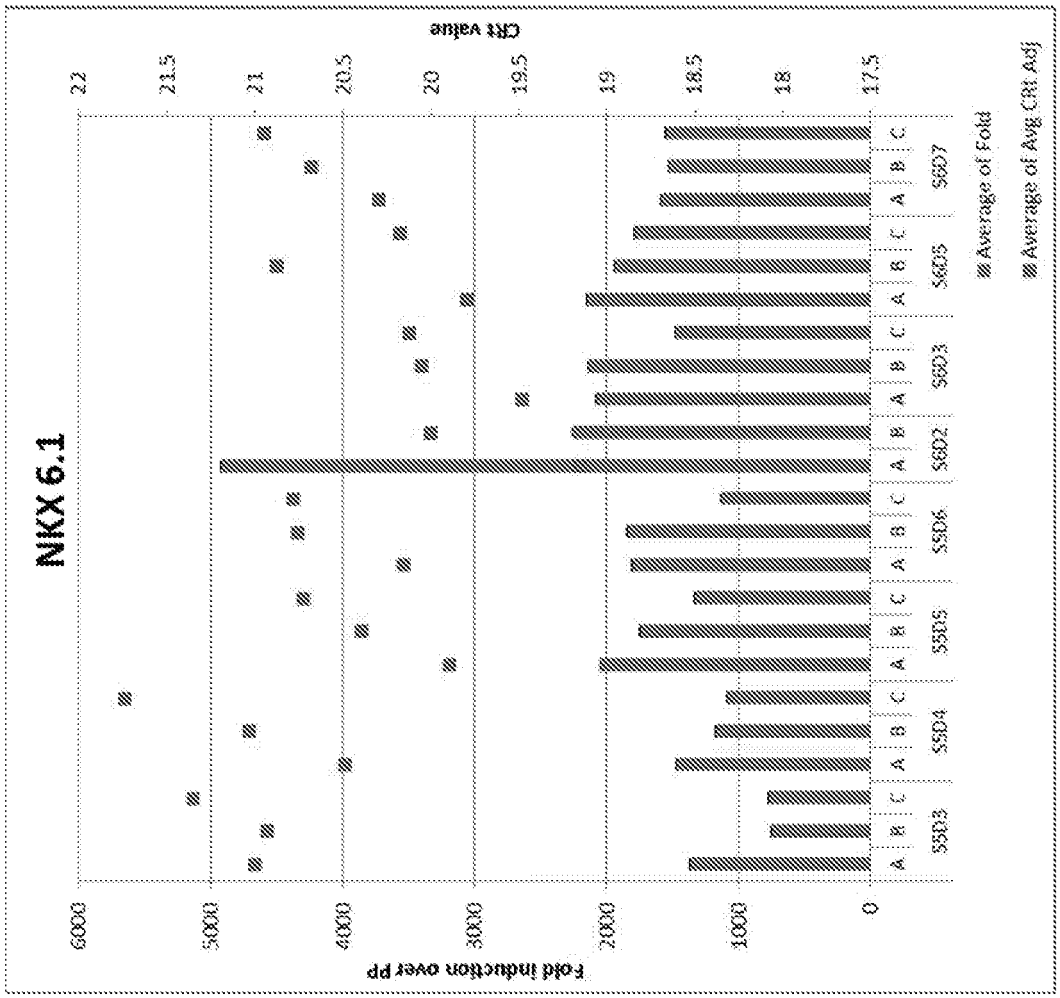

NKX 6.1
Fold induction over PP
CRt value
6000
5000
4000
3000
2000
1000
0
22
21.5
21
20.5
20
19.5
19
18.5
18
17.5
A B C A B C A B C A B C A B C A B C A B C
SSD3 SSD4 SSD5 SSD6 SSD2 SSD3 SSD5 SSD7
Average of Fold
Average of Avg CRt Adj

Figure 3C

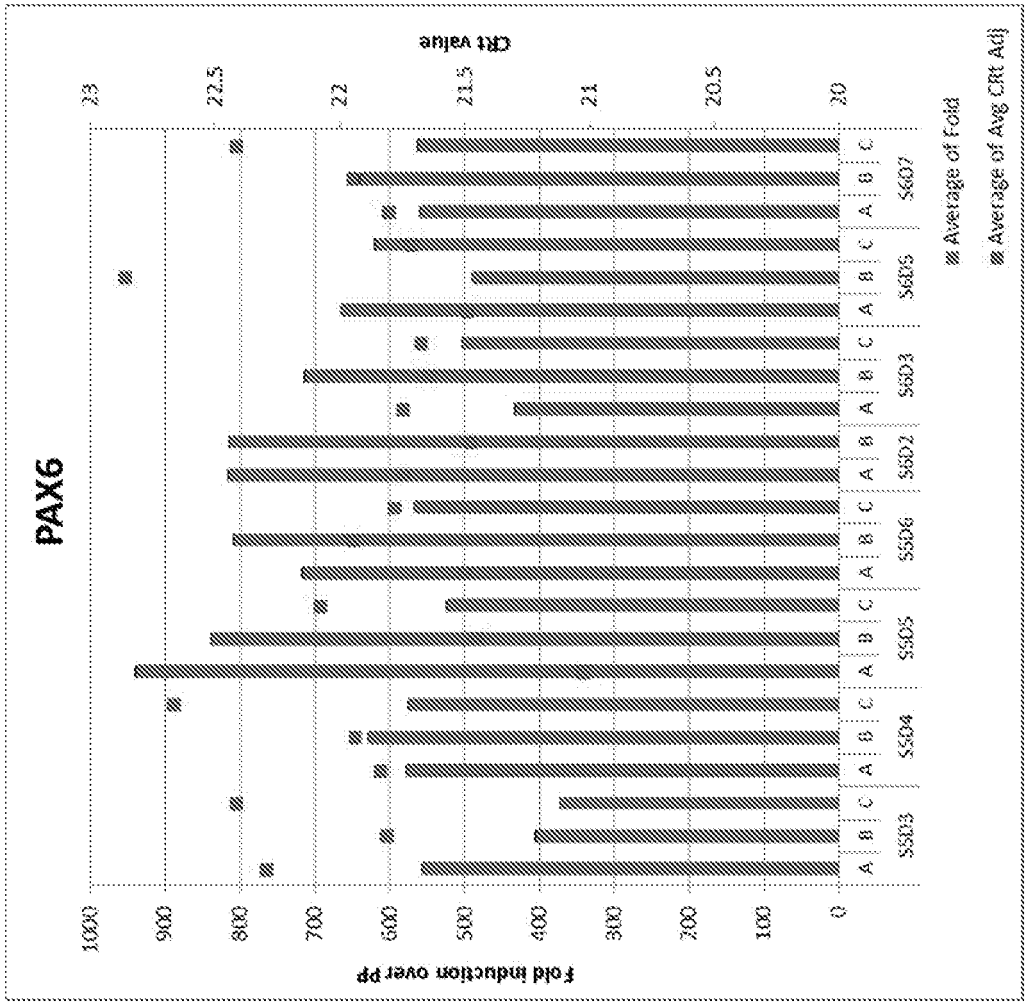

PAX6
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S503
S504
S505
S506
S502
S503
S505
S507

Figure 3D

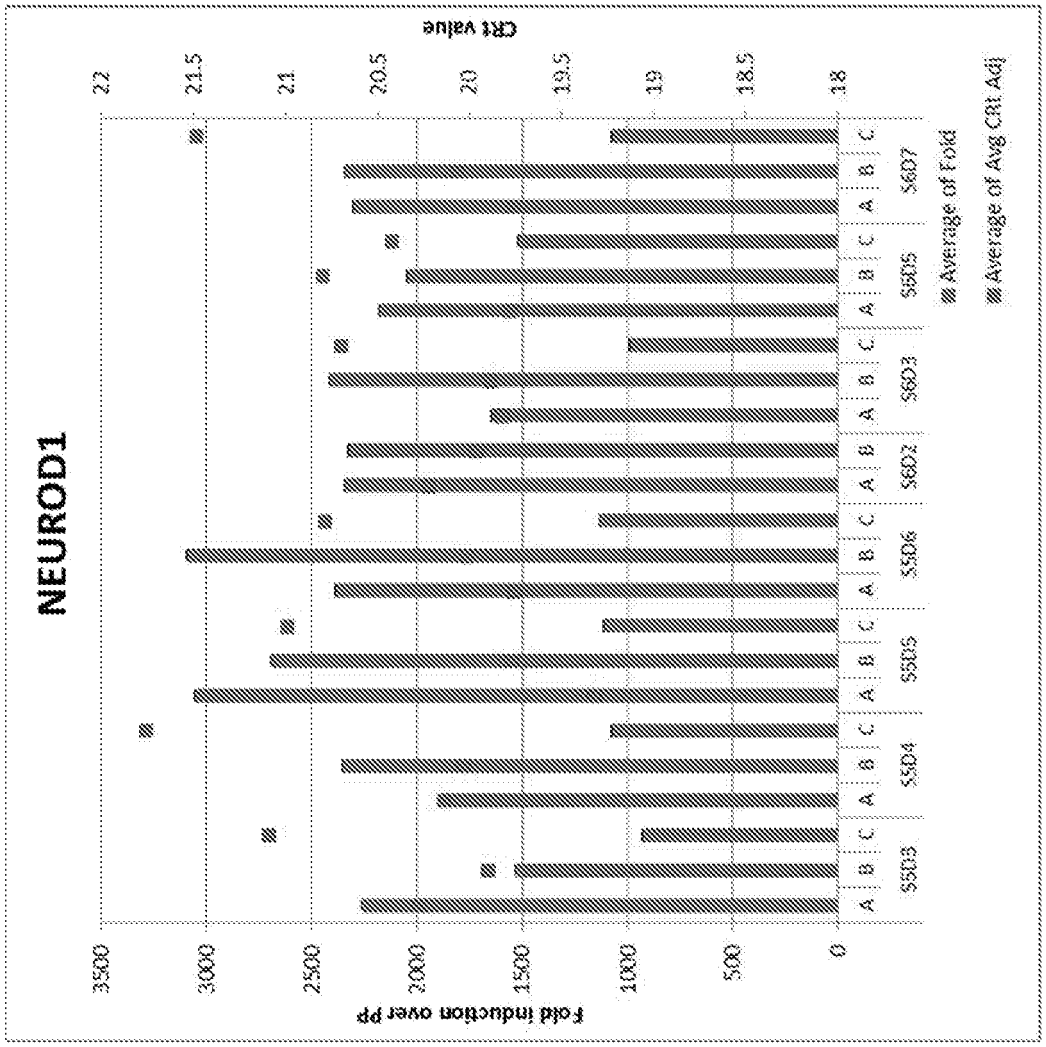

NEUROD1
Fold induction over PP
CRt value
3500
3000
2500
2000
1500
1000
500
0
22
21.5
21
20.5
20
19.5
19
18.5
18
A B C A B C A B C A B C A B C A B C A B C A B C
S5D3 S5D4 S5D5 S5D6 S6D2 S6D3 S6D5 S6D7
Average of Fold
Average of Avg CRt Adj

Figure 3E

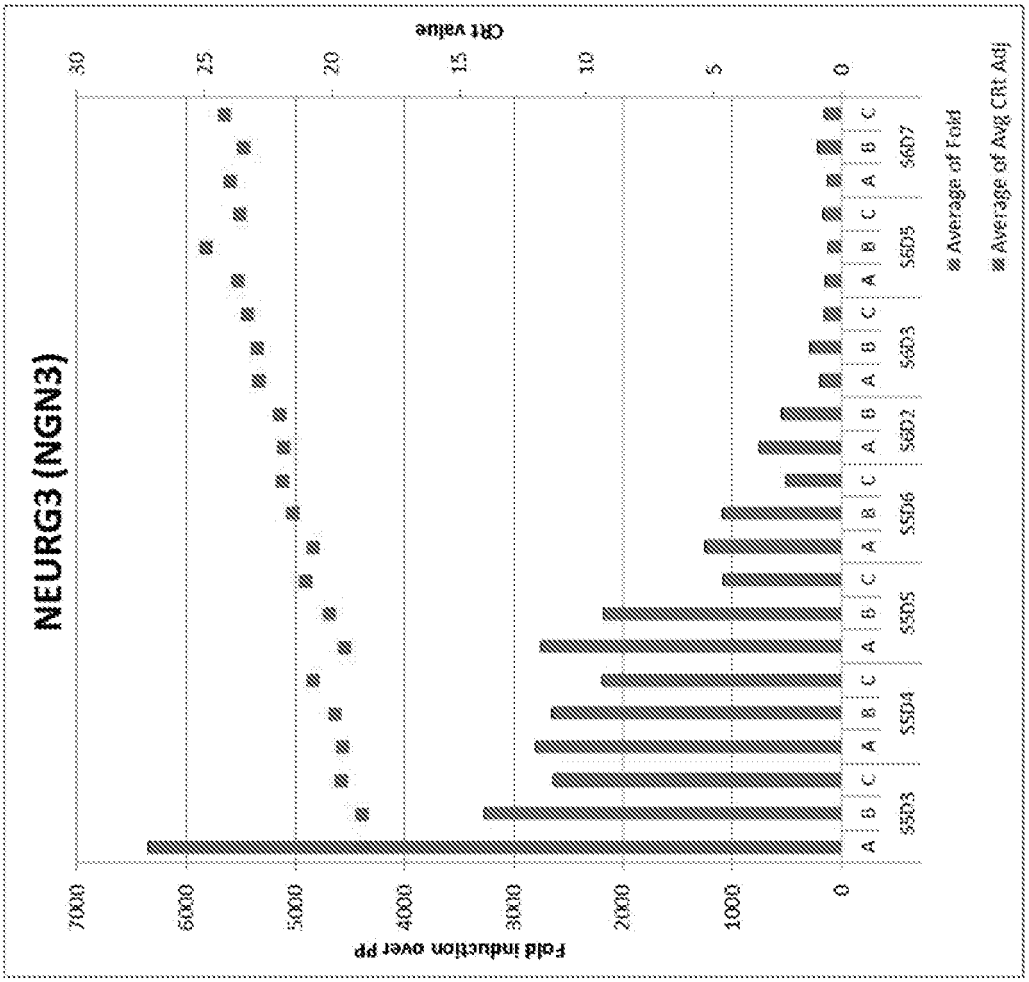

NEURG3 (NGN3)
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
5603
5604
5605
5606
5607

Figure 3F

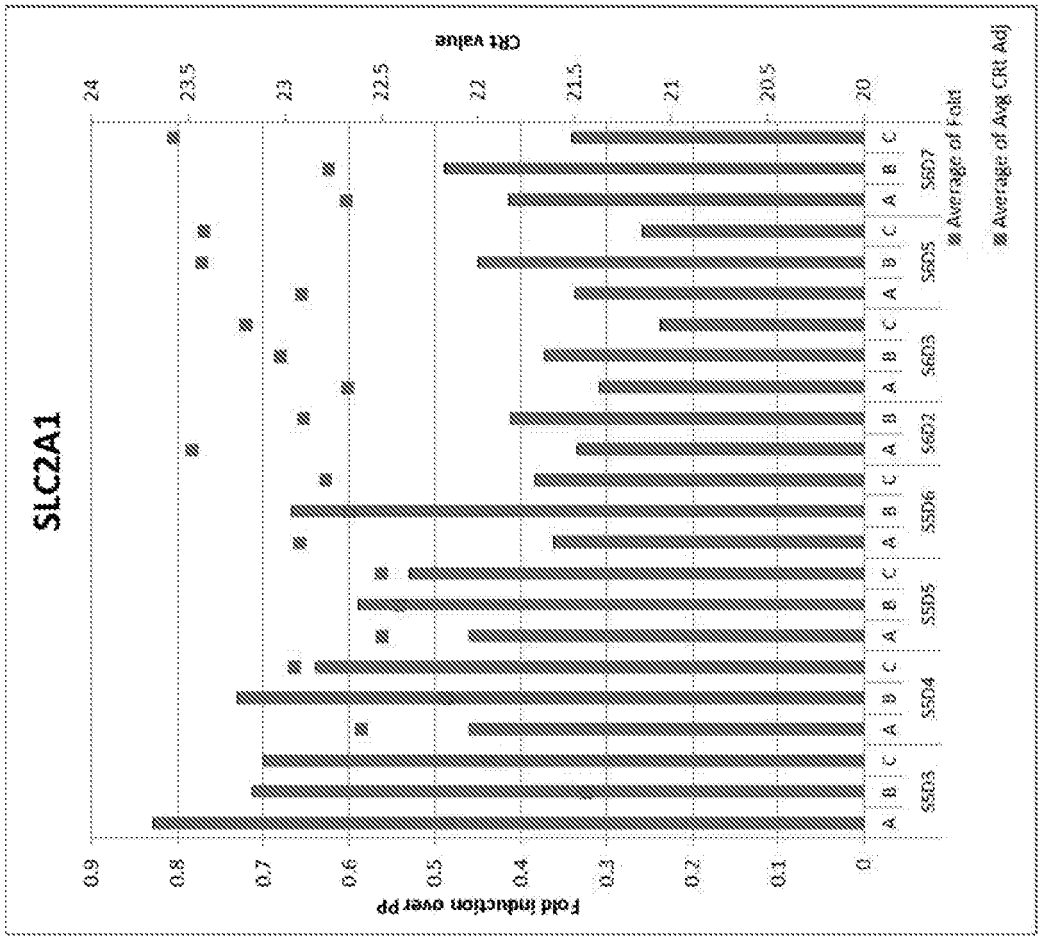

SLC2A1
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
SSD3
SSD4
SSD5
SSD6
SSD2
SSD3
SSD5
SSD7
A
B
C

Figure 3G

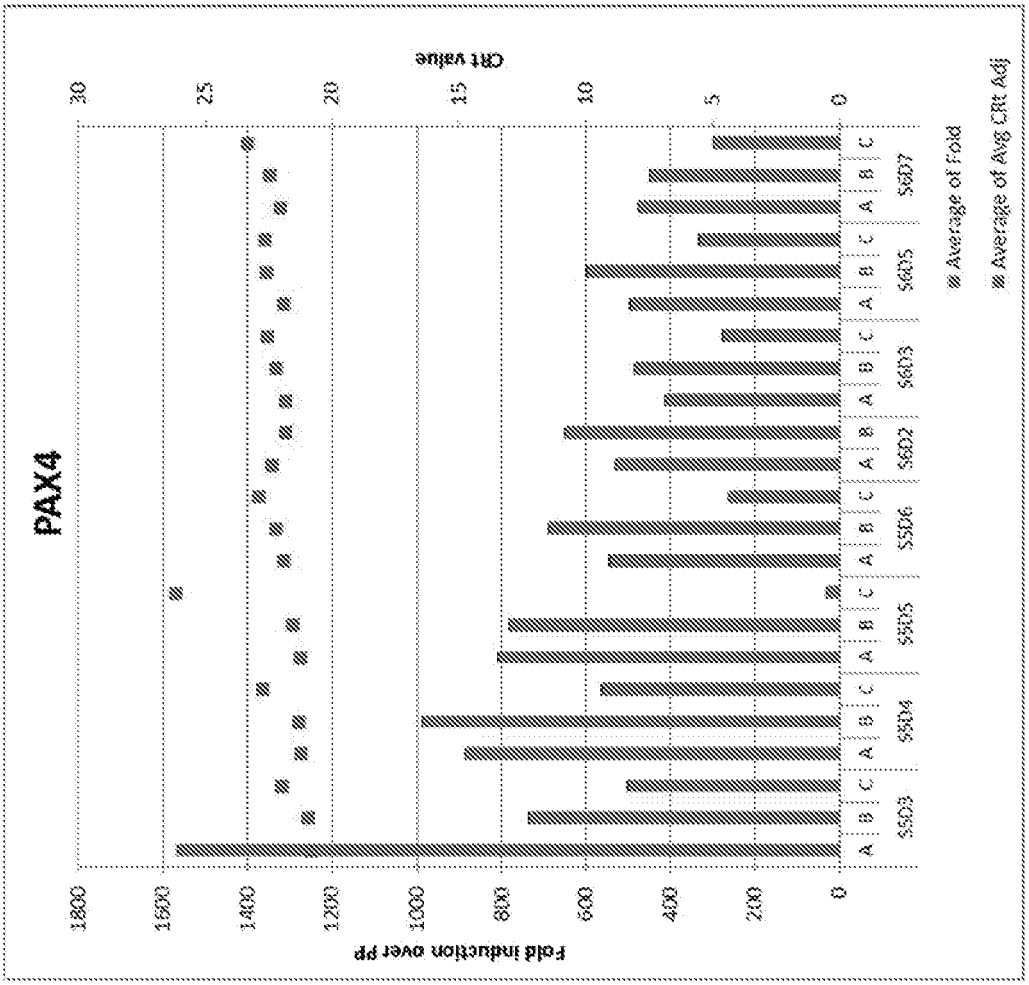

PAX4
Fold induction over PP
CRt value
1800
1600
1400
1200
1000
800
600
400
200
0
30
25
20
15
10
5
0
A B C A B C A B C A B C A B C A B C A B C A B C
S503 S504 S505 S506 S602 S603 S605 S607
Average of Fold
Average of Avg CRt Adj

Figure 3H

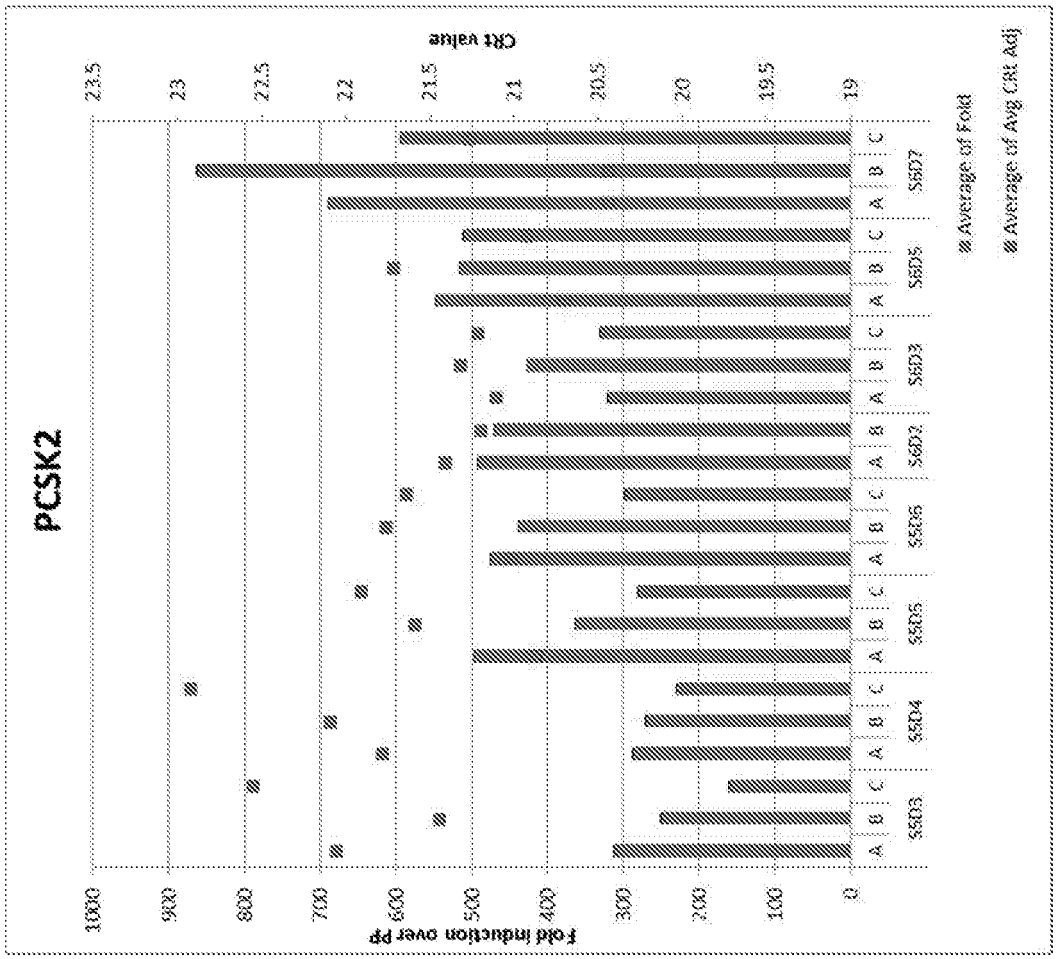

PCSK2
Fold induction over PP
Ct1 value
Average of Fold
Average of Avg Ct1 Adj
S5D3
S5D4
S5D5
S5D6
S6D2
S6D3
S6D5
S6D7

Figure 3I

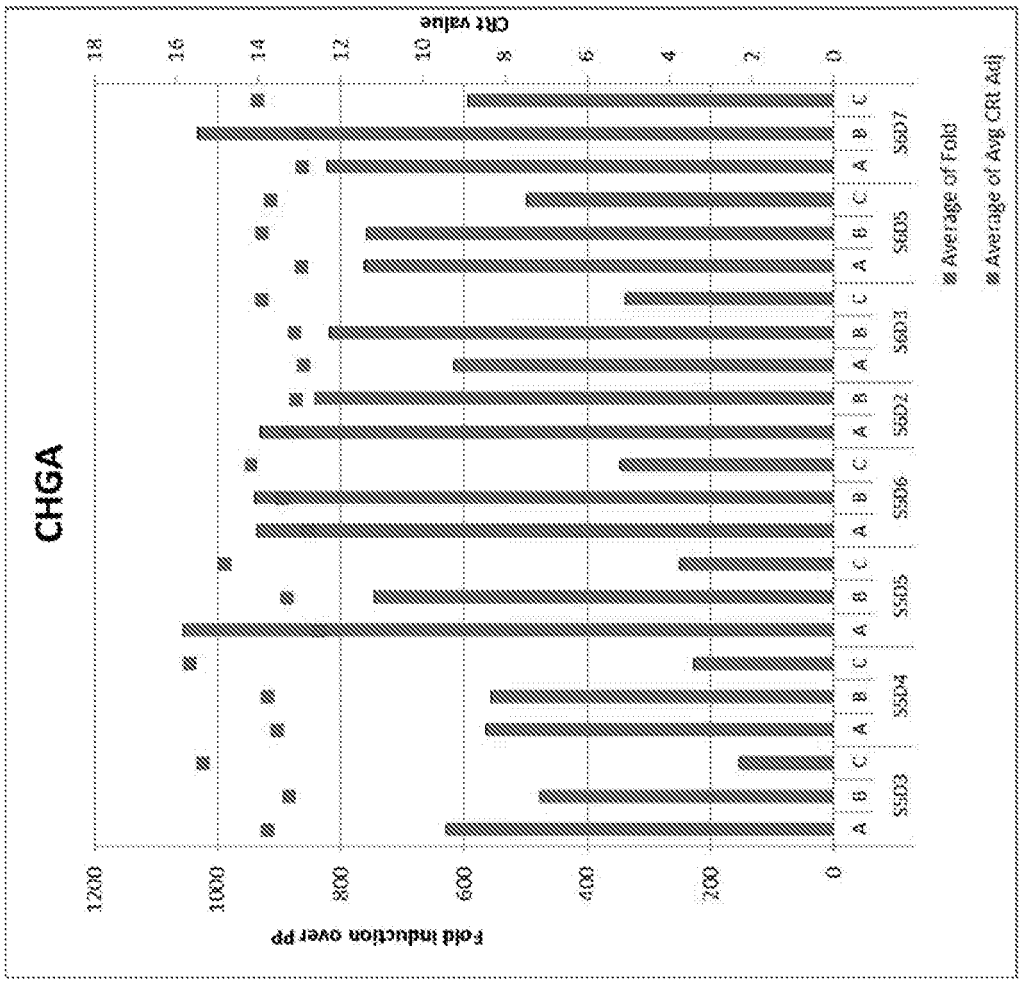

CHGA
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
SSD3
SSD4
SSD5
SSD6
SSD2
SSD1
SSD5
SSD7

Figure 3J

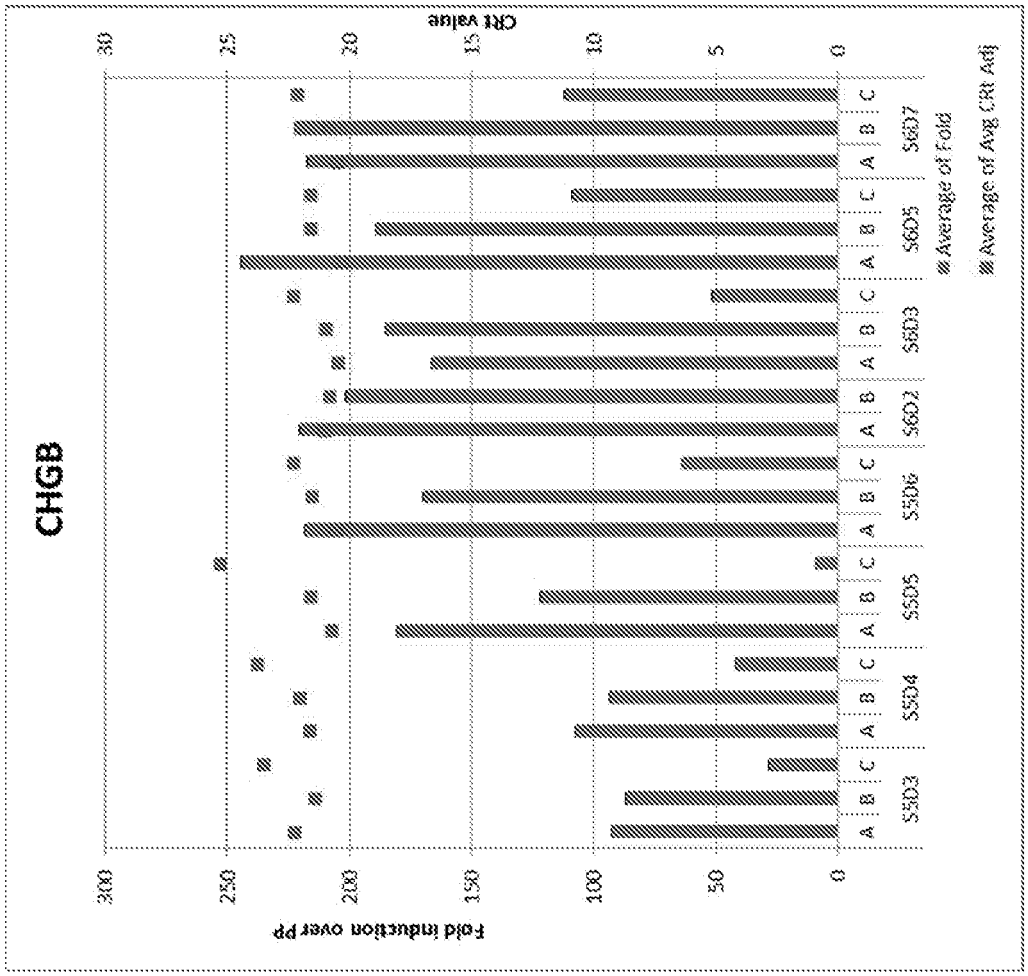

CHGB
Fold induction over PP
CRT value
Average of Fold
Average of Avg CRT Adj
S5D3
S5D4
S5D5
S5D6
S6D2
S6D3
S6D5
S6D7

Figure 3K

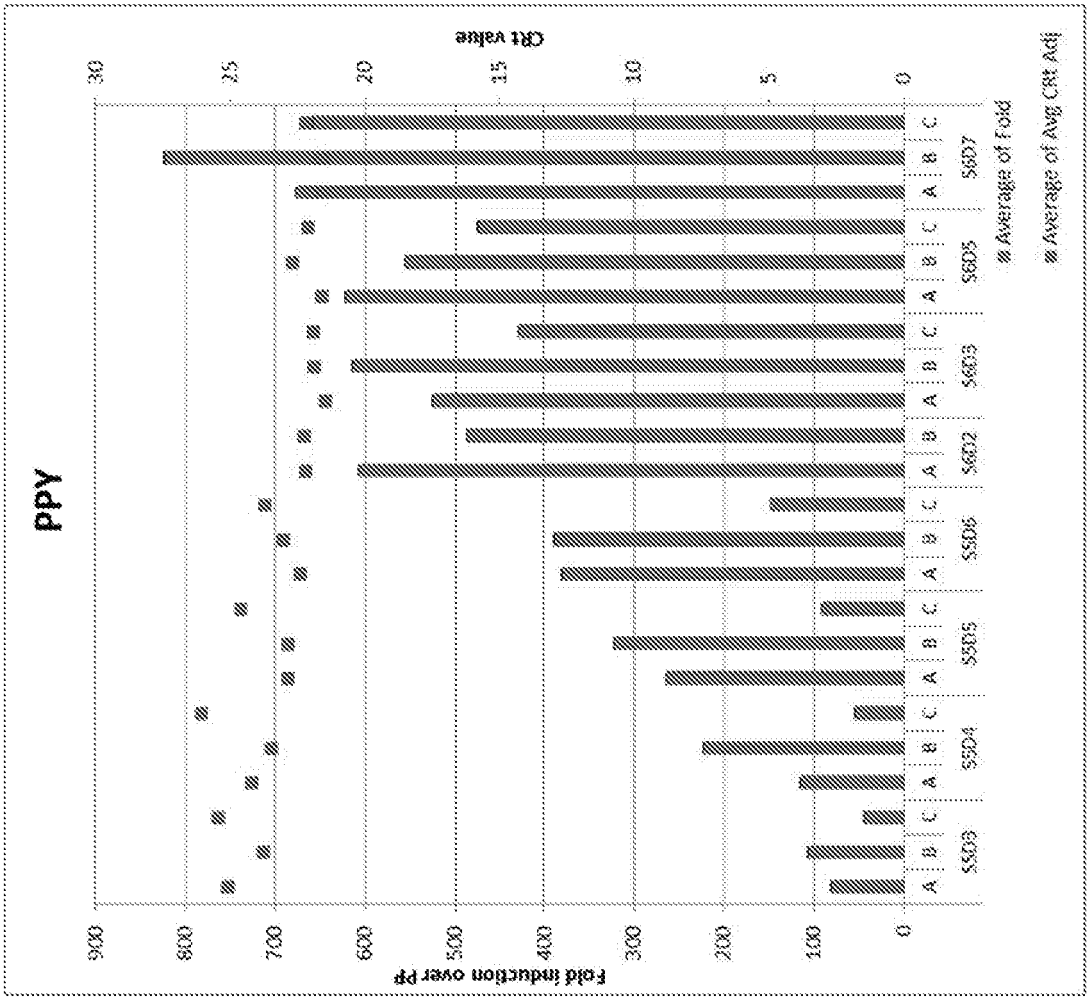

PPY
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S5D3
S5D4
S5D5
S5D6
S6D2
S6D3
S6D5
S6D7

Figure 3L

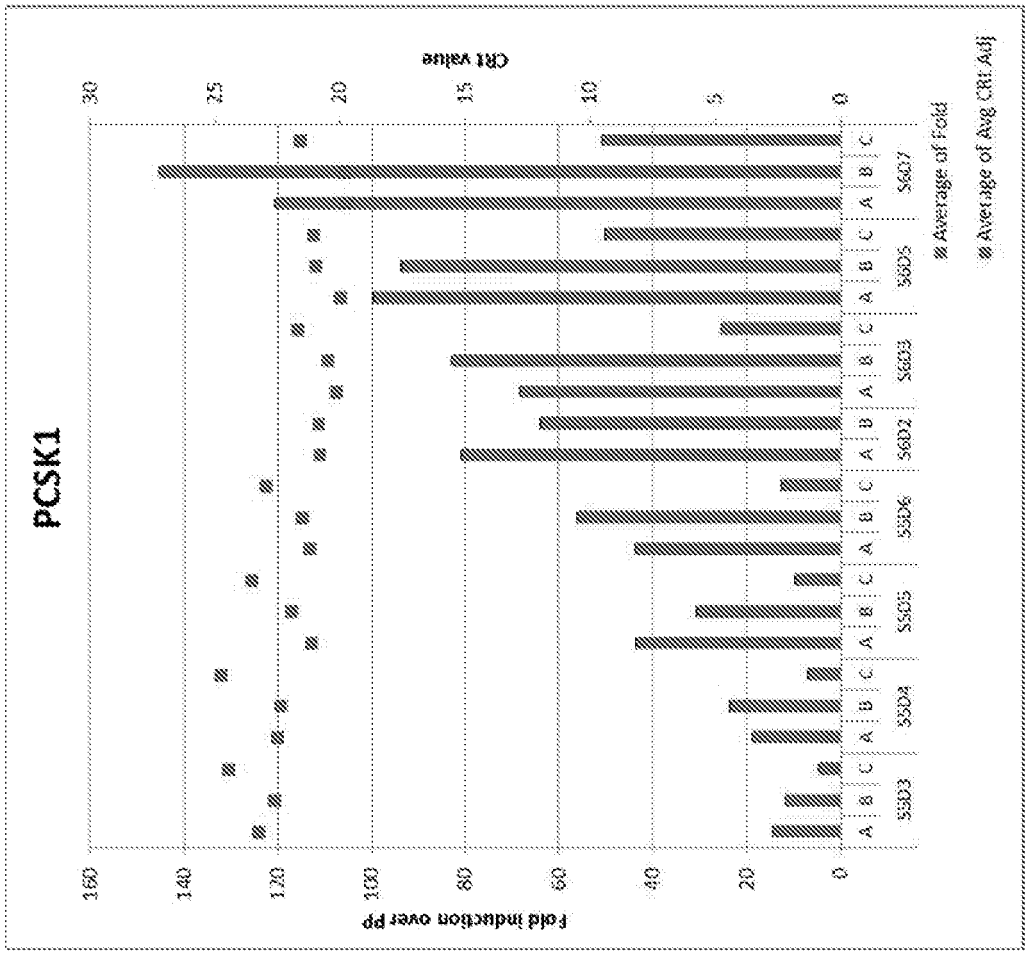

PCSK1
Fold induction over PP
CRI value
Average of Fold
Average of Avg CRI Adj
S6D3
S6D4
S6D5
S6D6
S6D2
S6D3
S6D5
S6D7

Figure 3M

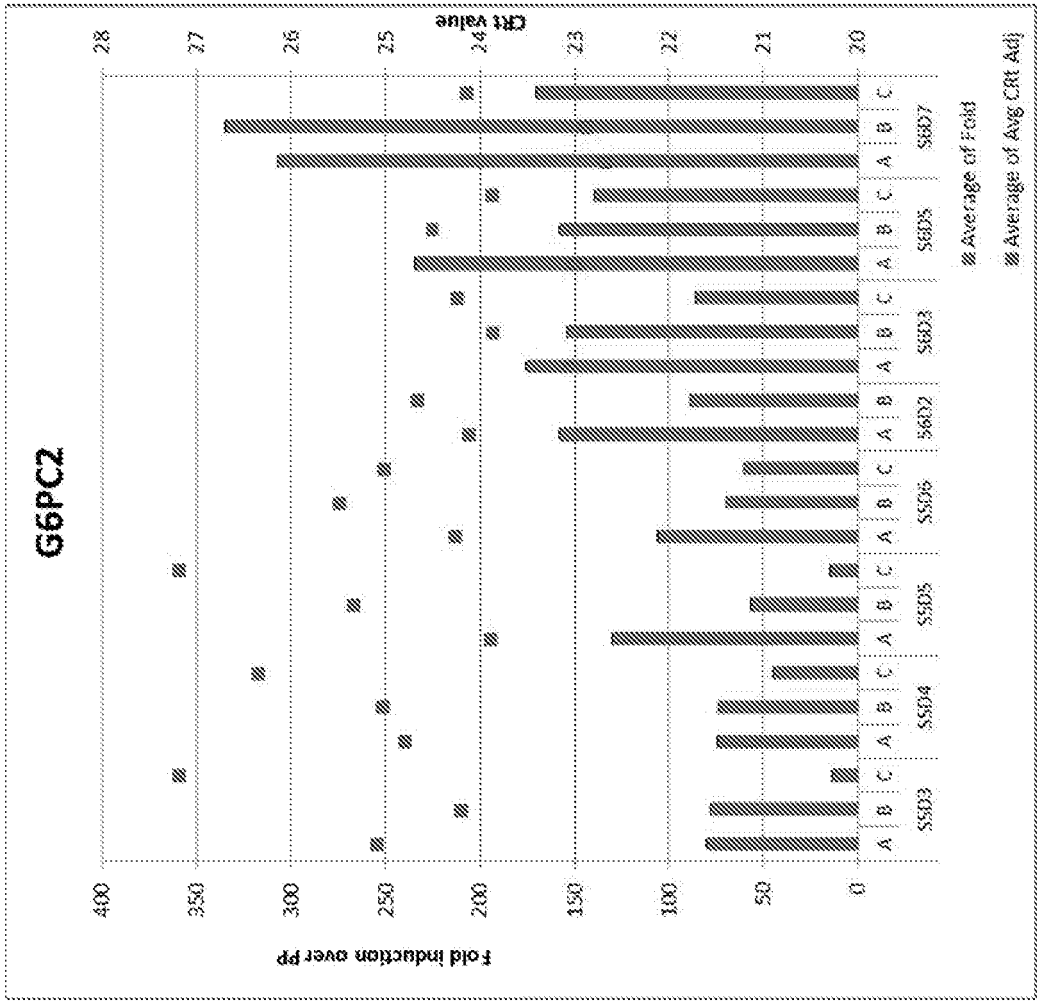

G6PC2
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
SSD3
SSD4
SSD5
SSD6
SSD2
SSD3
SSD5
SSD7

Figure 3N

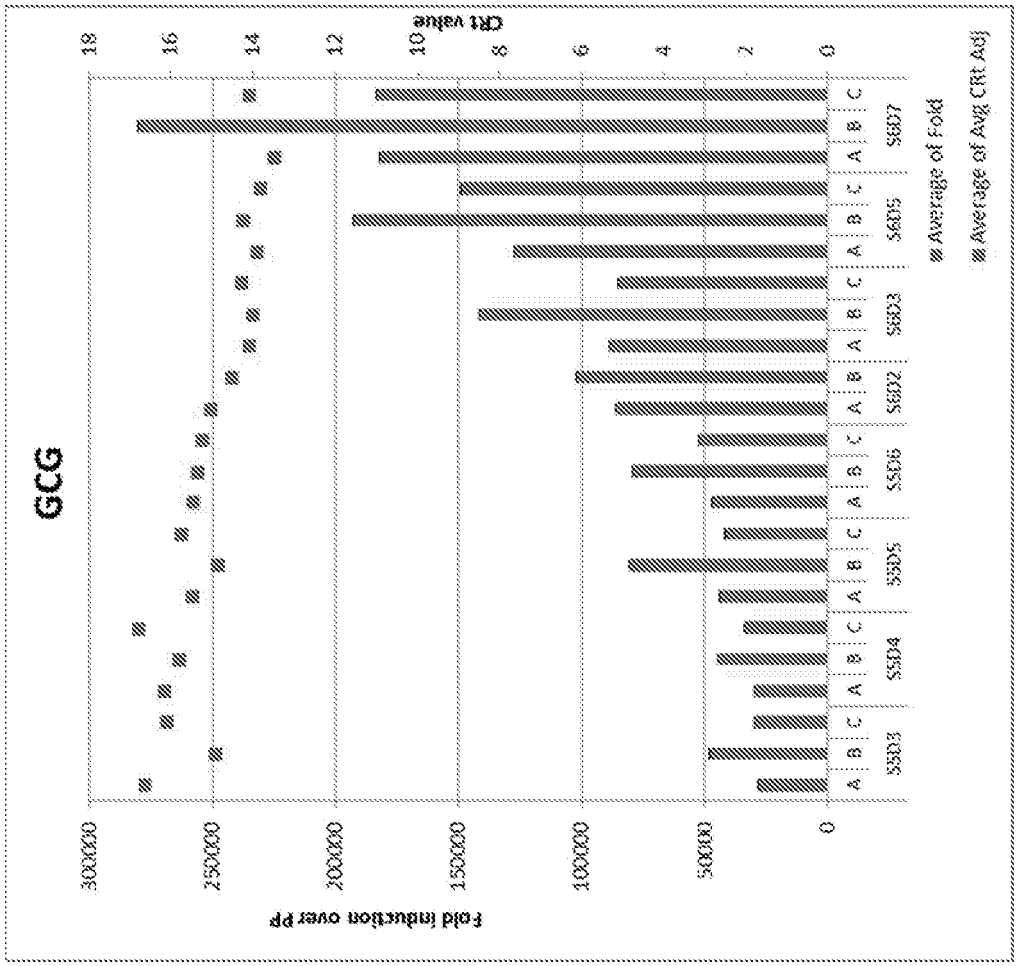

GCG
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S503
S504
S505
S506
S602
S603
S605
S607

Figure 3O

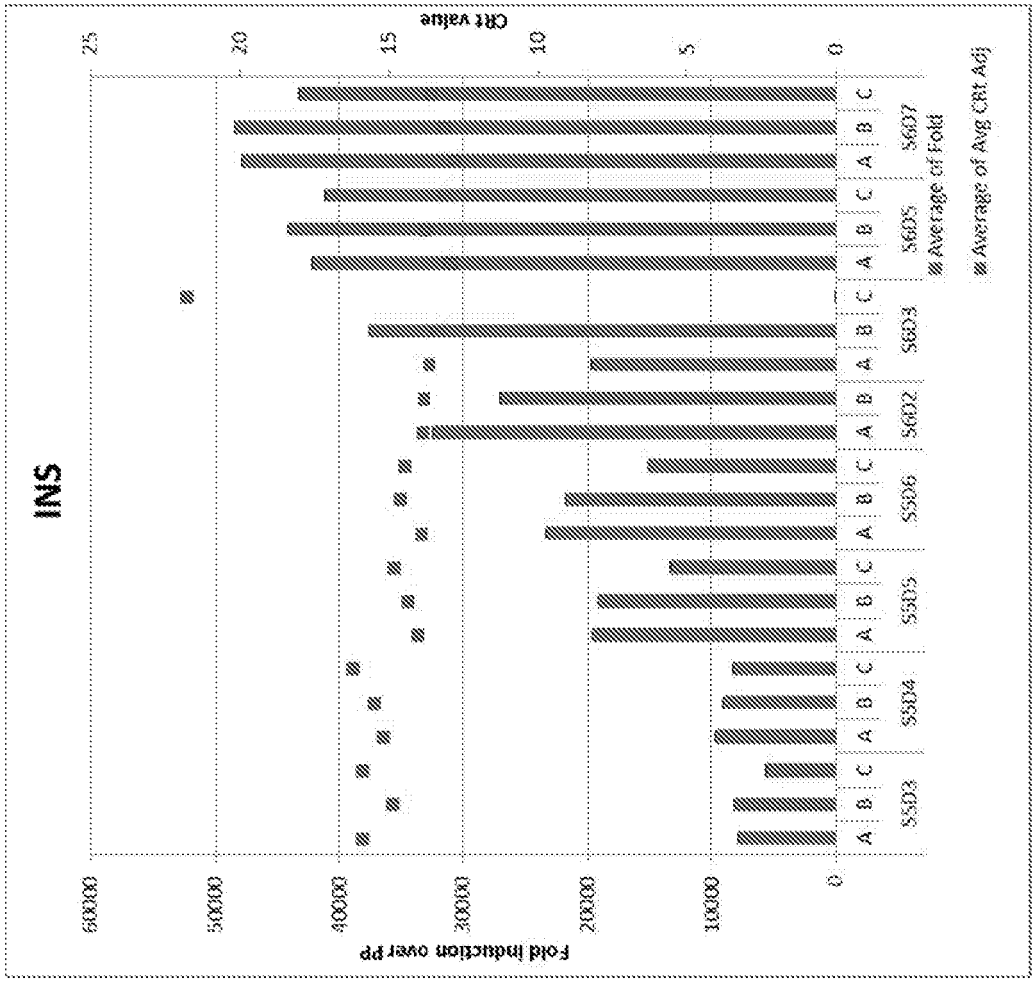

INS
Fold Induction over PP
60000
50000
40000
30000
20000
10000
0
CRT value
25
20
15
10
5
0
A B C A B C A B C A B C A B C A B C A B C A B C
S503 S504 S505 S506 S602 S603 S605 S607
Average of Avg CRT Adj
Average of Fold

Figure 4

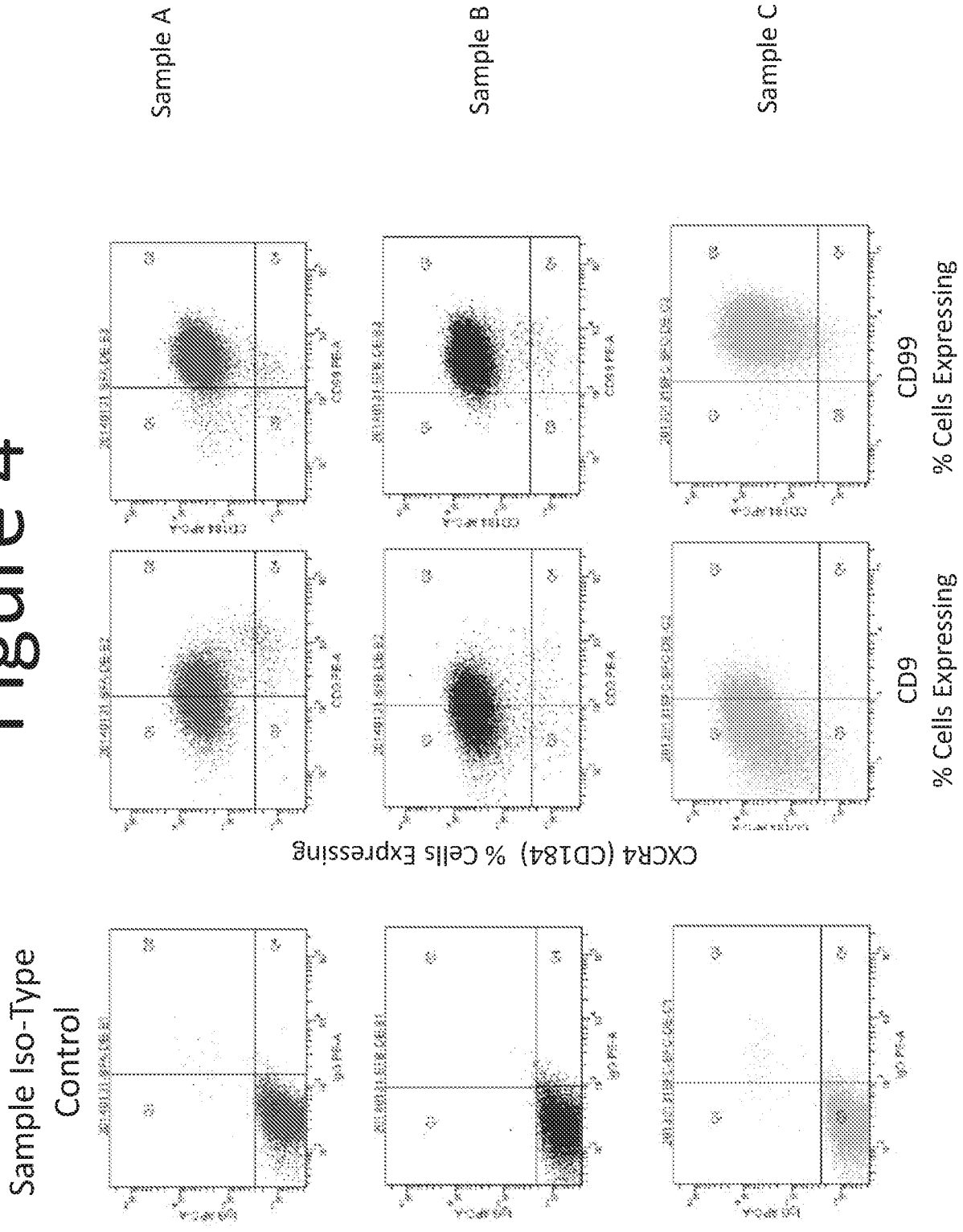

Sample A
Sample B
Sample C
Sample Iso-Type Control
CXCR4 (CD184) % Cells Expressing
CD9 % Cells Expressing
CD99 % Cells Expressing

Figure 5A

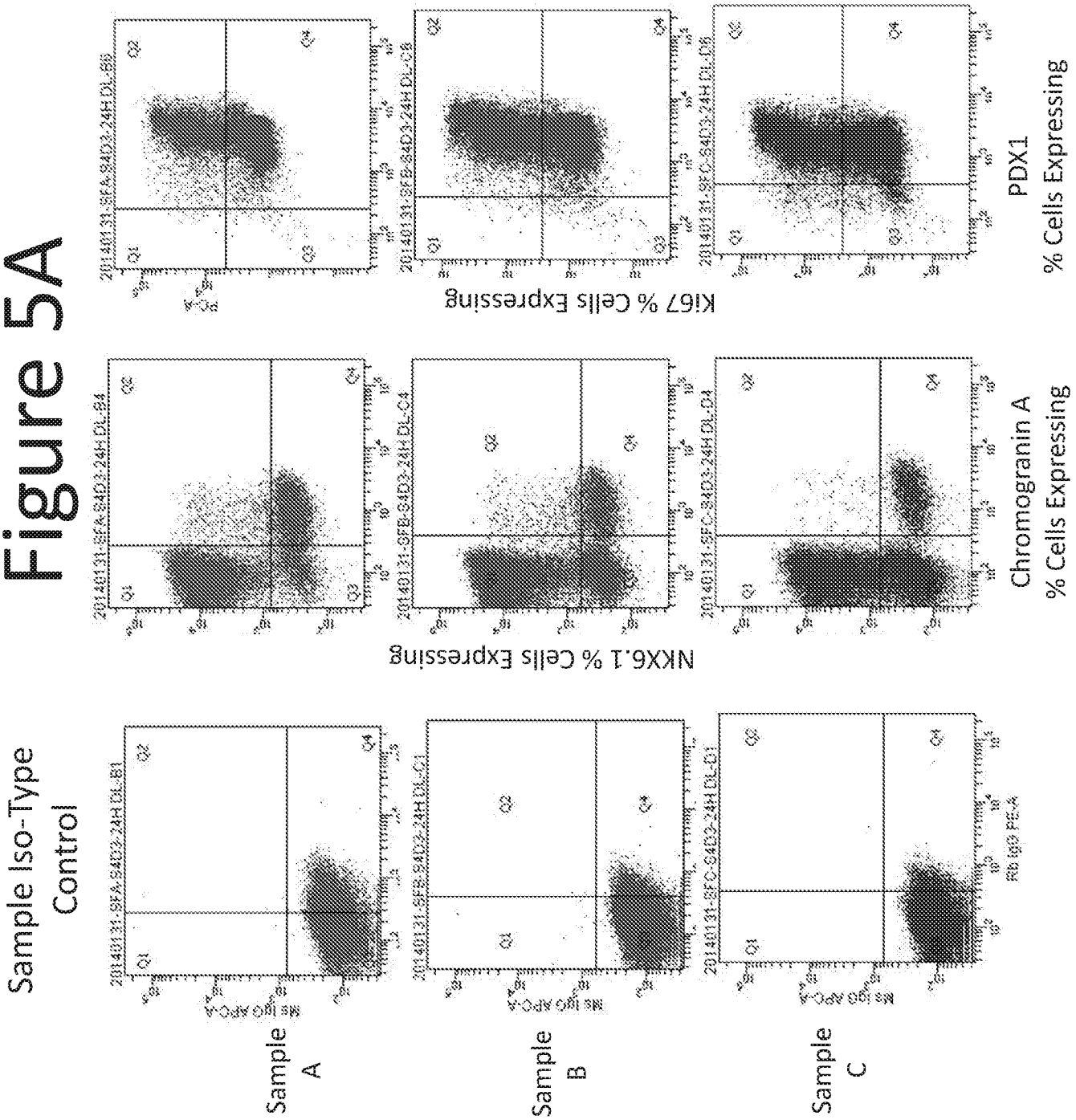

Sample Iso-Type Control
Sample A
Sample B
Sample C
NKX6.1 % Cells Expressing
Ki67 % Cells Expressing
Chromogranin A % Cells Expressing
PDX1 % Cells Expressing

Figure 5B

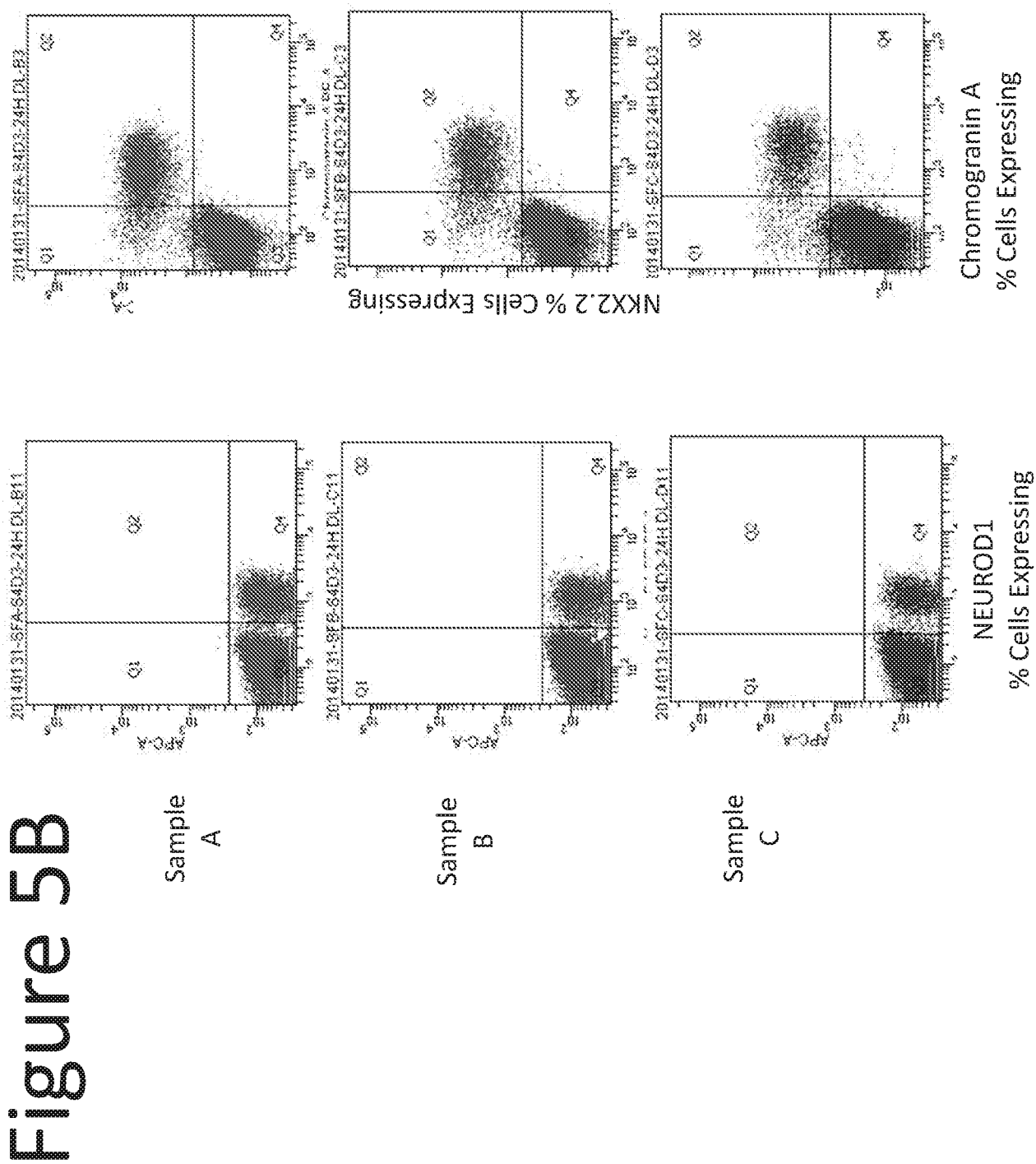

Sample A
Sample B
Sample C
NEUROD1
% Cells Expressing
NKX2.2 % Cells Expressing
Chromogranin A
% Cells Expressing

Figure 6A

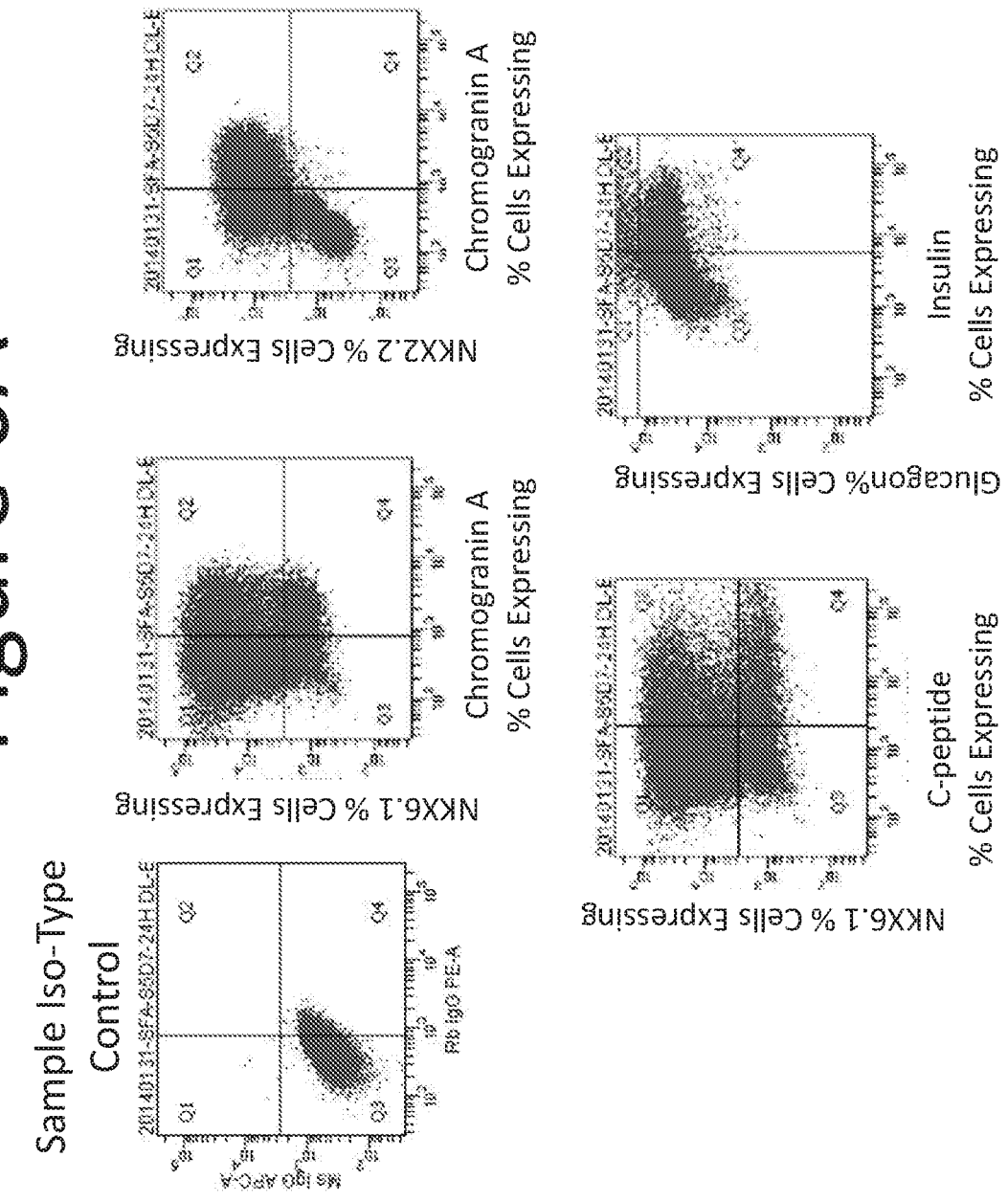

Sample Iso-Type Control
NKX6.1 % Cells Expressing
Chromogranin A
% Cells Expressing
NKX2.2 % Cells Expressing
Chromogranin A
% Cells Expressing
NKX6.1 % Cells Expressing
C-peptide
% Cells Expressing
Glucagon% Cells Expressing
Insulin
% Cells Expressing

Figure 6B

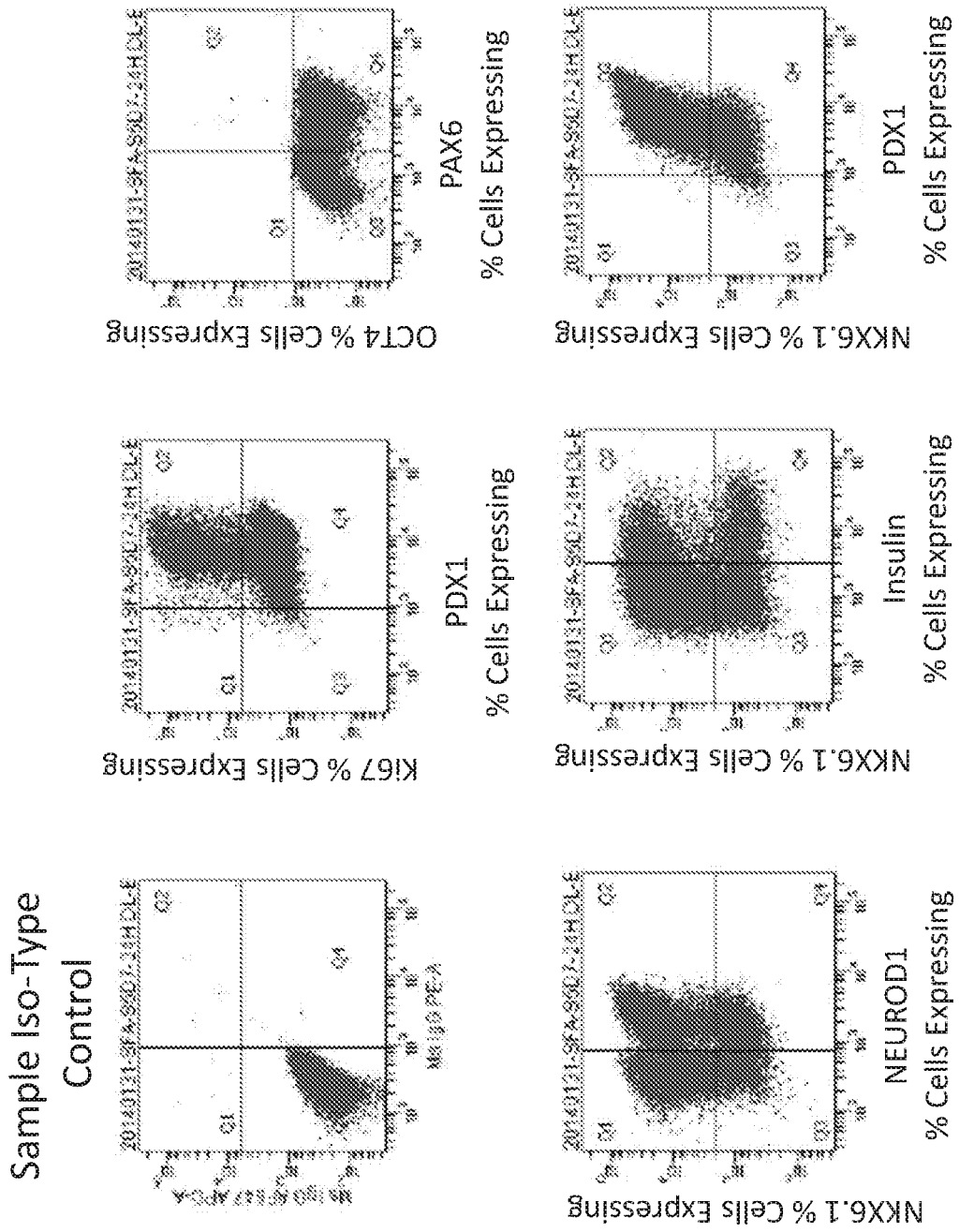

Sample Iso-Type Control
KI67 % Cells Expressing
PDX1
% Cells Expressing
OCT4 % Cells Expressing
PAX6
% Cells Expressing
NKX6.1 % Cells Expressing
NEUROD1
% Cells Expressing
NKX6.1 % Cells Expressing
Insulin
% Cells Expressing
NKX6.1 % Cells Expressing
PDX1
% Cells Expressing

Figure 7A

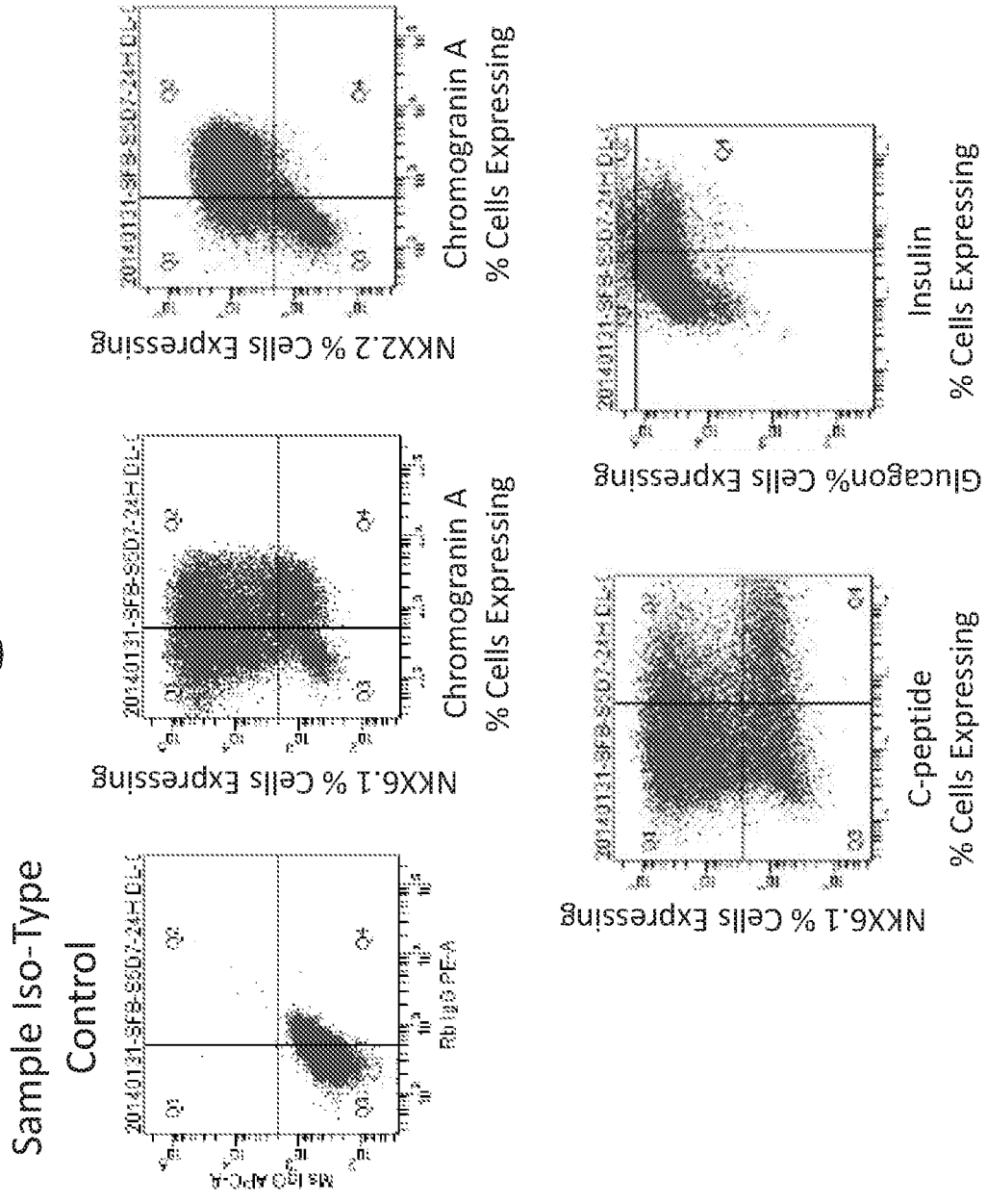

Sample Iso-Type Control
NKX6.1 % Cells Expressing
Chromogranin A % Cells Expressing
NKX2.2 % Cells Expressing
Chromogranin A % Cells Expressing
NKX6.1 % Cells Expressing
C-peptide % Cells Expressing
Glucagon% Cells Expressing
Insulin % Cells Expressing

Figure 7B

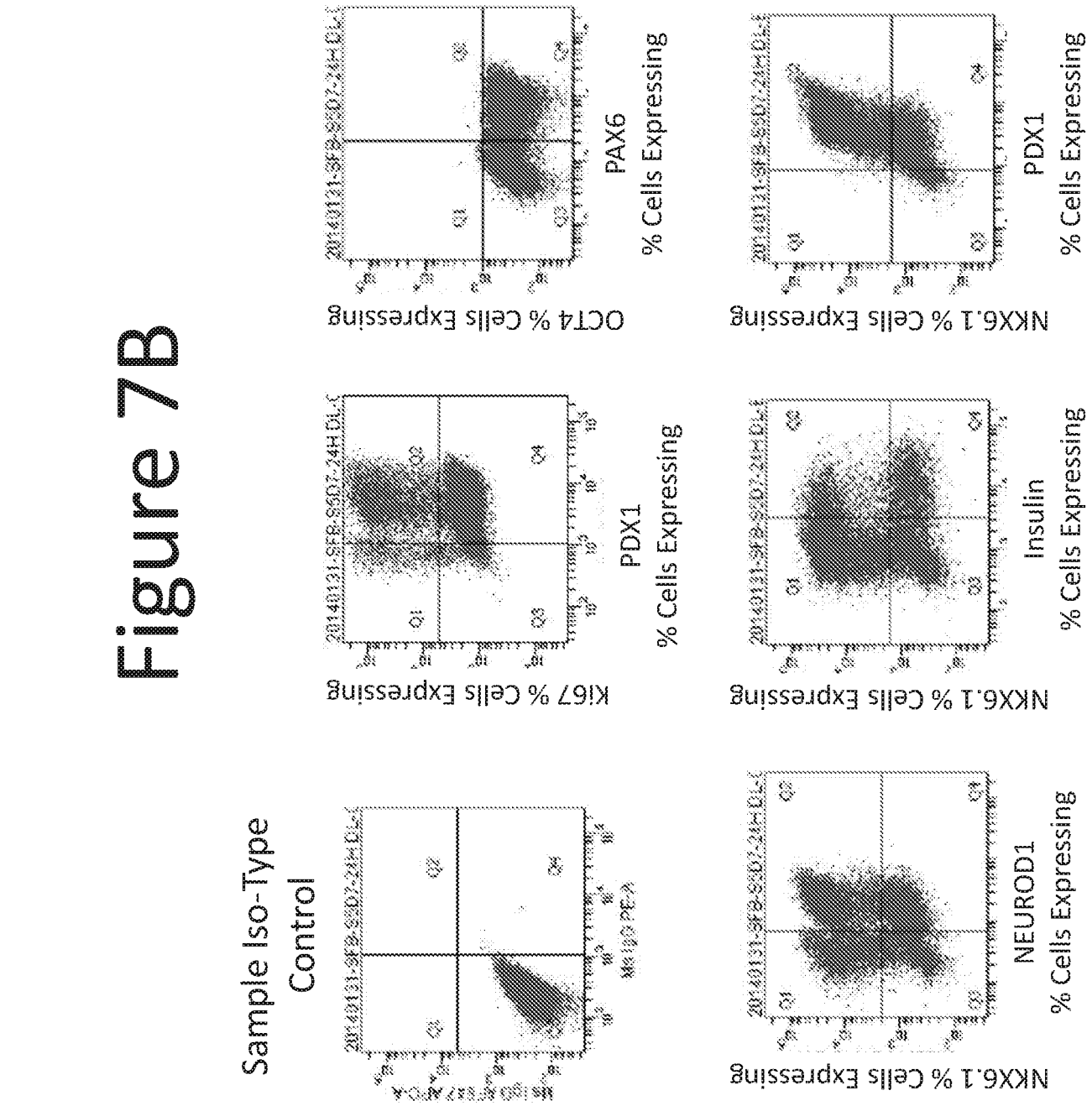

Sample Iso-Type Control
Ki67 % Cells Expressing
PDX1
% Cells Expressing
OCT4 % Cells Expressing
PAX6
% Cells Expressing
NKX6.1 % Cells Expressing
Insulin
% Cells Expressing
NKX6.1 % Cells Expressing
PDX1
% Cells Expressing
NKX6.1 % Cells Expressing
NEUROD1
% Cells Expressing

Figure 8A

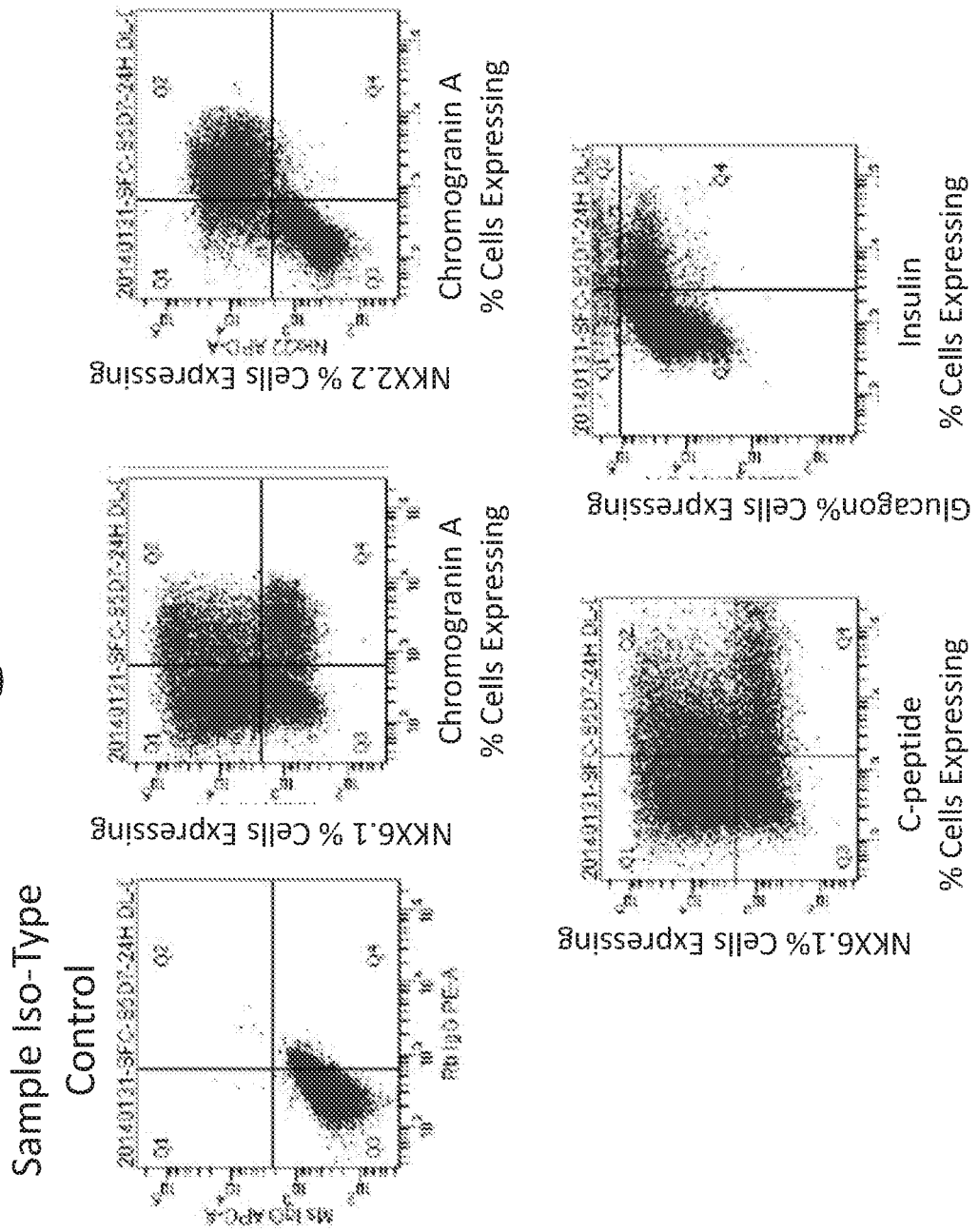

Sample Iso-Type Control
NKX6.1 % Cells Expressing
Chromogranin A % Cells Expressing
NKX2.2 % Cells Expressing
Chromogranin A % Cells Expressing
NKX6.1% Cells Expressing
C-peptide % Cells Expressing
Glucagon% Cells Expressing
Insulin % Cells Expressing

Figure 8B

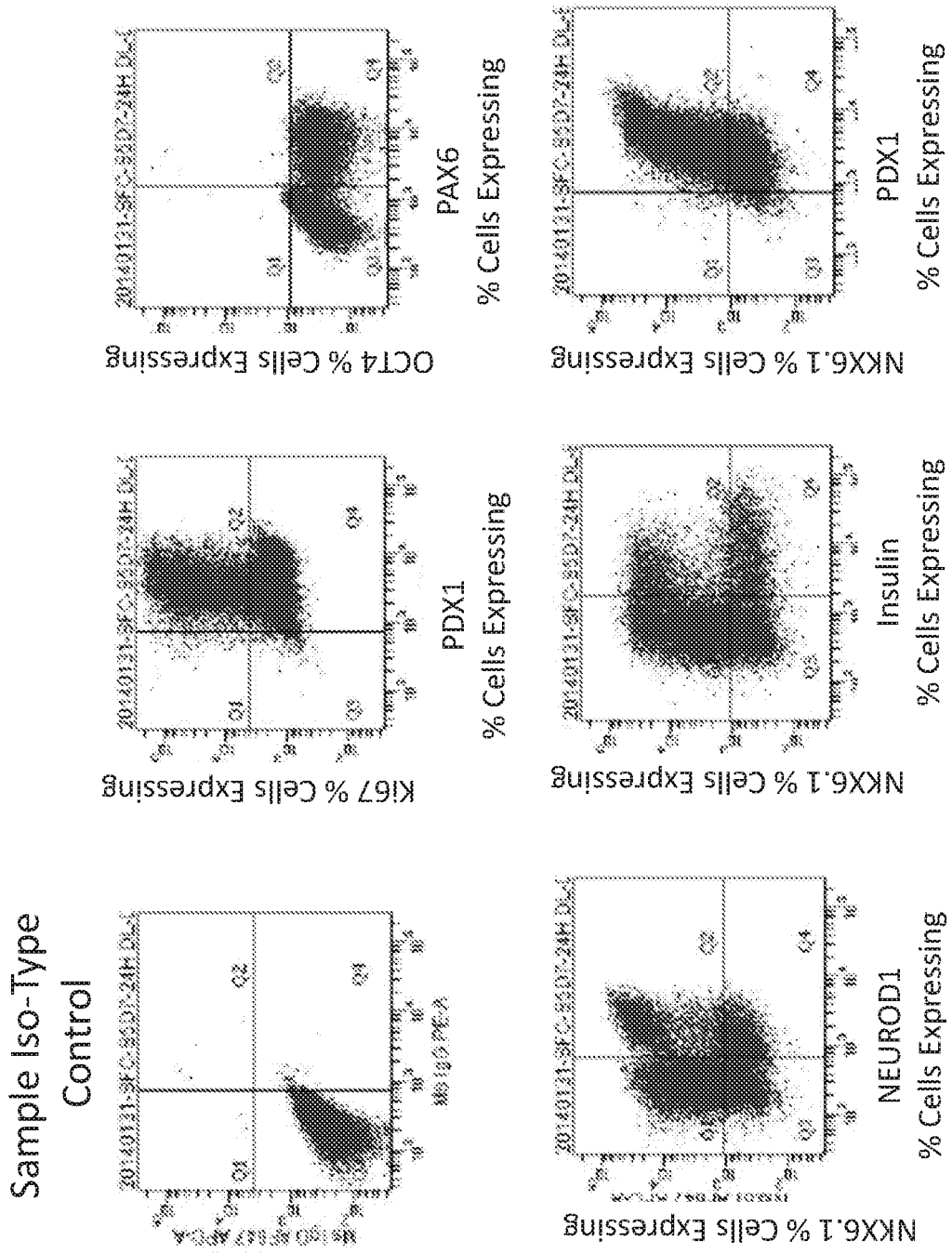

Sample Iso-Type Control
KI67 % Cells Expressing
PDX1
% Cells Expressing
OCT4 % Cells Expressing
PAX6
% Cells Expressing
NKX6.1 % Cells Expressing
NEUROD1
% Cells Expressing
NKX6.1 % Cells Expressing
Insulin
% Cells Expressing
NKX6.1 % Cells Expressing
PDX1
% Cells Expressing

Figure 9A

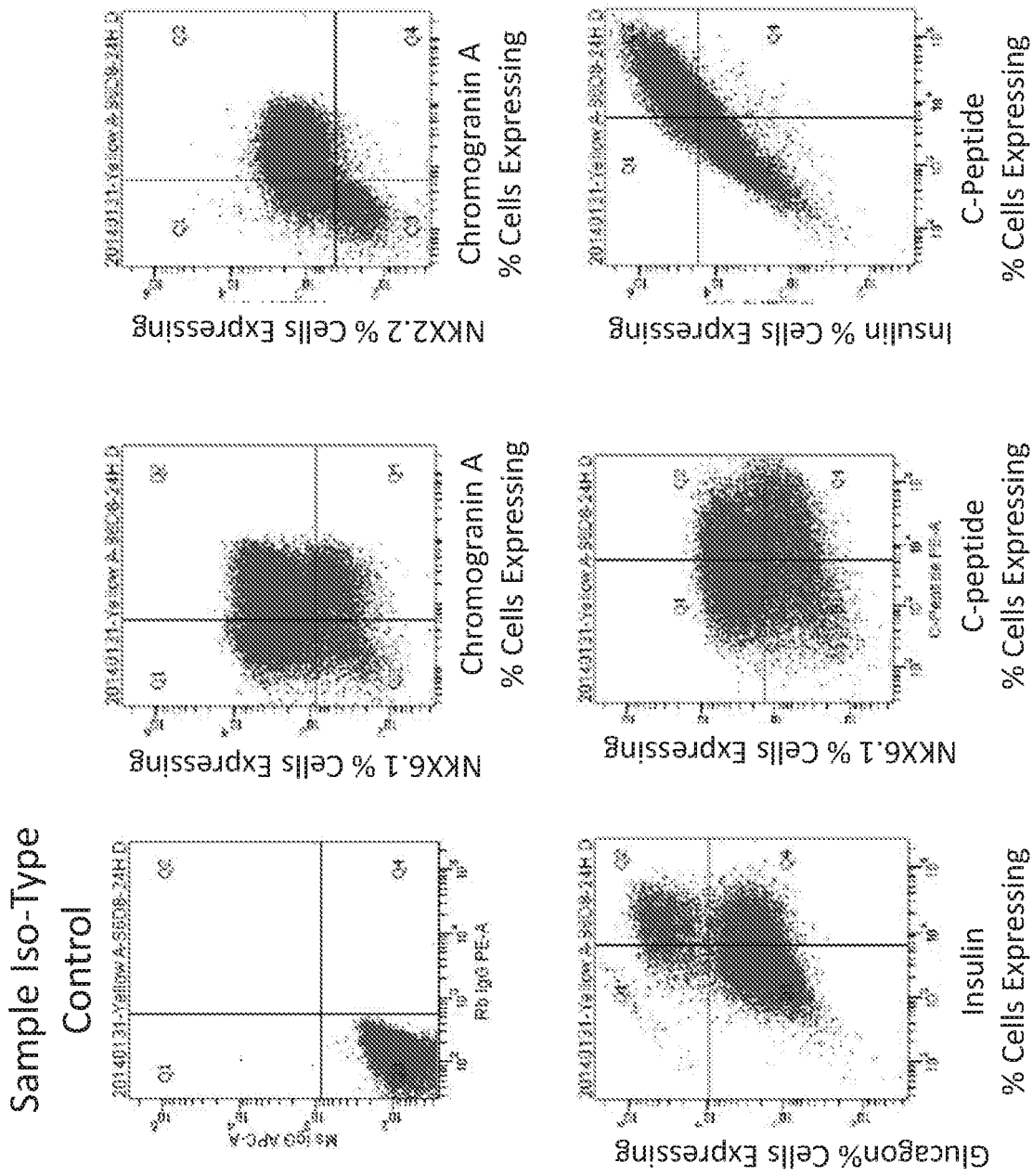

Sample Iso-Type Control
NKX6.1 % Cells Expressing
Chromogranin A % Cells Expressing
NKX6.1 % Cells Expressing
C-peptide % Cells Expressing
NKX2.2 % Cells Expressing
Chromogranin A % Cells Expressing
Glucagon% Cells Expressing
Insulin % Cells Expressing
NKX6.1 % Cells Expressing
C-Peptide % Cells Expressing

Figure 9B

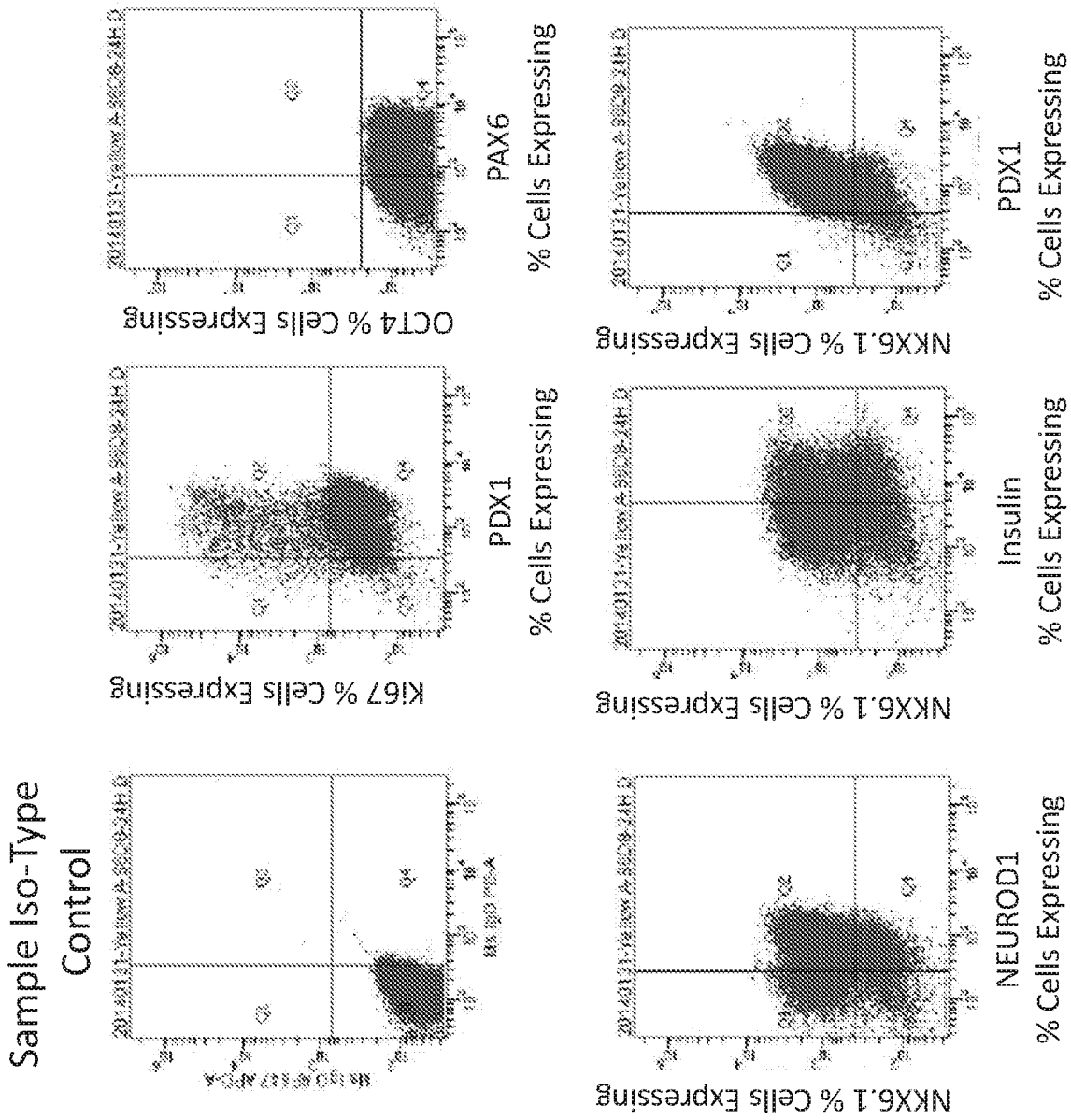

Sample Iso-Type Control
Ki67 % Cells Expressing
PDX1 % Cells Expressing
OCT4 % Cells Expressing
PAX6 % Cells Expressing
NKX6.1 % Cells Expressing
Insulin % Cells Expressing
NKX6.1 % Cells Expressing
PDX1 % Cells Expressing
NKX6.1 % Cells Expressing
NEUROD1 % Cells Expressing

Figure 10A

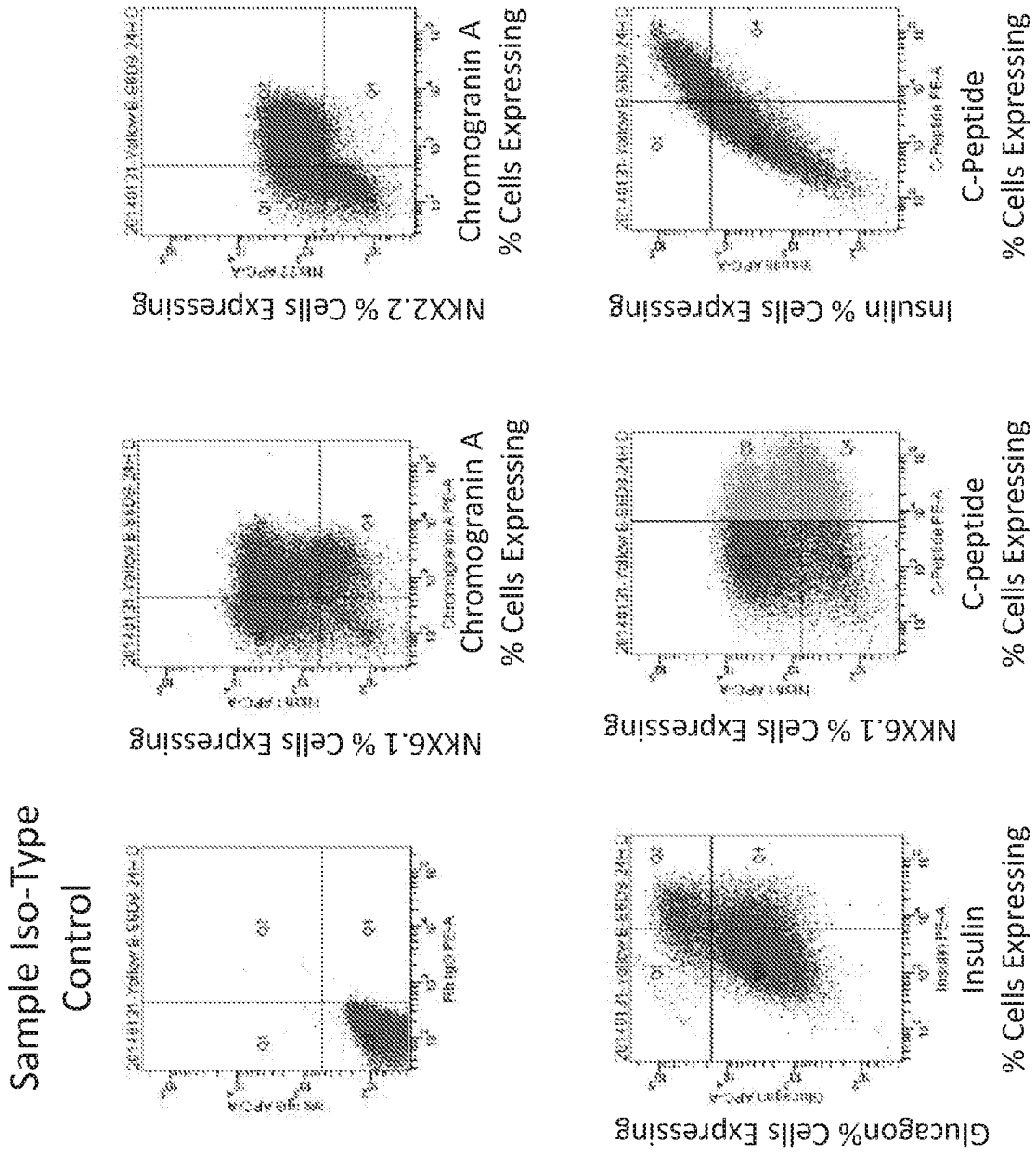

Sample Iso-Type Control
NKX6.1 % Cells Expressing
NKX2.2 % Cells Expressing
Glucagon% Cells Expressing
Insulin % Cells Expressing
Insulin % Cells Expressing
C-peptide % Cells Expressing
Chromogranin A % Cells Expressing
C-peptide % Cells Expressing
Chromogranin A % Cells Expressing

Figure 10B

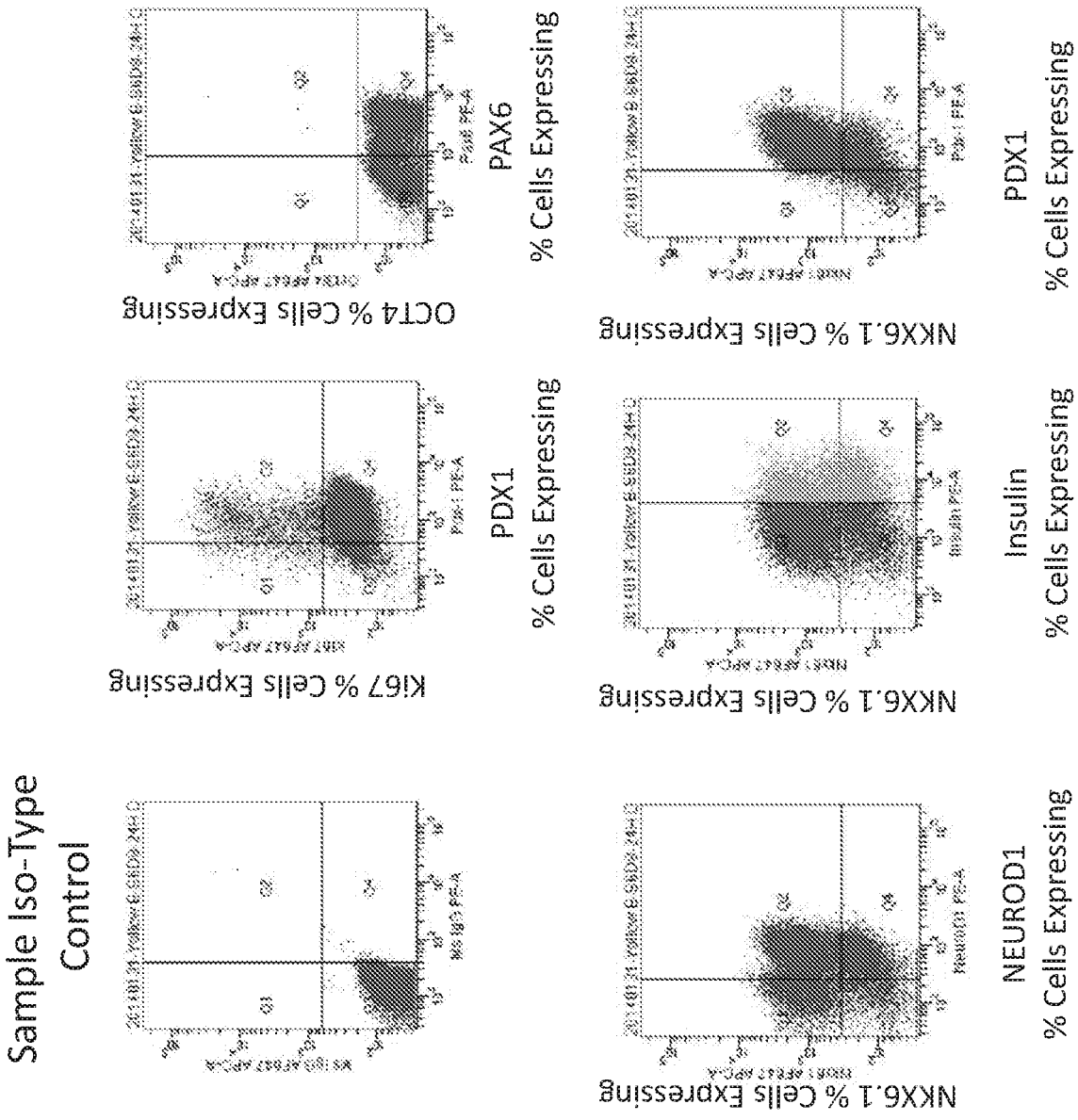

Sample Iso-Type Control
Ki67 % Cells Expressing
OCT4 % Cells Expressing
PAX6 % Cells Expressing
PDX1 % Cells Expressing
NKX6.1 % Cells Expressing
Insulin % Cells Expressing
NKX6.1 % Cells Expressing
PDX1 % Cells Expressing
NKX6.1 % Cells Expressing
NEUROD1 % Cells Expressing

Figure 11A

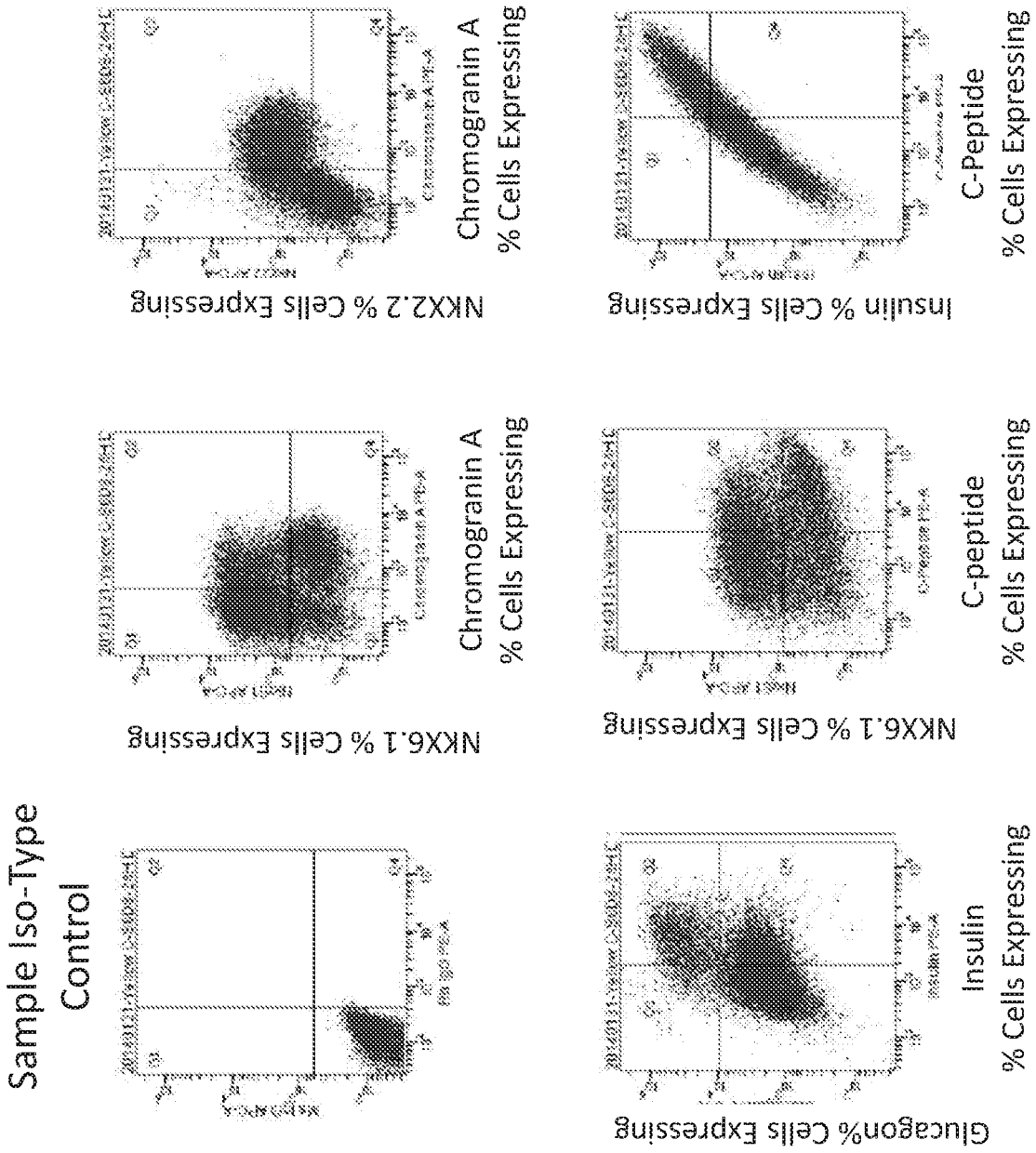

Sample Iso-Type Control
NKX6.1 % Cells Expressing
Chromogranin A % Cells Expressing
NKX2.2 % Cells Expressing
Chromogranin A % Cells Expressing
Glucagon% Cells Expressing
Insulin % Cells Expressing
NKX6.1 % Cells Expressing
C-peptide % Cells Expressing
Insulin % Cells Expressing
C-Peptide % Cells Expressing

Figure 11B

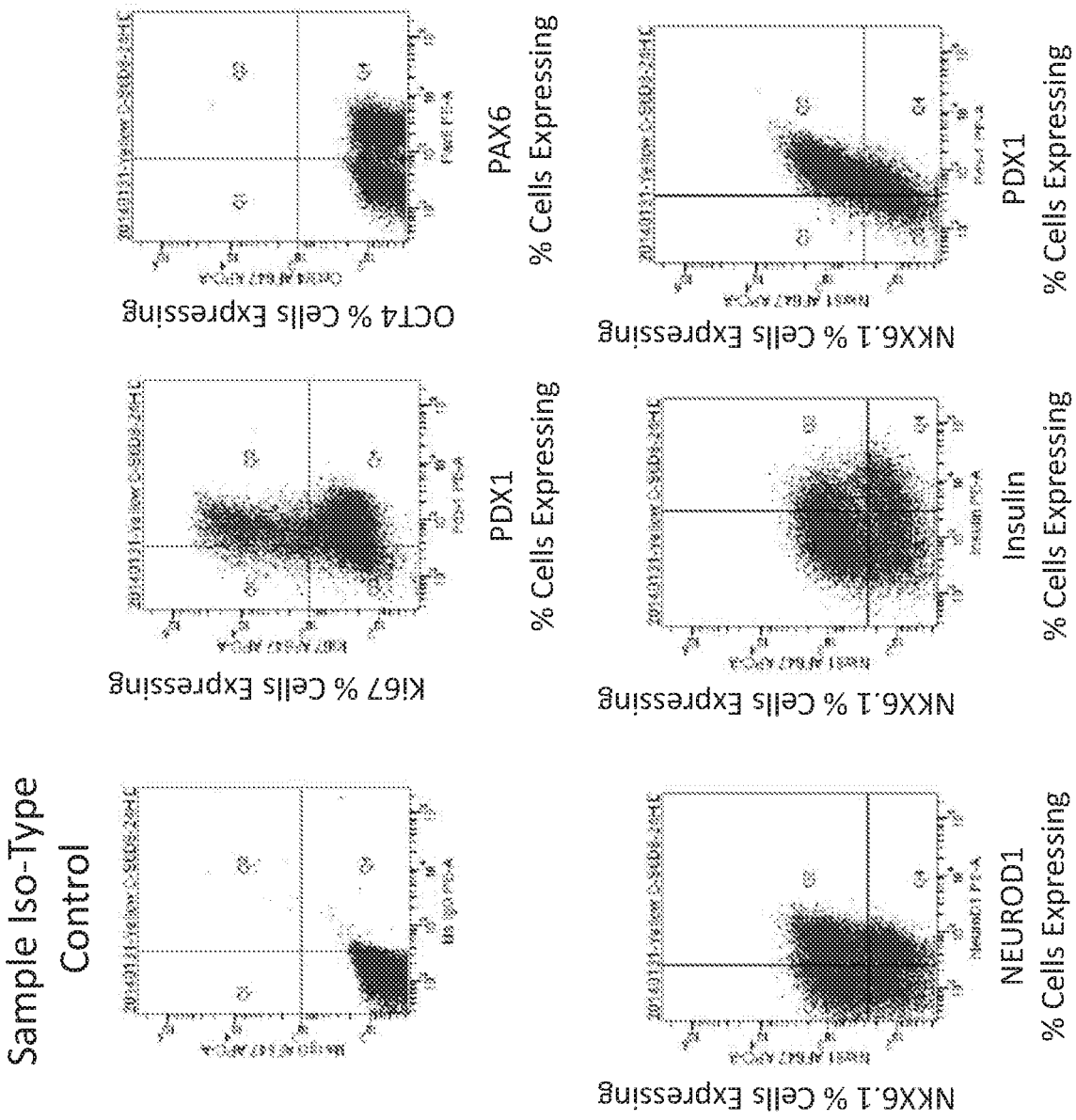
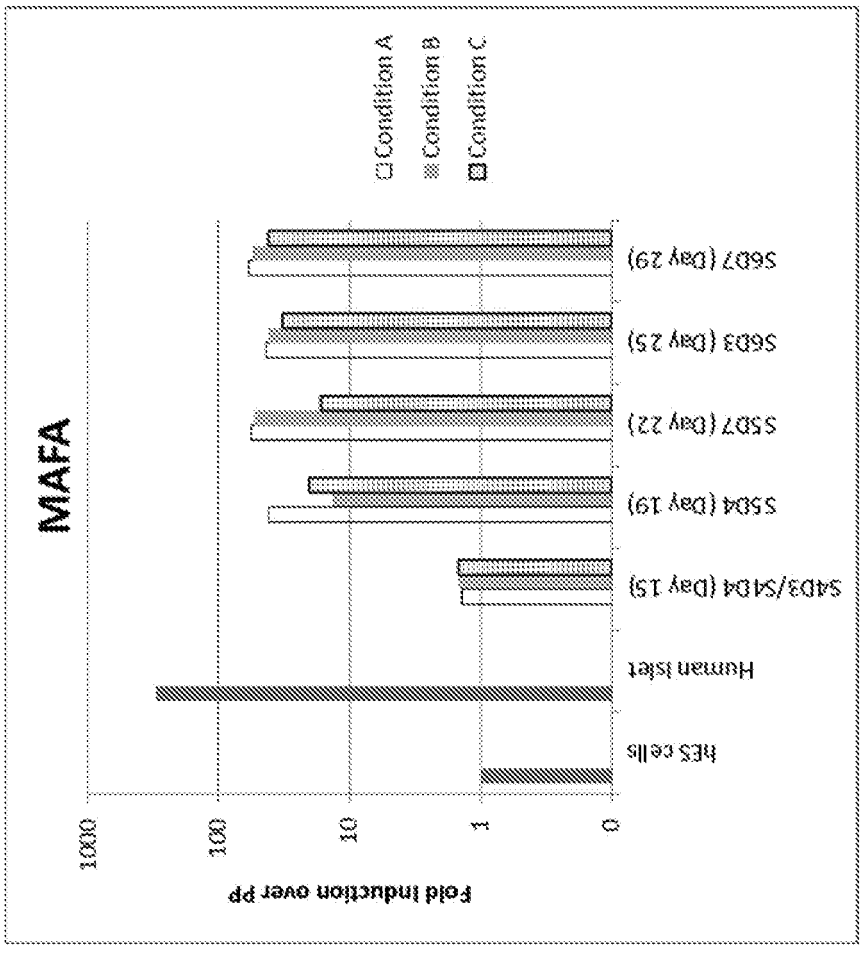

Sample Iso-Type Control
Ki67 % Cells Expressing
PDX1 % Cells Expressing
OCT4 % Cells Expressing
PAX6 % Cells Expressing
NKX6.1 % Cells Expressing
NEUROD1 % Cells Expressing
NKX6.1 % Cells Expressing
Insulin % Cells Expressing
NKX6.1 % Cells Expressing
PDX1 % Cells Expressing

Figure 12



	MAFA Ct	GAPDH Ct
WA01-H1 hES	30.2	17.5
Human Islets	23.2	18.8
Condition A S4D3	32.5	20.3
Condition B S4D3	31.6	19.4
Condition C S4D4	32.3	20.2
Condition A S5D4	26.4	19.5
Condition B S5D4	26.6	19.6
Condition C S5D4	27.7	19.1
Condition A S5D7	26.6	19.3
Condition B S5D7	26.7	19.3
Condition C S5D7	26.8	19.1
Condition A S6D3	27.0	19.7
Condition B S6D3	28.2	19.3
Condition C S6D3	28.5	20.1
Condition A S6D7	25.7	18.9
Condition B S6D7	26.0	19.0
Condition C S6D7	26.7	19.4

Figure 13

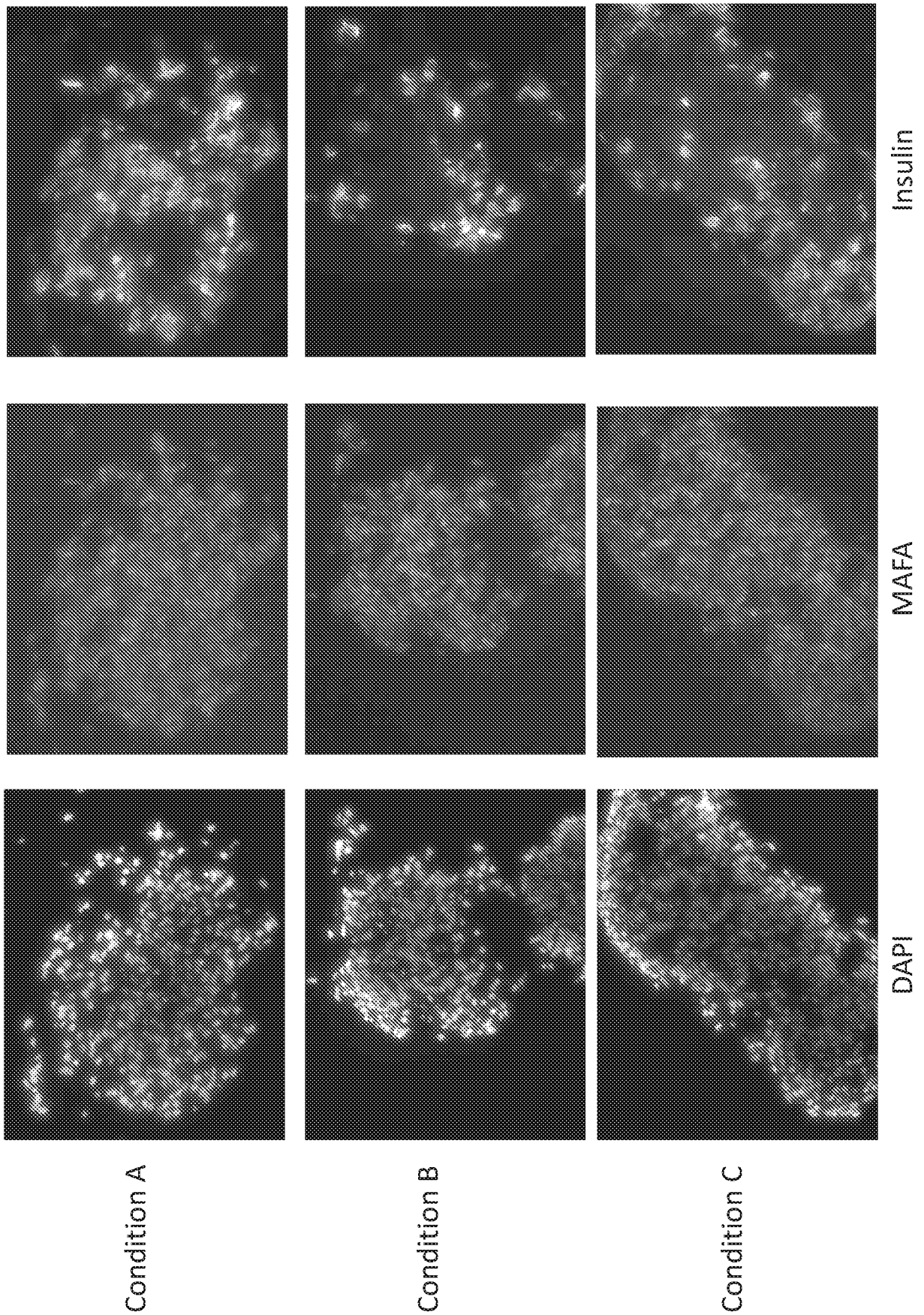


Figure 14

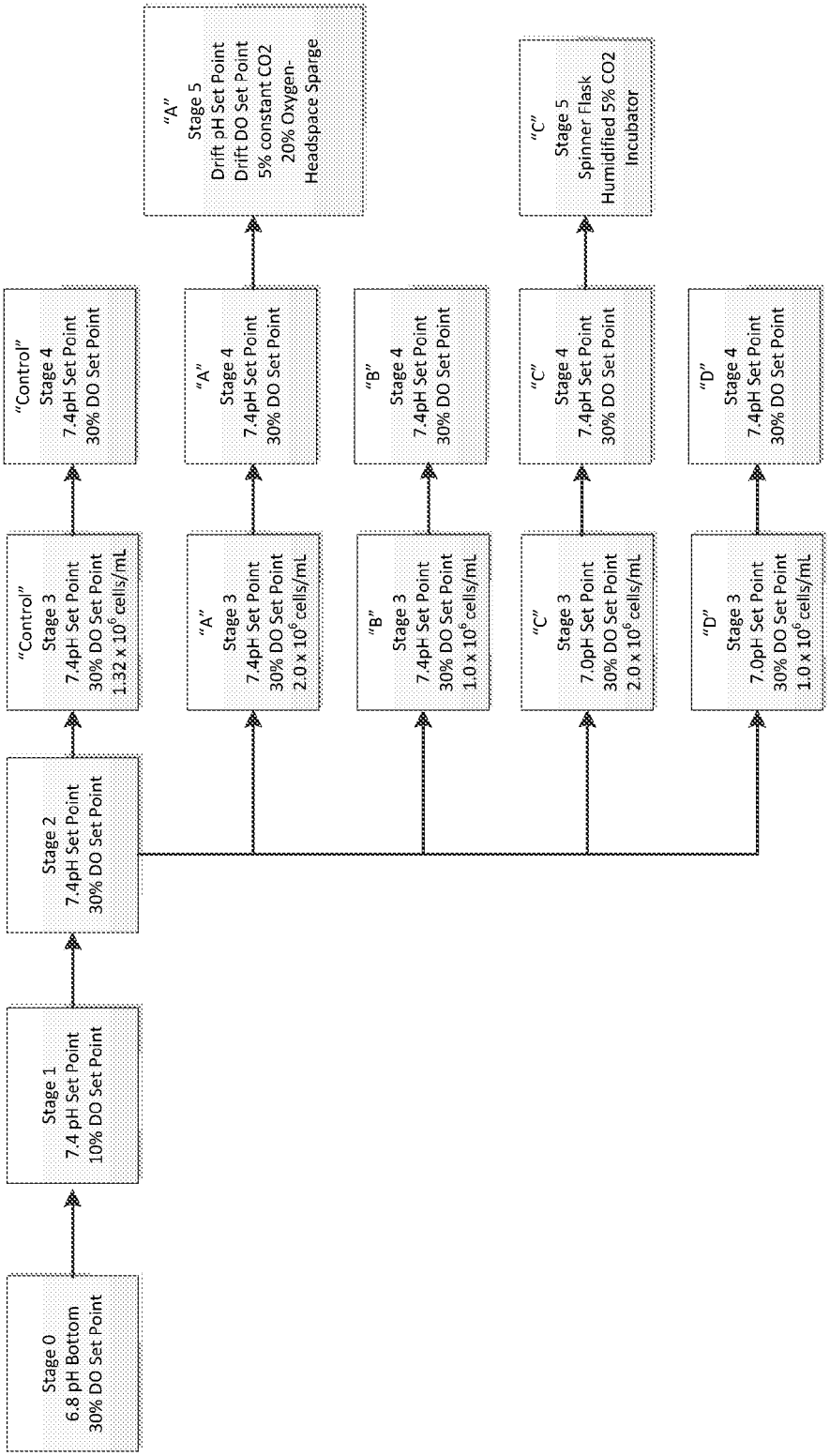

Stage 0
6.8 pH Bottom
30% DO Set Point
Stage 1
7.4 pH Set Point
10% DO Set Point
Stage 2
7.4pH Set Point
30% DO Set Point
"Control"
Stage 3
7.4pH Set Point
30% DO Set Point
1.32 x 10^6 cells/mL
"A"
Stage 3
7.4pH Set Point
30% DO Set Point
2.0 x 10^6 cells/mL
"B"
Stage 3
7.4pH Set Point
30% DO Set Point
1.0 x 10^6 cells/mL
"C"
Stage 3
7.0pH Set Point
30% DO Set Point
2.0 x 10^6 cells/mL
"D"
Stage 3
7.0pH Set Point
30% DO Set Point
1.0 x 10^6 cells/mL
"Control"
Stage 4
7.4pH Set Point
30% DO Set Point
"A"
Stage 4
7.4pH Set Point
30% DO Set Point
"B"
Stage 4
7.4pH Set Point
30% DO Set Point
"C"
Stage 4
7.4pH Set Point
30% DO Set Point
"D"
Stage 4
7.4pH Set Point
30% DO Set Point
"A"
Stage 5
Drift pH Set Point
Drift DO Set Point
5% constant CO2
20% Oxygen-
Headspace Sparge
"C"
Stage 5
Spinner Flask
Humidified 5% CO2
Incubator

Figure 15A

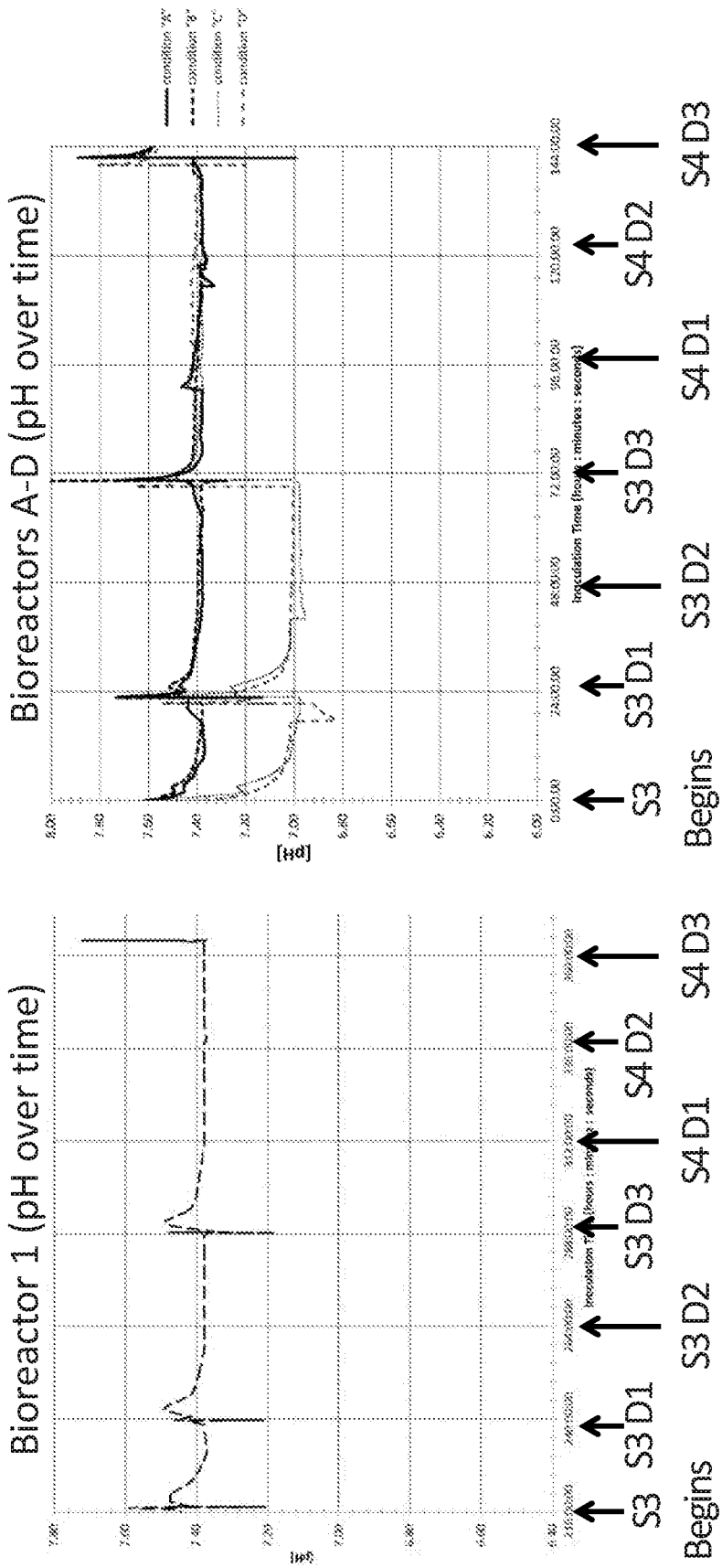

Bioreactors A-D (pH over time)
Bioreactor 1 (pH over time)
S3
S3 D1
S3 D2
S3 D3
S4 D1
S4 D2
S4 D3
Begins

Figure 15B

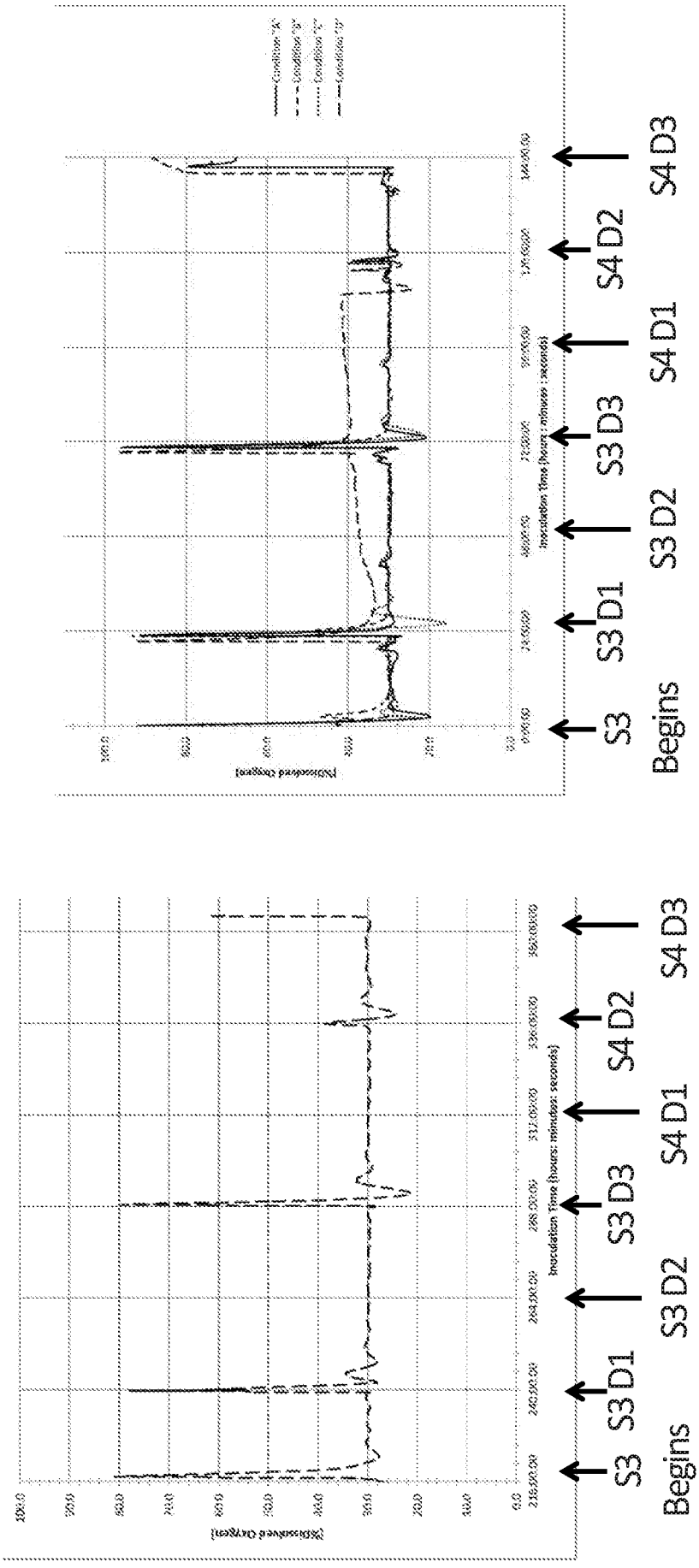

Bioreactor 1 (Dissolved Oxygen)
Bioreactors A-D (Dissolved Oxygen)
Begins
S3
S3 D1
S3 D2
S3 D3
S4 D1
S4 D2
S4 D3

Figure 16A

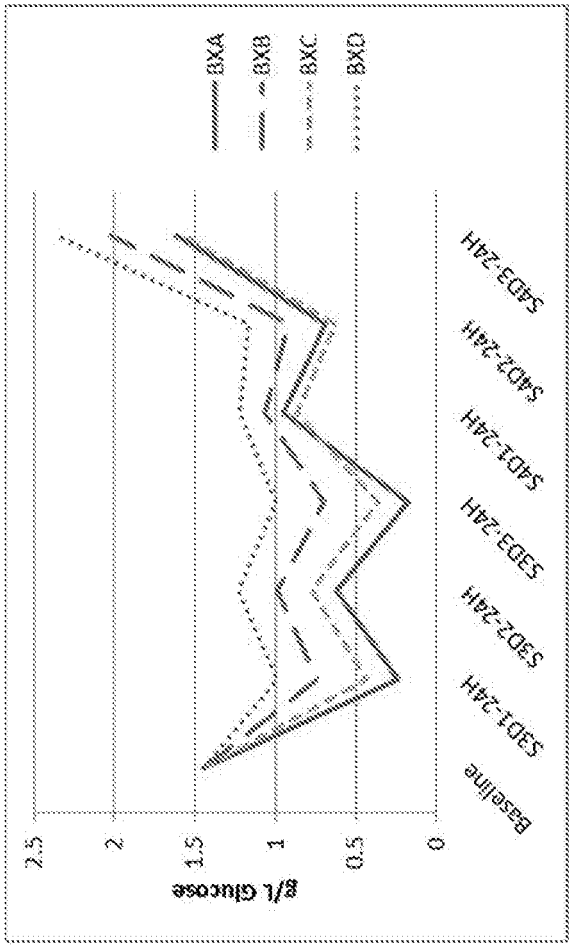

BXA
BXB
BXC
BXD
g/L Glucose
2.5
2
1.5
1
0.5
0
Baseline
S3D1-24H
S3D2-24H
S3D3-24H
S4D1-24H
S4D2-24H
S4D3-24H

Figure 16B

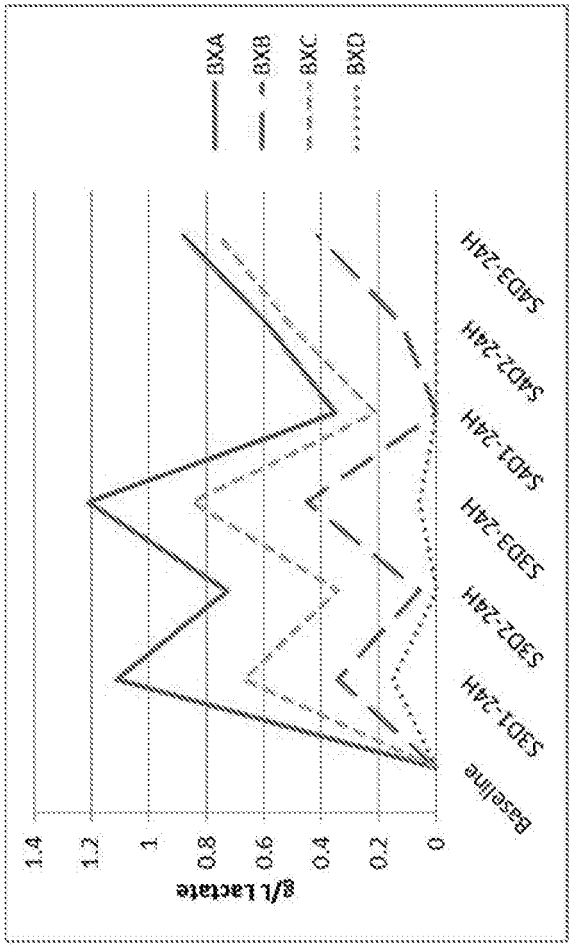

BXA
BXB
BXC
BXD
g/L Lactate
1.4
1.2
1
0.8
0.6
0.4
0.2
0
Baseline
S3D1-24H
S3D2-24H
S3D3-24H
S4D1-24H
S4D2-24H
S4D3-24H

Figure 17

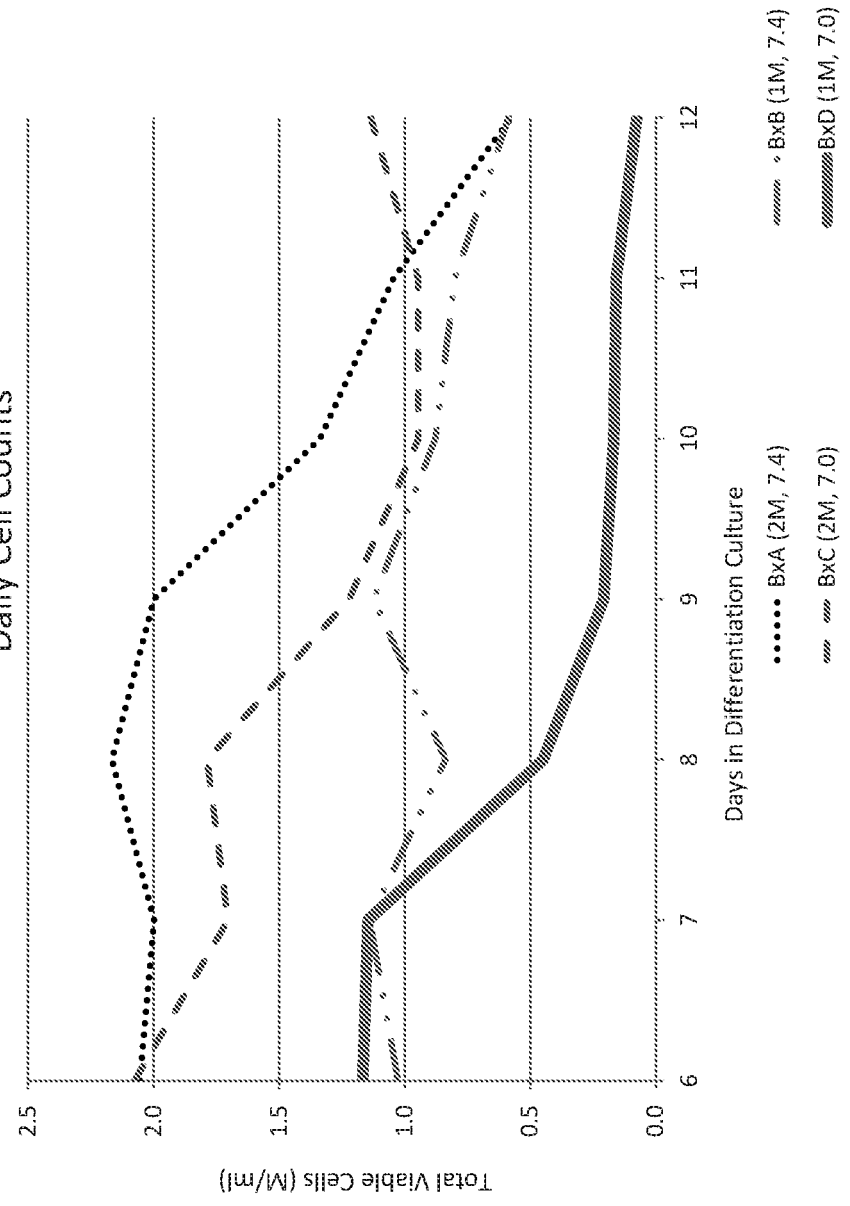

Daily Cell Counts
Total Viable Cells (M/ml)
2.5
2.0
1.5
1.0
0.5
0.0
6
7
8
9
10
11
12
Days in Differentiation Culture
BxA (2M, 7.4)
BxC (2M, 7.0)
BxB (1M, 7.4)
BxD (1M, 7.0)

Figure 18A

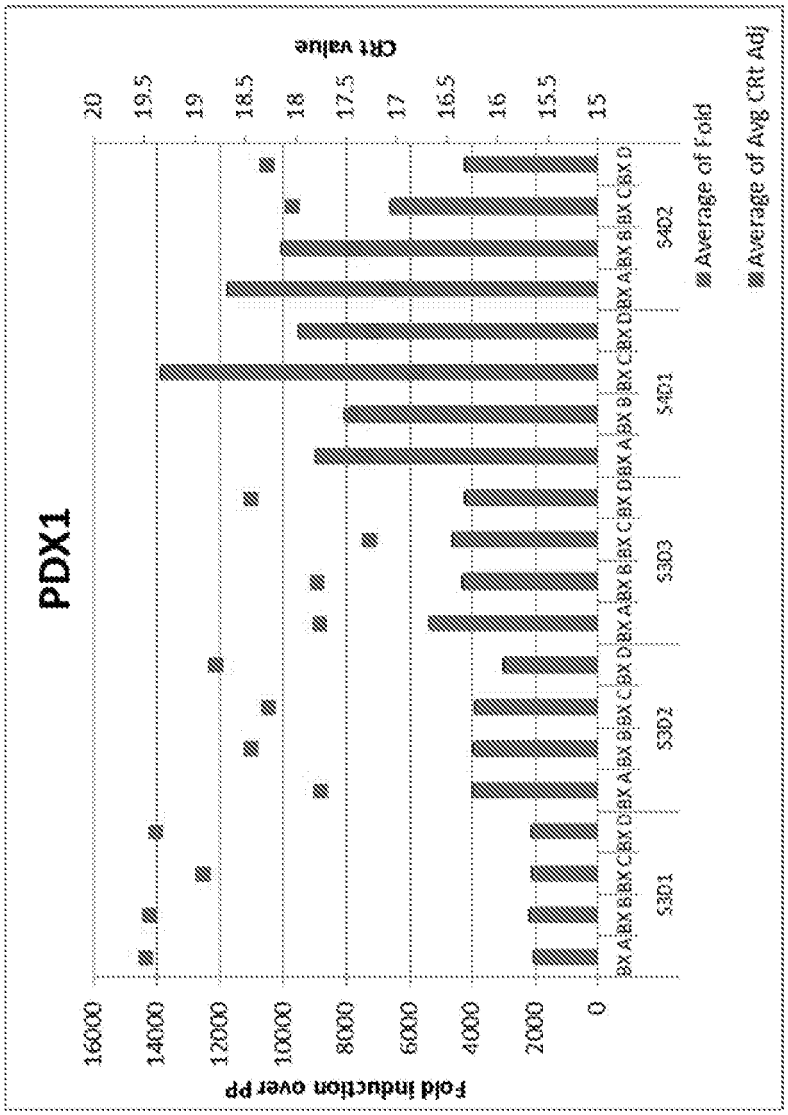

PDX1
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
5303
5302
5303
5471
5402

Figure 18B

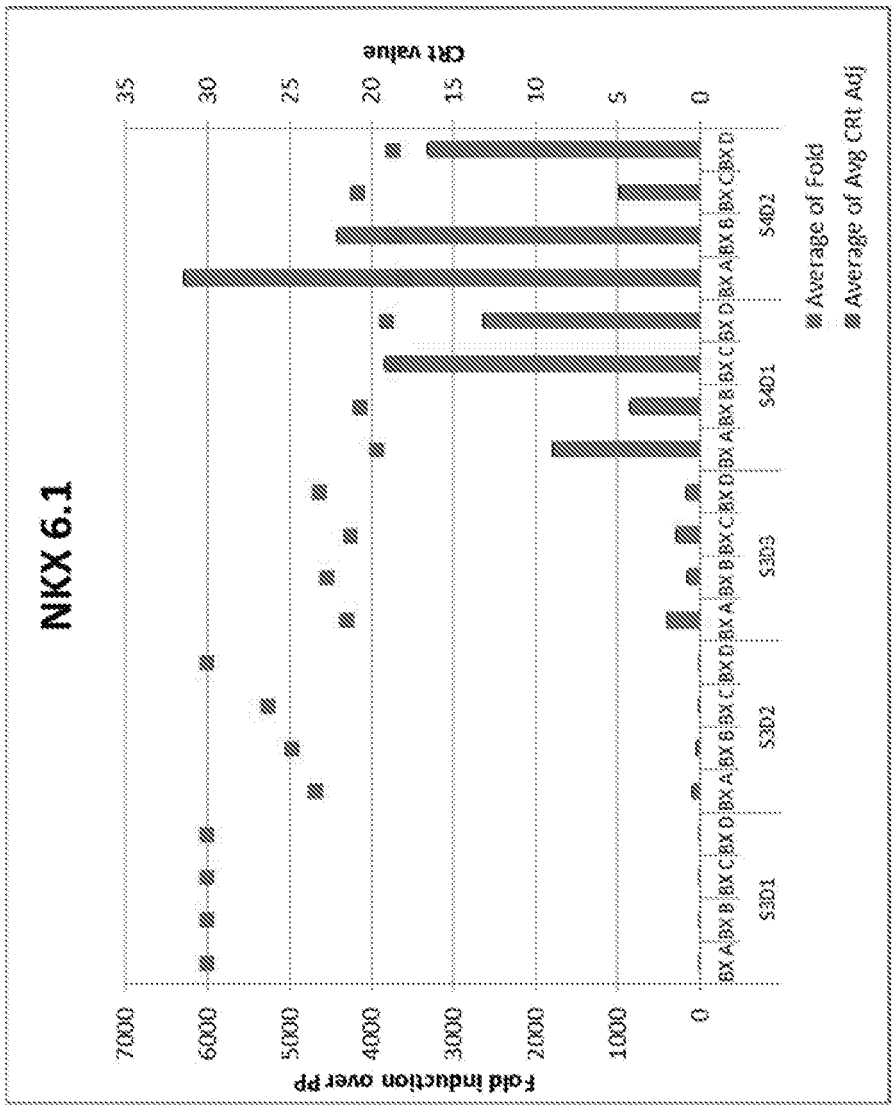

NKX 6.1
Fold induction over PP
CRt value
7000
6000
5000
4000
3000
2000
1000
0
35
30
25
20
15
10
5
0
S3D1
S3D2
S3D3
S4D1
S4D2
Average of Fold
Average of Avg CRt Adj

Figure 18C

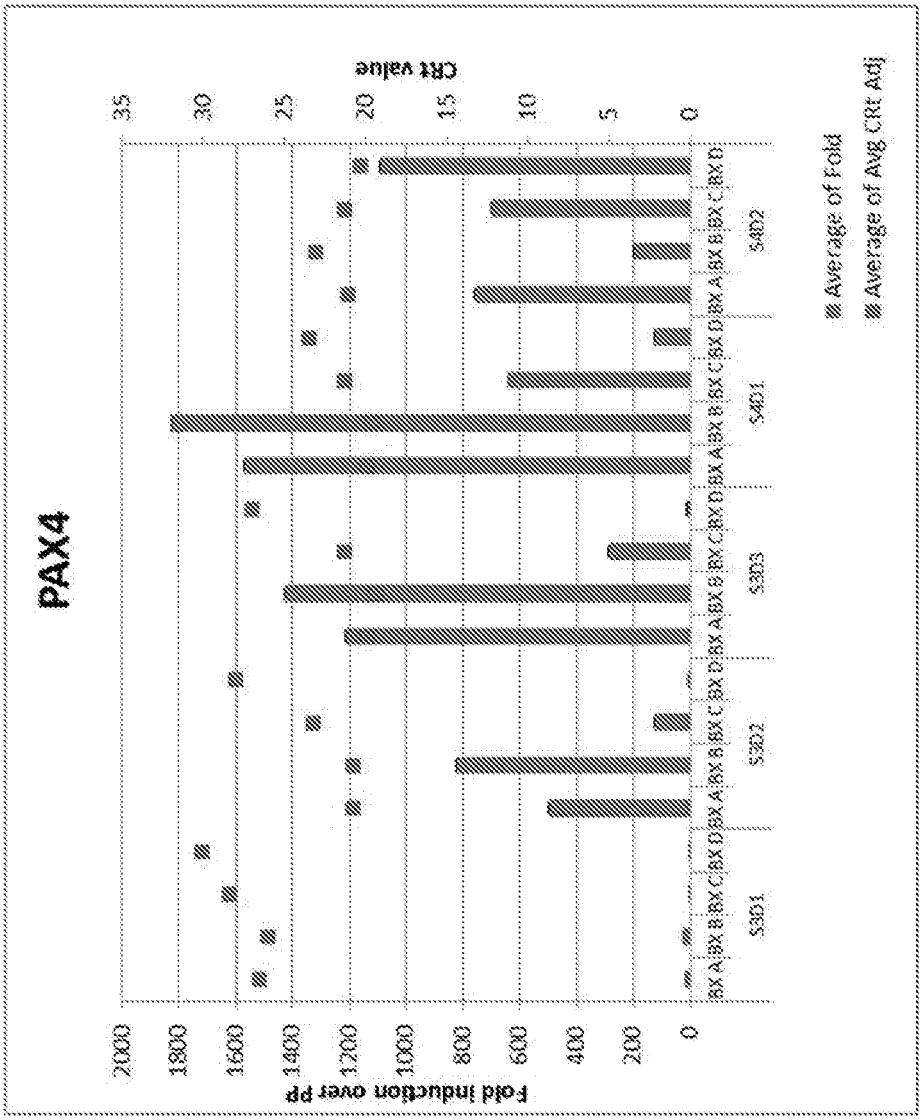

PAX4
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S301
S302
S303
S401
S402

Figure 18D

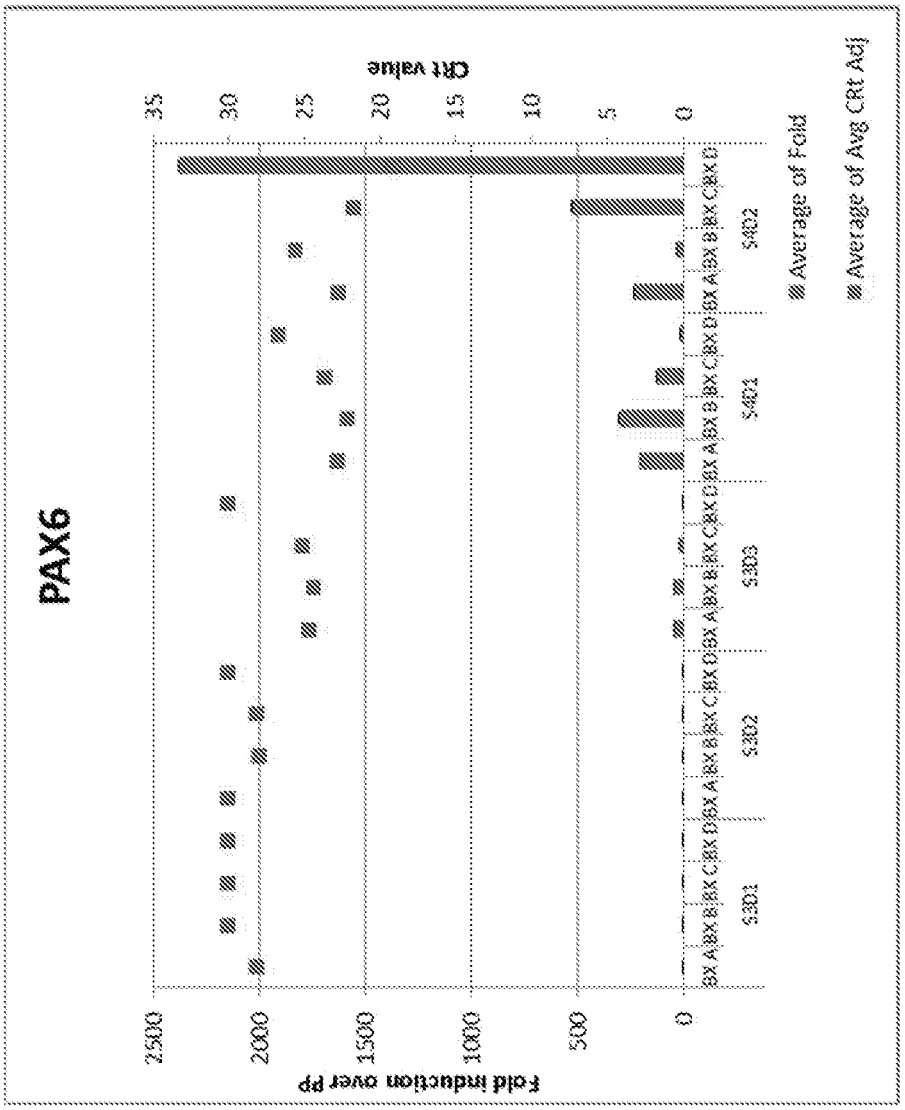

PAX6
Fold induction over PP
2500
2000
1500
1000
500
0
CRt value
35
30
25
20
15
10
5
0
5301
5302
5303
5401
5402
Average of Fold
Average of Avg CRt Adj

Figure 18E

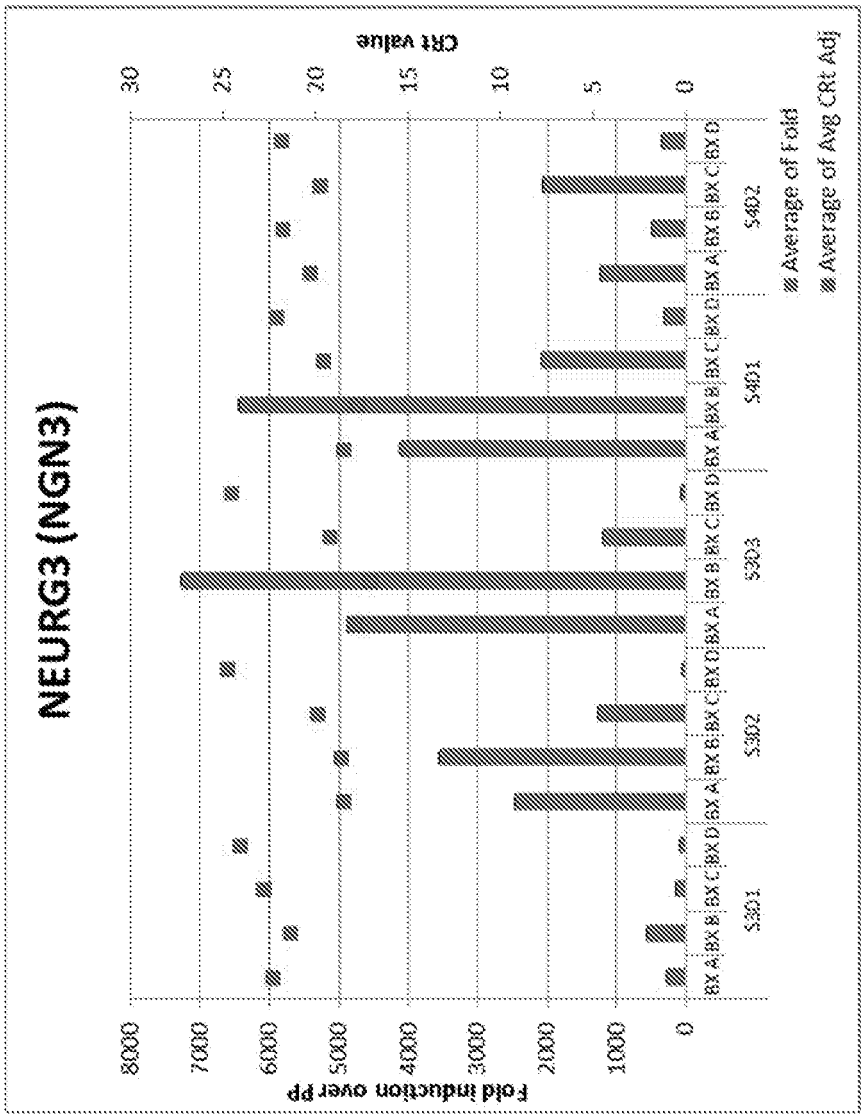

NEURG3 (NGN3)
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S301
S302
S303
S401
S402

Figure 18F

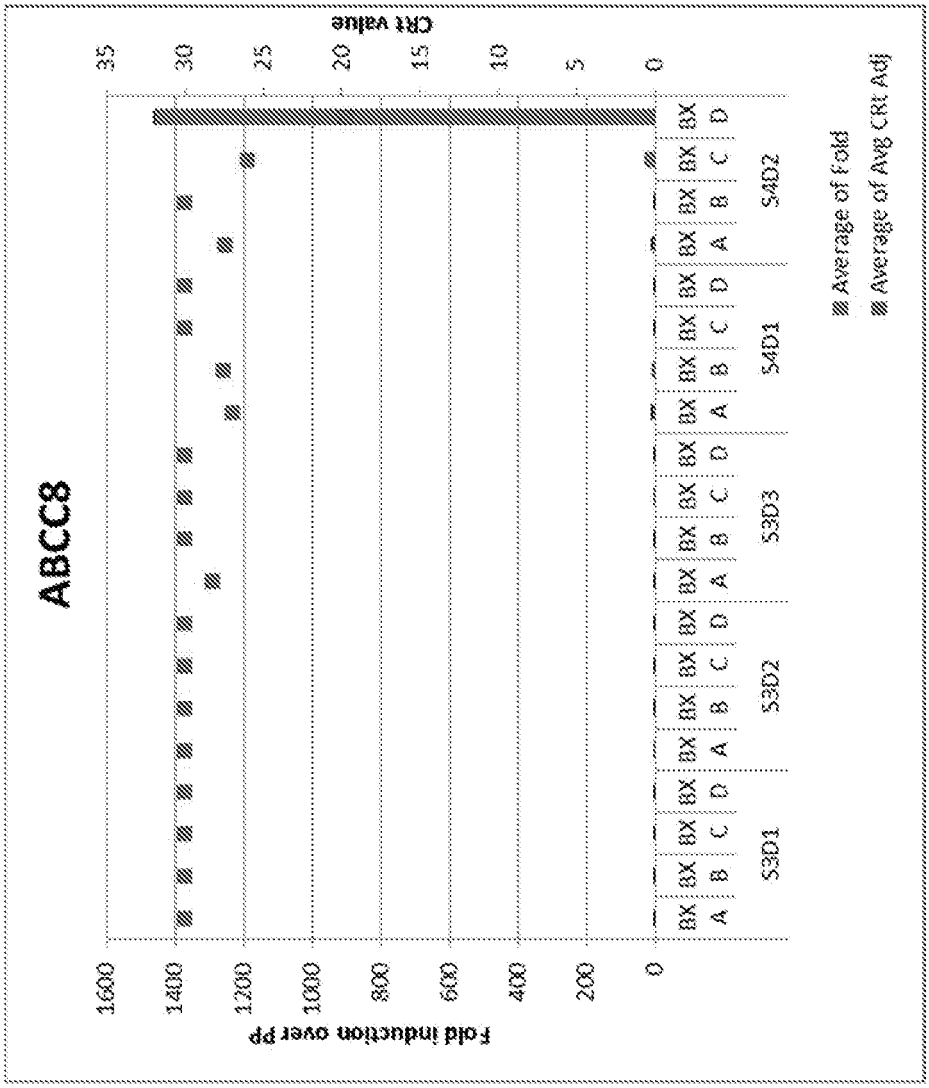

ABCC8
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S3D1
S3D2
S3D3
S4D1
S4D2
BX
A
B
C
D

Figure 18G

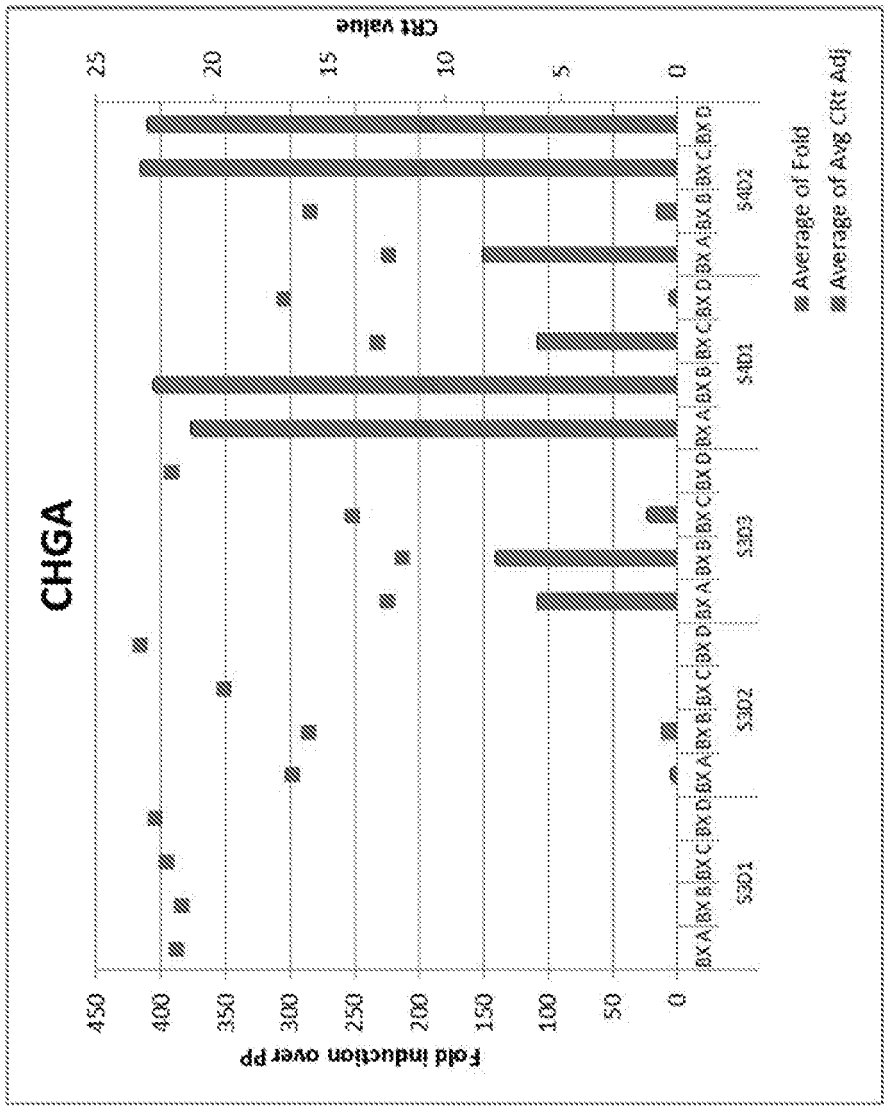

CHGA
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
0
50
100
150
200
250
300
350
400
450
0
5
10
15
20
25
S301
S302
S303
S401
S402

Figure 18H

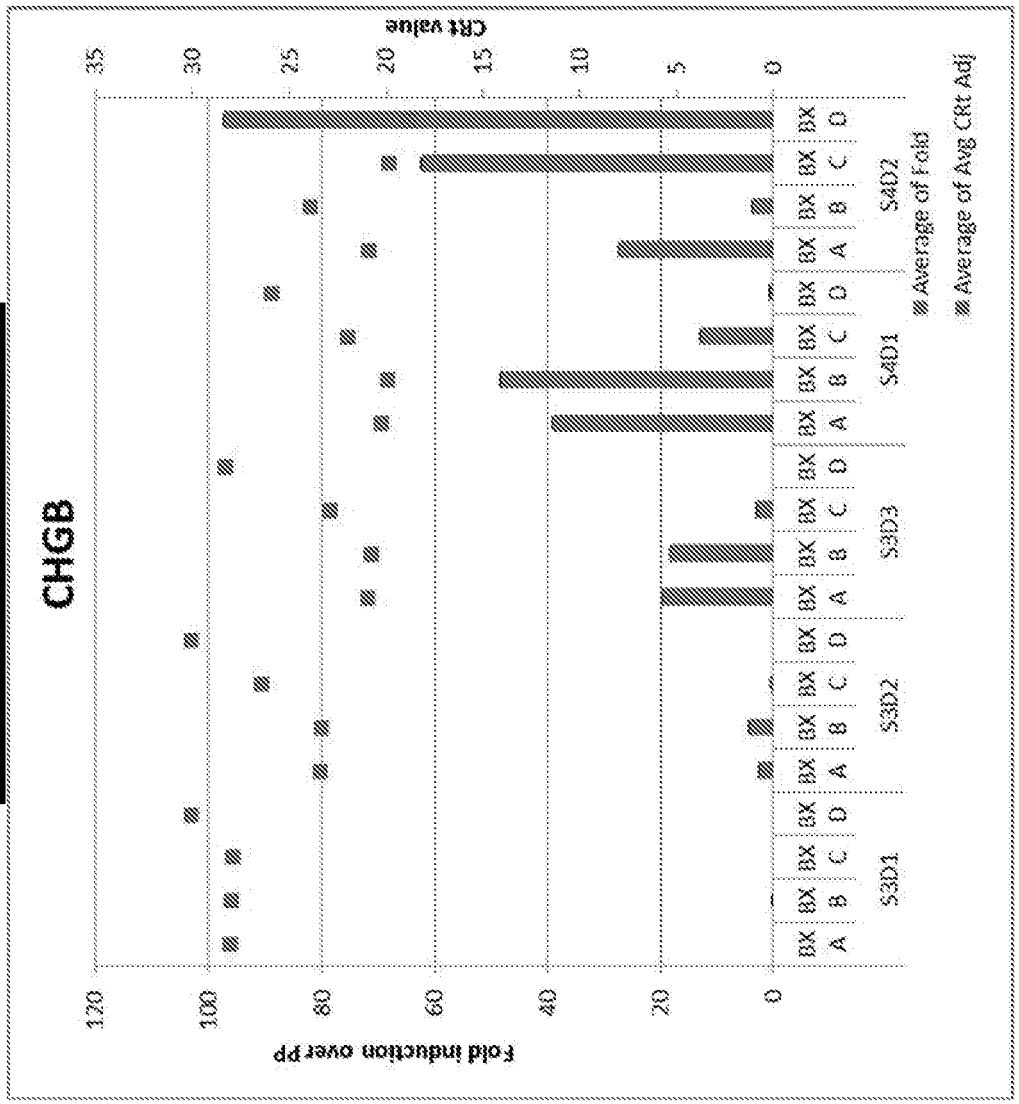

CHGB
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S3D1
S3D2
S3D3
S4D1
S4D2
BX
A
B
C
D

Figure 18I

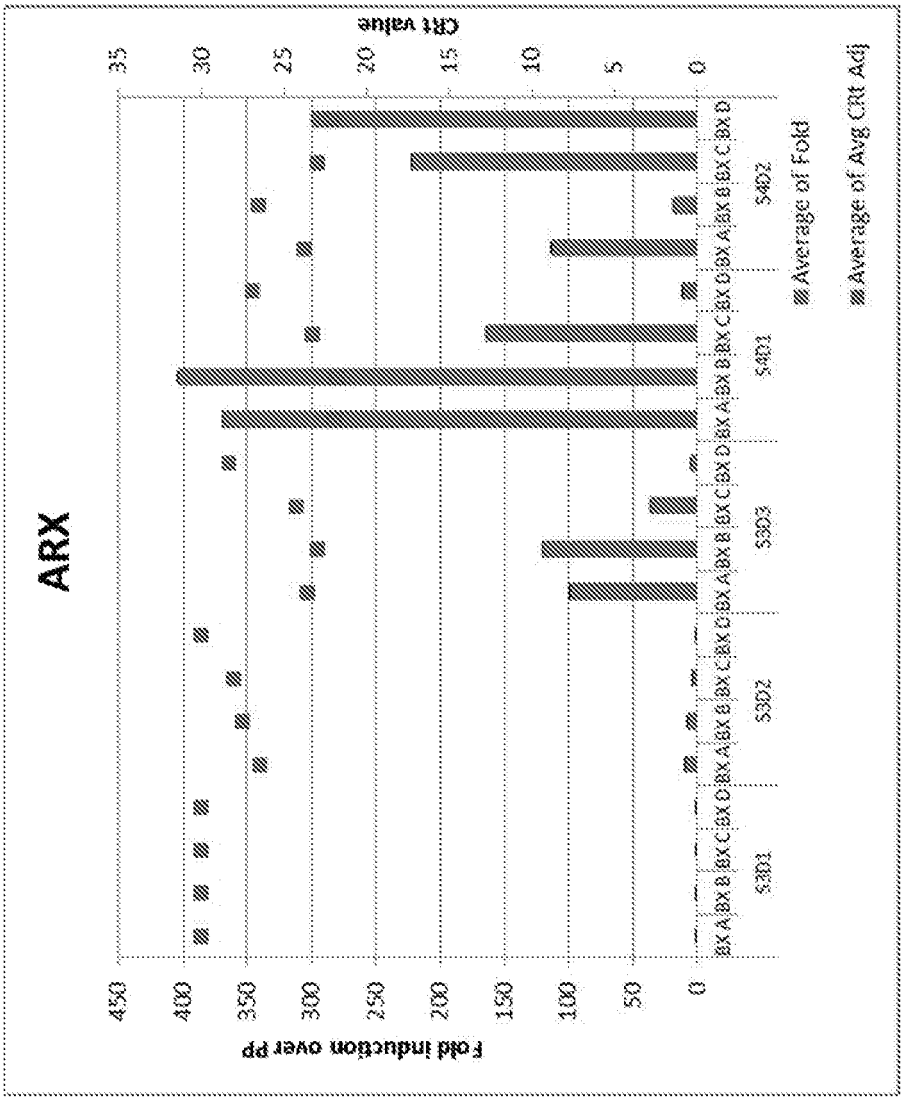

ARX
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S303
S302
S303
S401
S402

Figure 18J

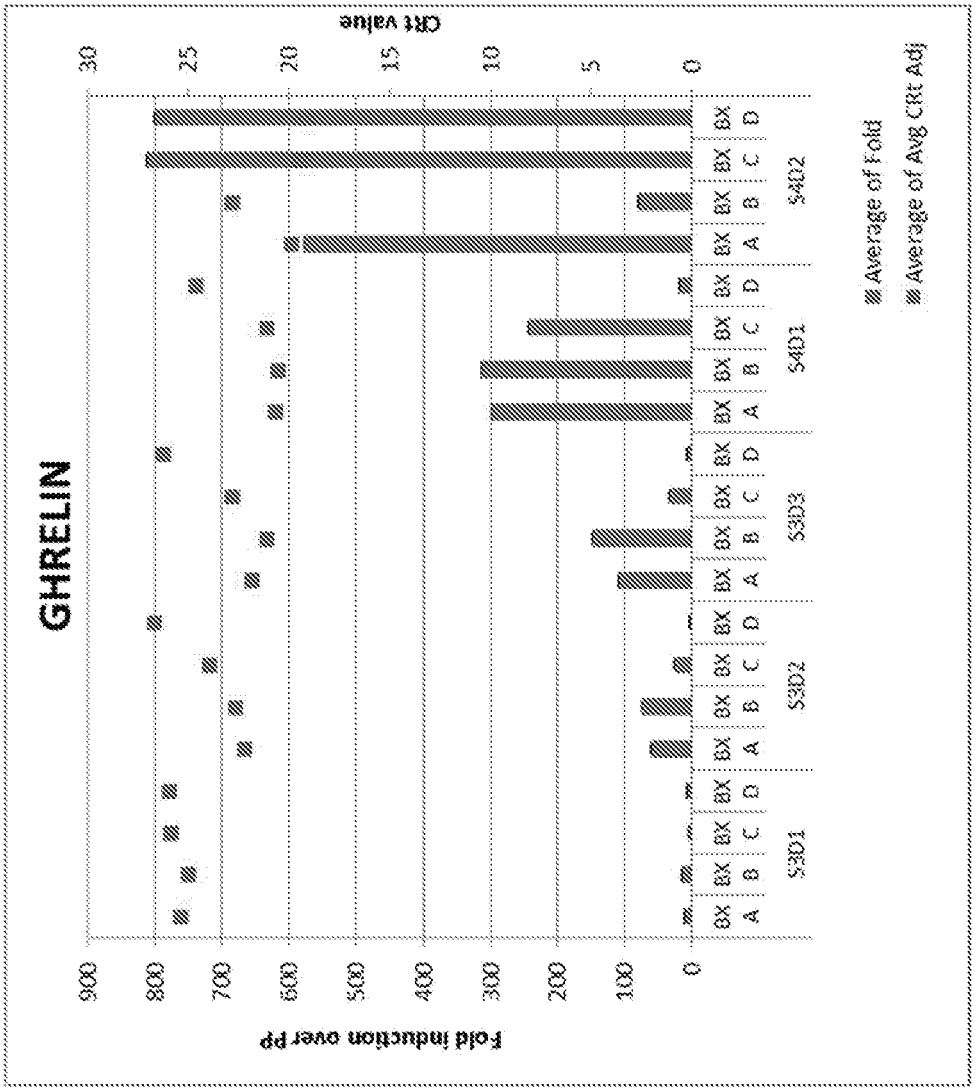

GHRELIN
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S3D1
S3D2
S3D3
S4D1
S4D2

Figure 18K

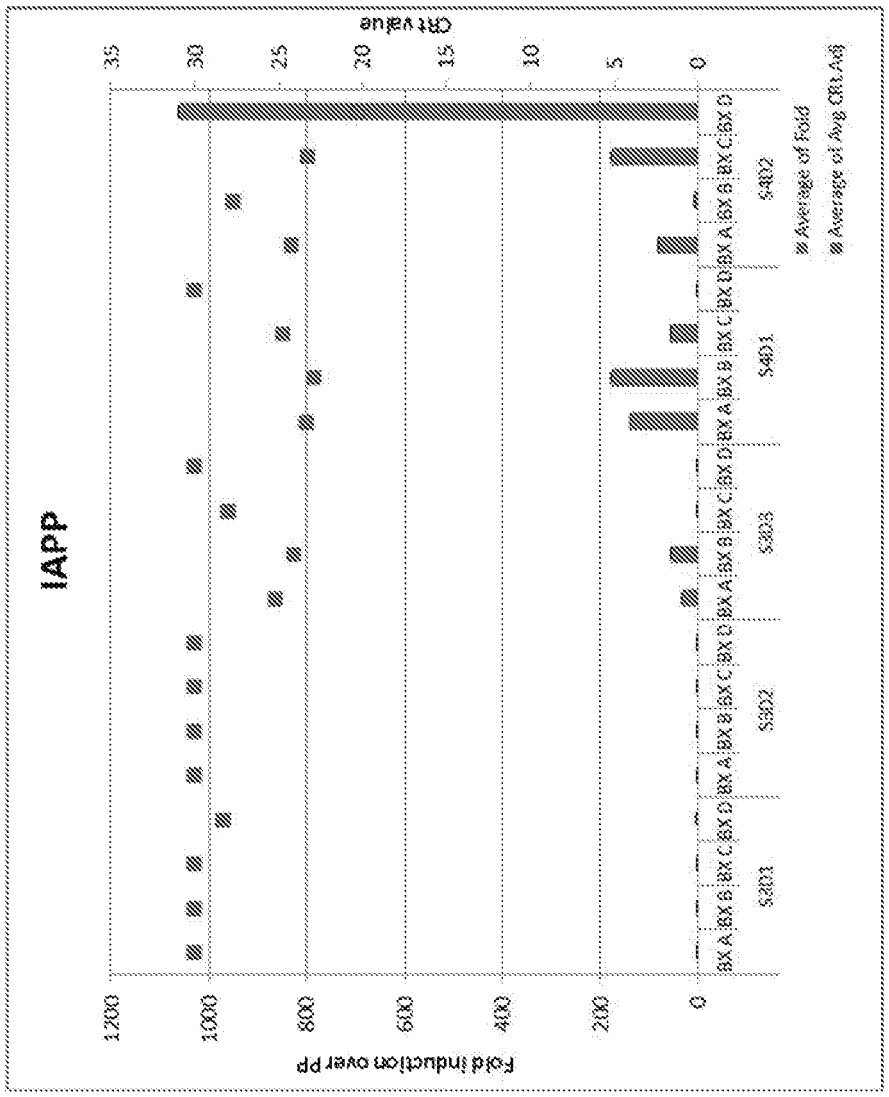

IAPP
Fold induction over PP
CRT value
0
200
400
600
800
1000
1200
0
5
10
15
20
25
30
35
BX A
BX B
BX C
BX D
S203
S302
S303
S401
S402
Average of Fold
Average of Avg CRT Adj

Figure 18L

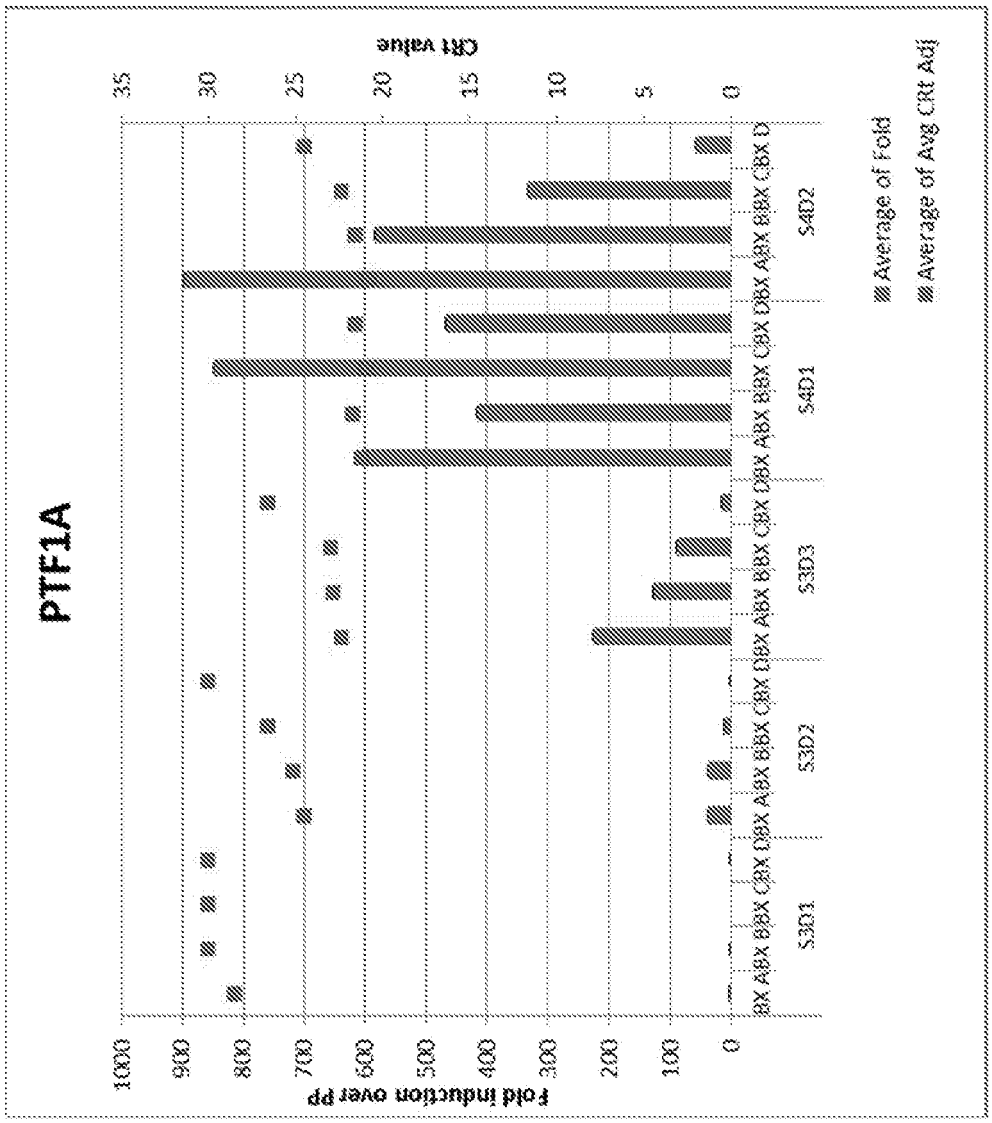

PTF1A
Fold induction over PP
CRt value
0
100
200
300
400
500
600
700
800
900
1000
0
5
10
15
20
25
30
35
S3D1
S3D2
S3D3
S4D1
S4D2
Average of Fold
Average of Avg CRt Adj

Figure 18M

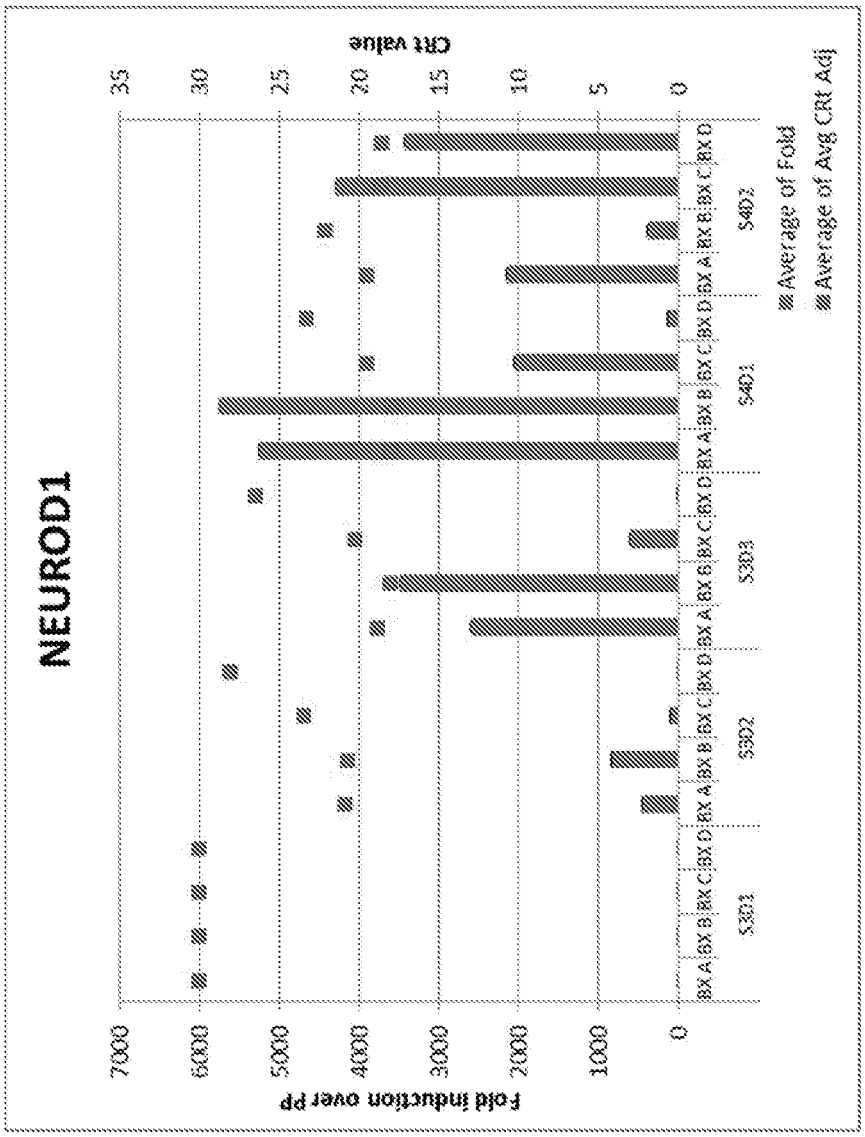

NEUROD1
Fold induction over PP
CRt value
0
1000
2000
3000
4000
5000
6000
7000
0
5
10
15
20
25
30
35
5301
5302
5303
5401
5402
Average of Fold
Average of Avg CRt Adj

Figure 18N

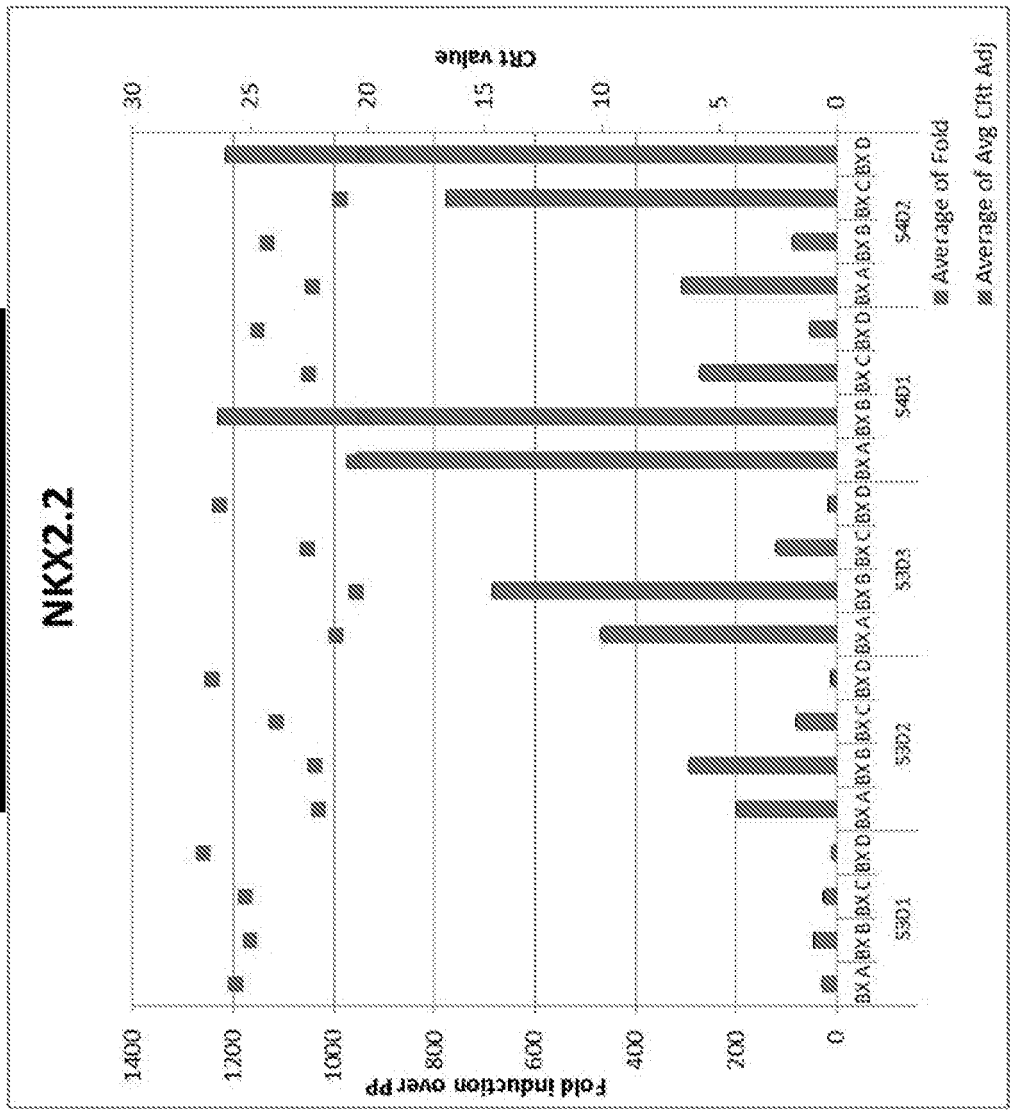

NKX2.2
Fold induction over PP
CRt value
Average of Fold
Average of Avg Cflt Adj
5301
5302
5303
5401
5402

Figure 19

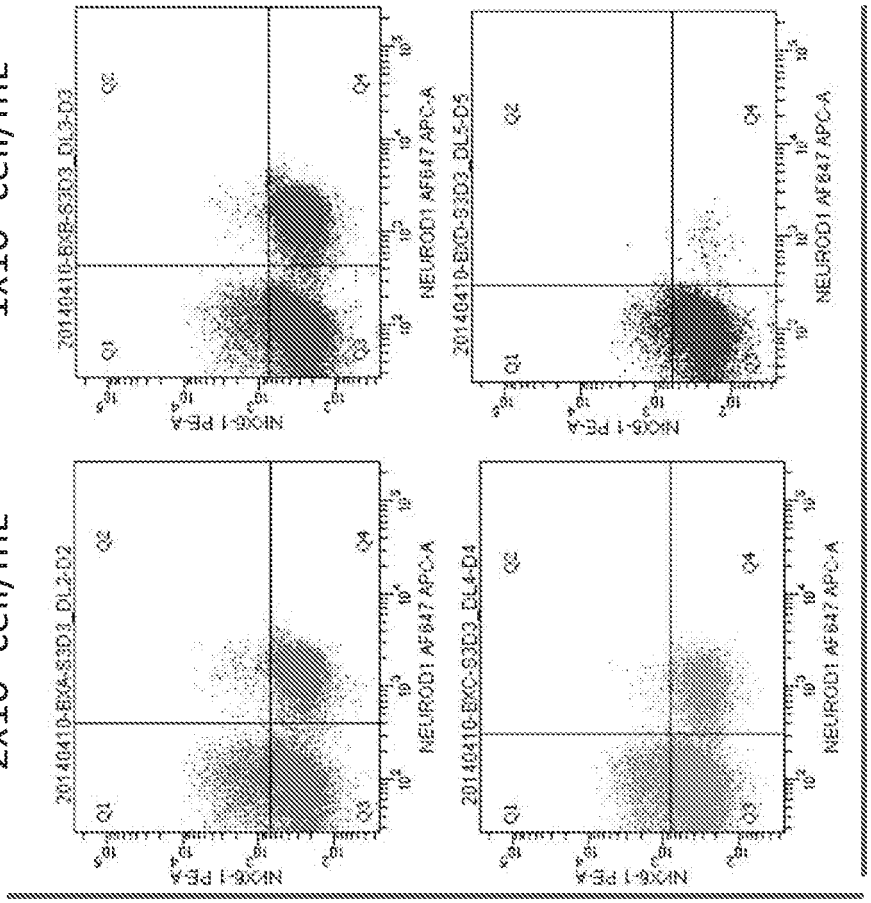

2x10^6 cell/mL
1x10^6 cell/mL
Stage 3: 7.4pH Medium Setpoint
Stage 3: 7.0pH Medium Setpoint
NKX6.1
% Cells Positive
NEUROD1
% Cells Positive

Figure 20

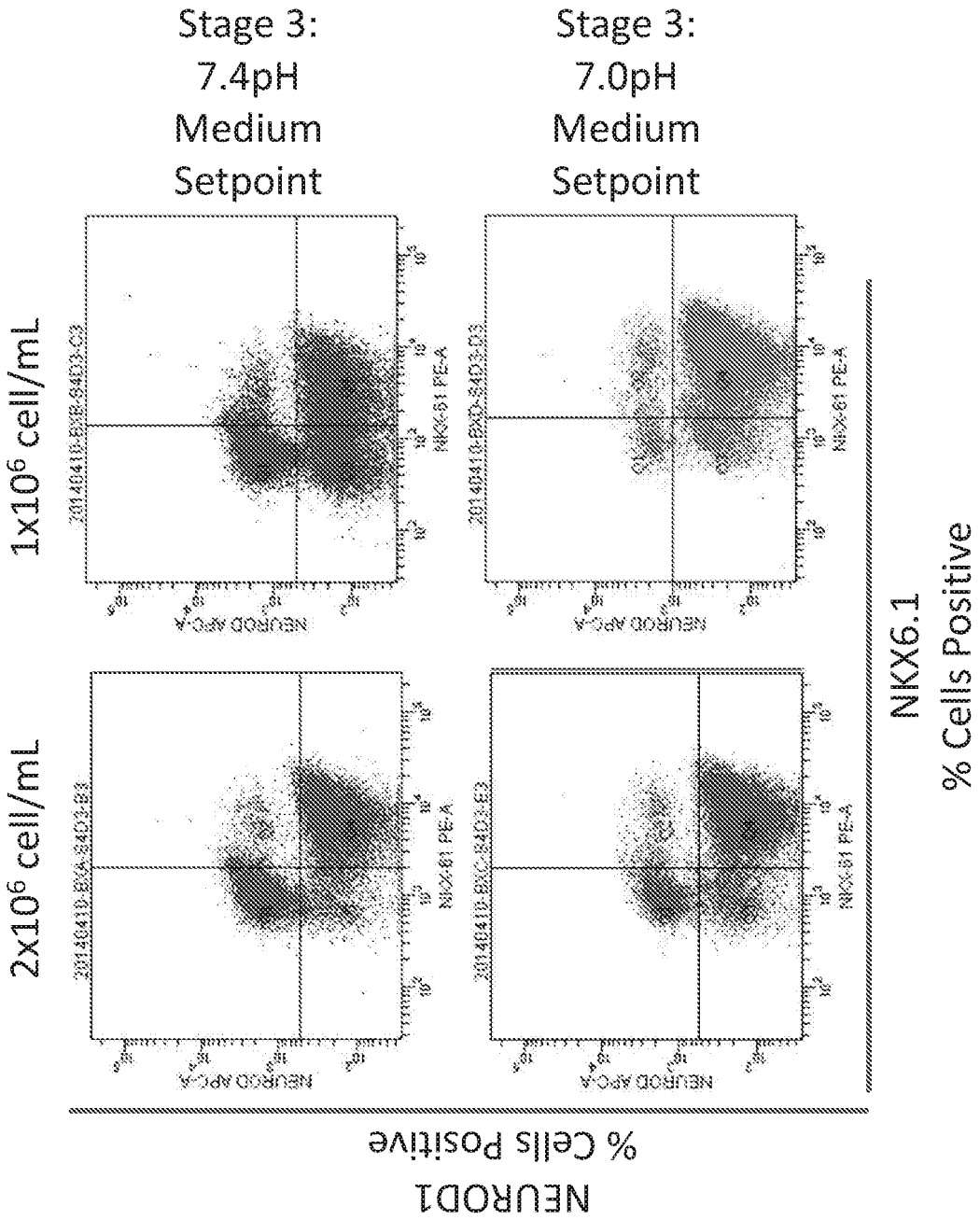

Stage 3:
7.4pH
Medium
Setpoint
Stage 3:
7.0pH
Medium
Setpoint
1x10^6 cell/mL
2x10^6 cell/mL
NEUROD1
% Cells Positive
NKX6.1
% Cells Positive

Figure 21A

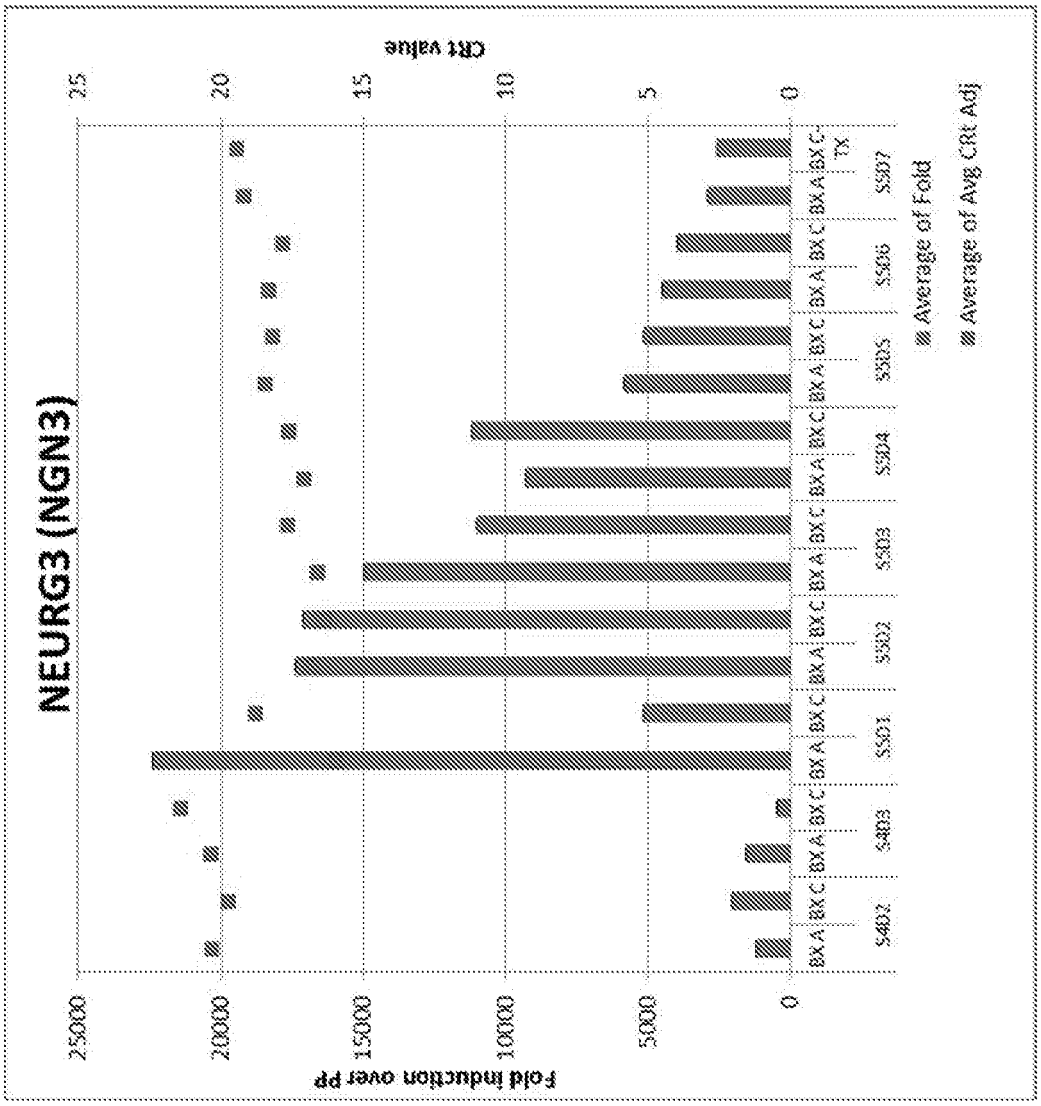

NEURG3 (NGN3)
Fold induction over PP
CRt value
25000
20000
15000
10000
5000
0
25
20
15
10
5
0
Average of Fold
Average of Avg CRt Adj
S402
S403
S501
S502
S503
S504
S505
S506
S507
BX A
BX C

Figure 21B

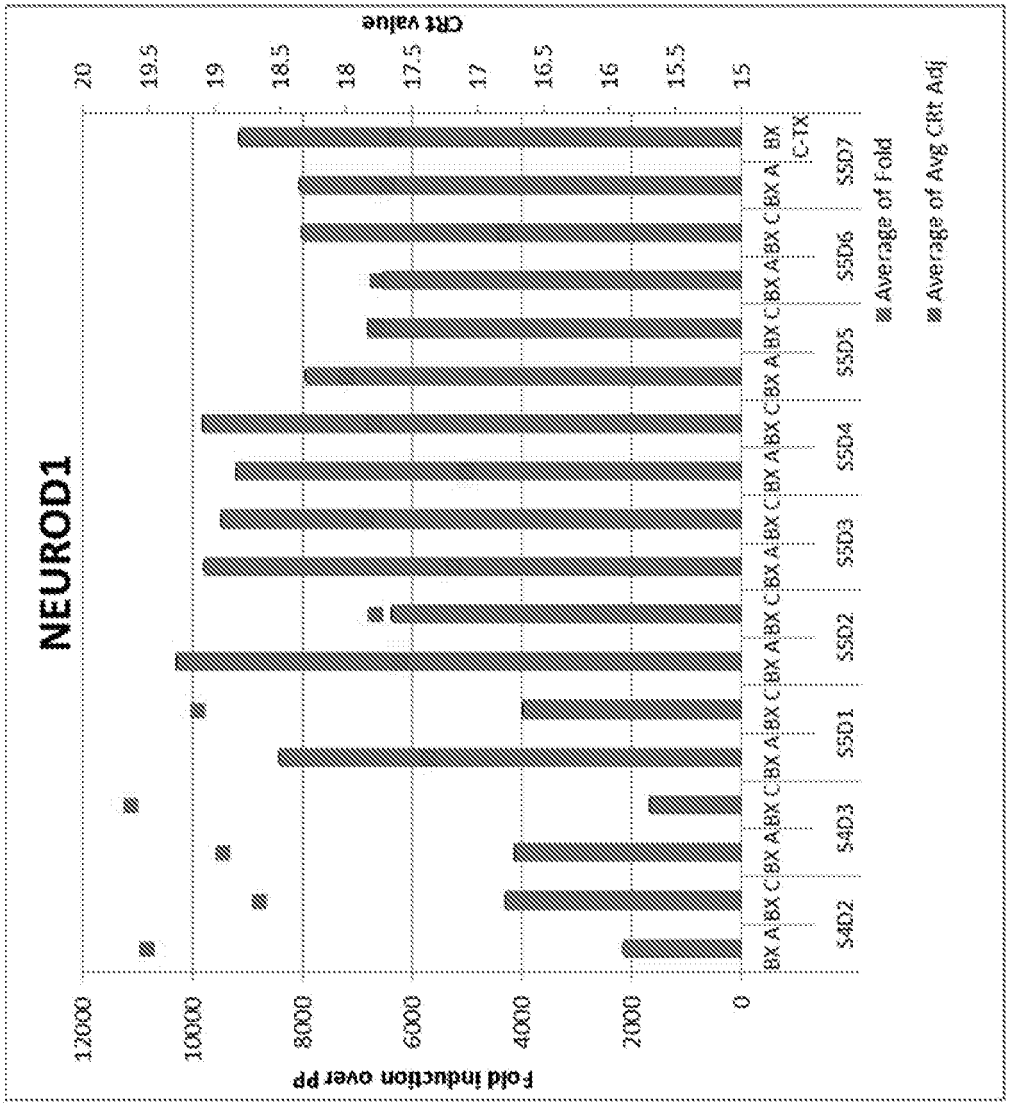

NEUROD1
Fold induction over PP
CRt value
12000
10000
8000
6000
4000
2000
0
20
19.5
19
18.5
18
17.5
17
16.5
16
15.5
15
S4D2
S4D3
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
IC-TX
Average of Fold
Average of Avg CRt Adj

Figure 21C

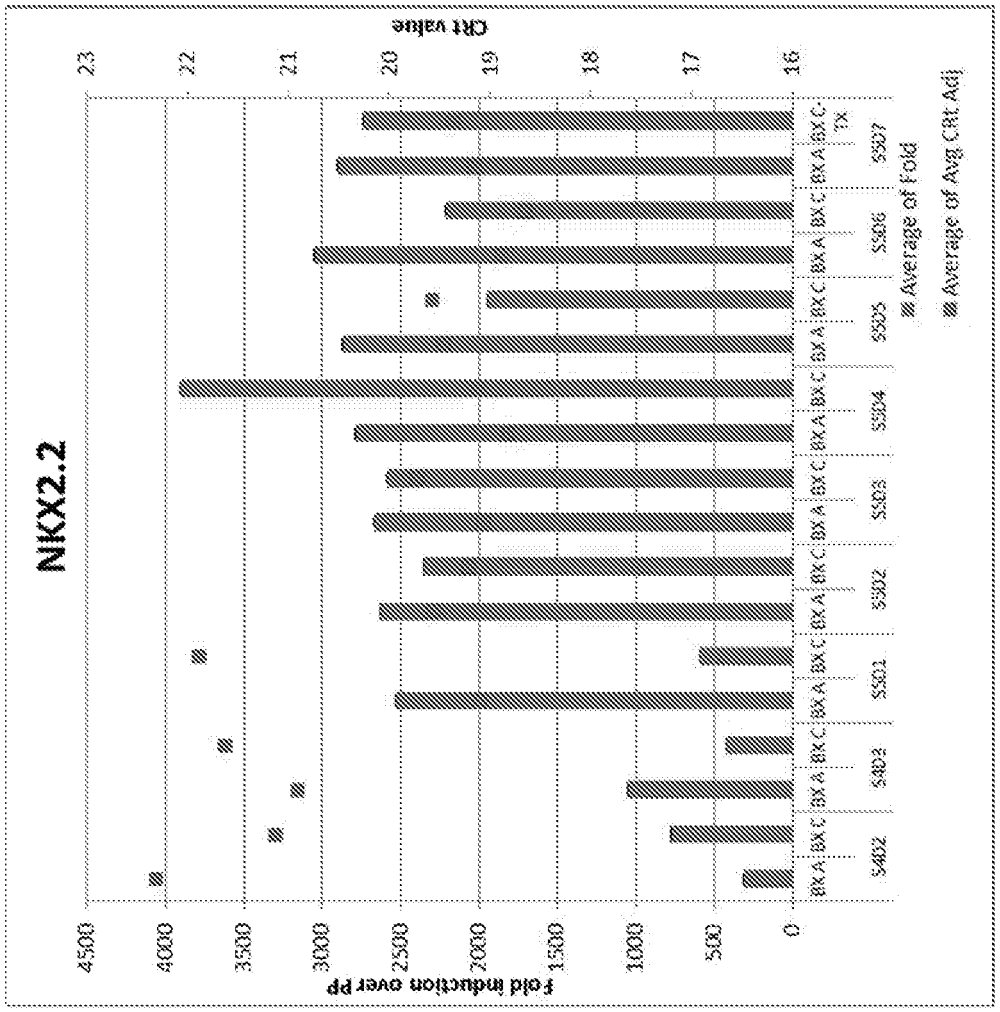

NKX2.2
Fold induction over PP
CRT value
4500
4000
3500
3000
2500
2000
1500
1000
500
0
23
22
21
20
19
18
17
16
BX A BX C
5402
5303
5501
5502
5503
5504
5505
5506
5507
Average of Fold
Average of Avg CRt Adj

Figure 21D

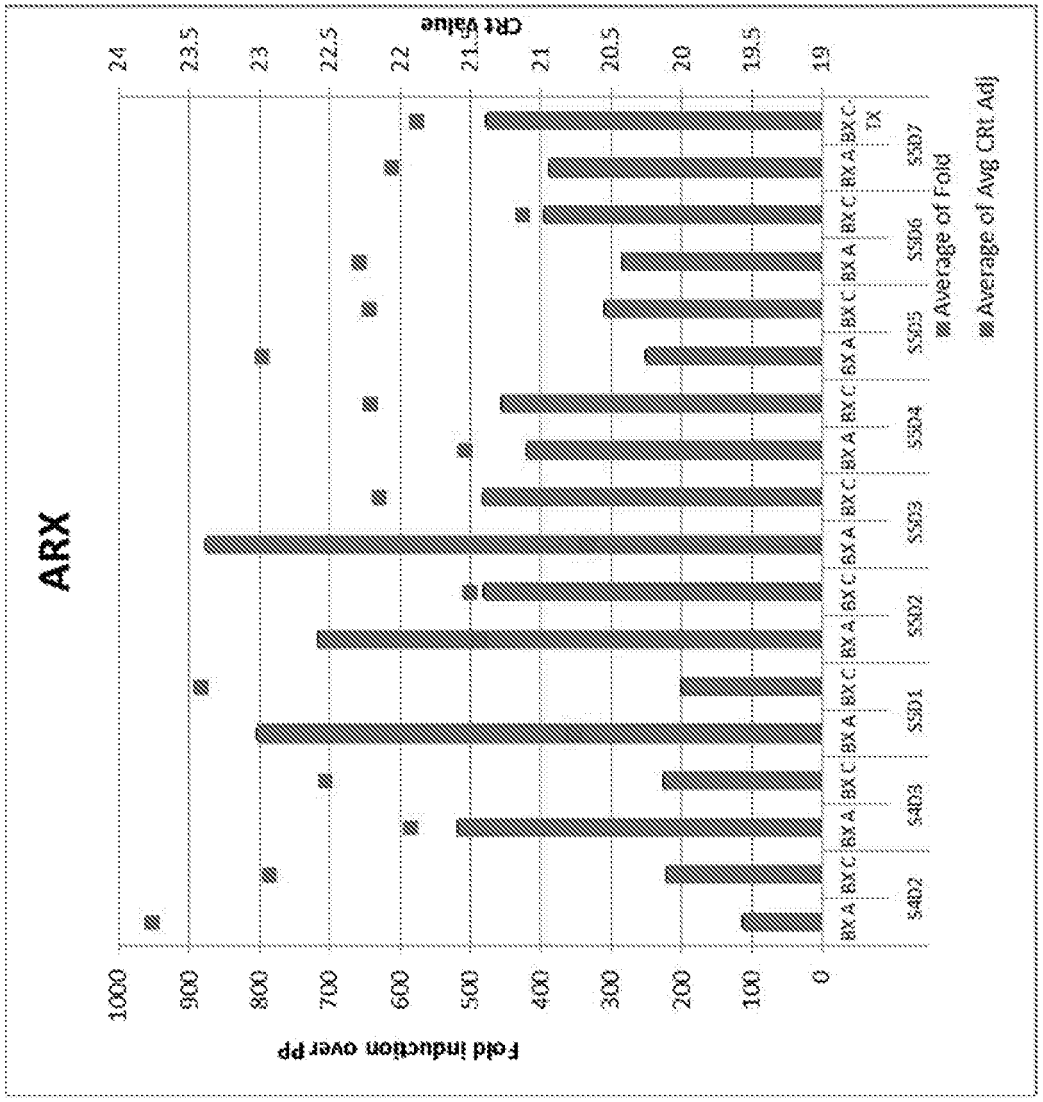

ARX
Fold induction over PP
CRt Value
1000
900
800
700
600
500
400
300
200
100
0
24
23.5
23
22.5
22
21.5
21
20.5
20
19.5
19
5402
5403
5501
5502
5503
5504
5505
5506
5507
TX
Average of Fold
Average of Avg CRt Adj

Figure 21E

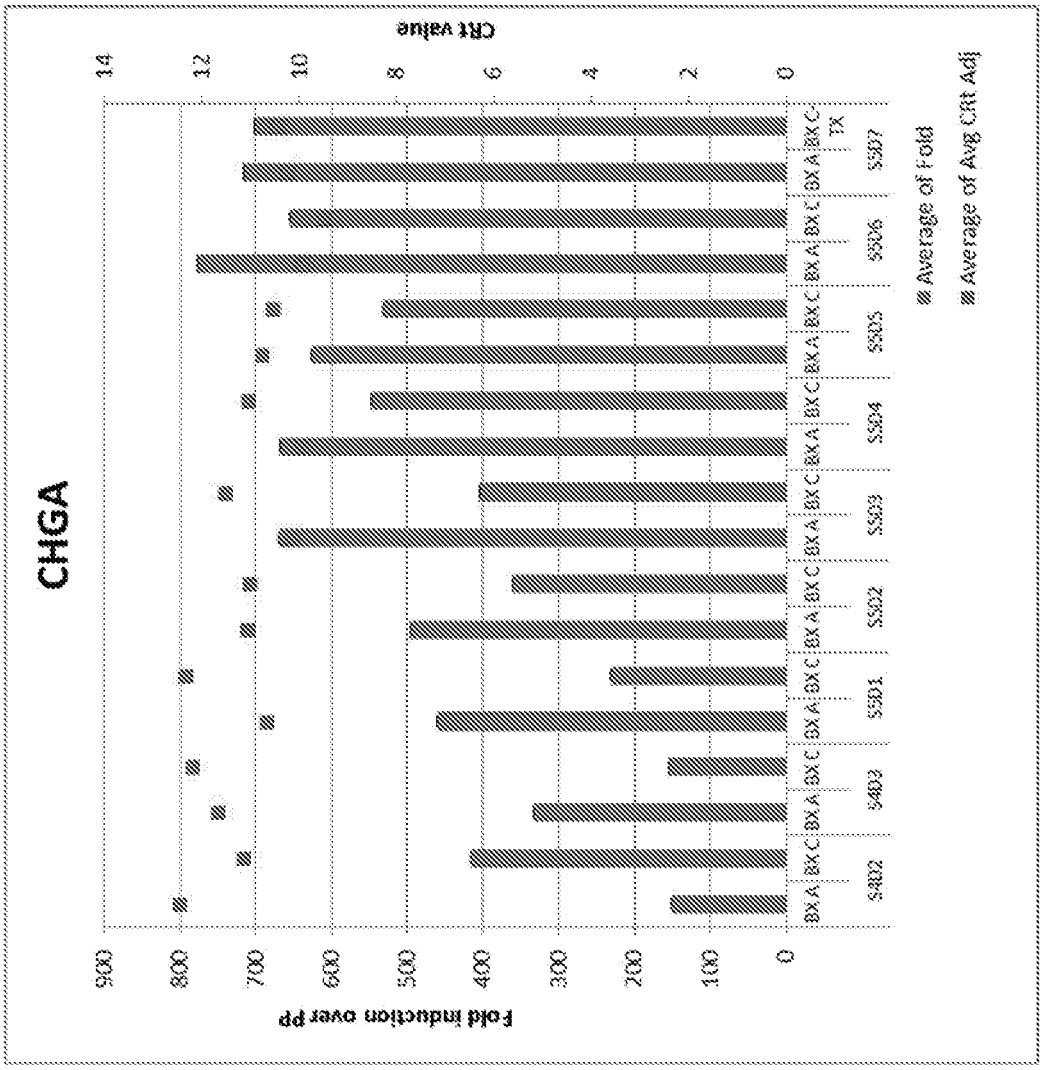

CHGA
Fold induction over PP
CRT value
Average of Fold
Average of Avg Cllt Adj
0
100
200
300
400
500
600
700
800
900
0
2
4
6
8
10
12
14
S402
S403
S501
S502
S503
S504
S505
S506
S507
BX A
BX C
TX

Figure 21F

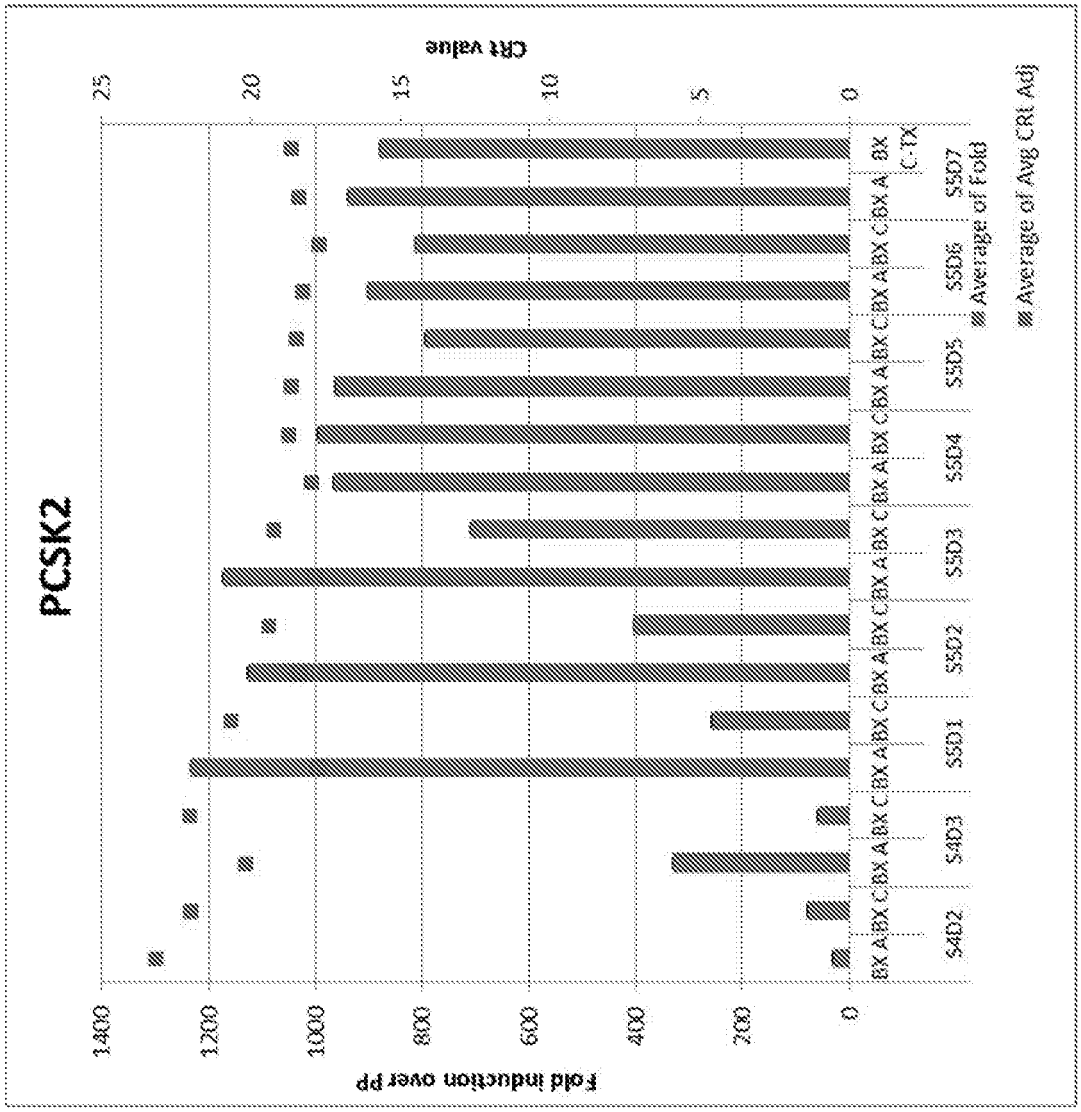

PCSK2
Fold induction over PP
CRt value
Average of Avg CRt Adj
Average of Fold
S4D2
S4D3
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
C-TX

Figure 21G

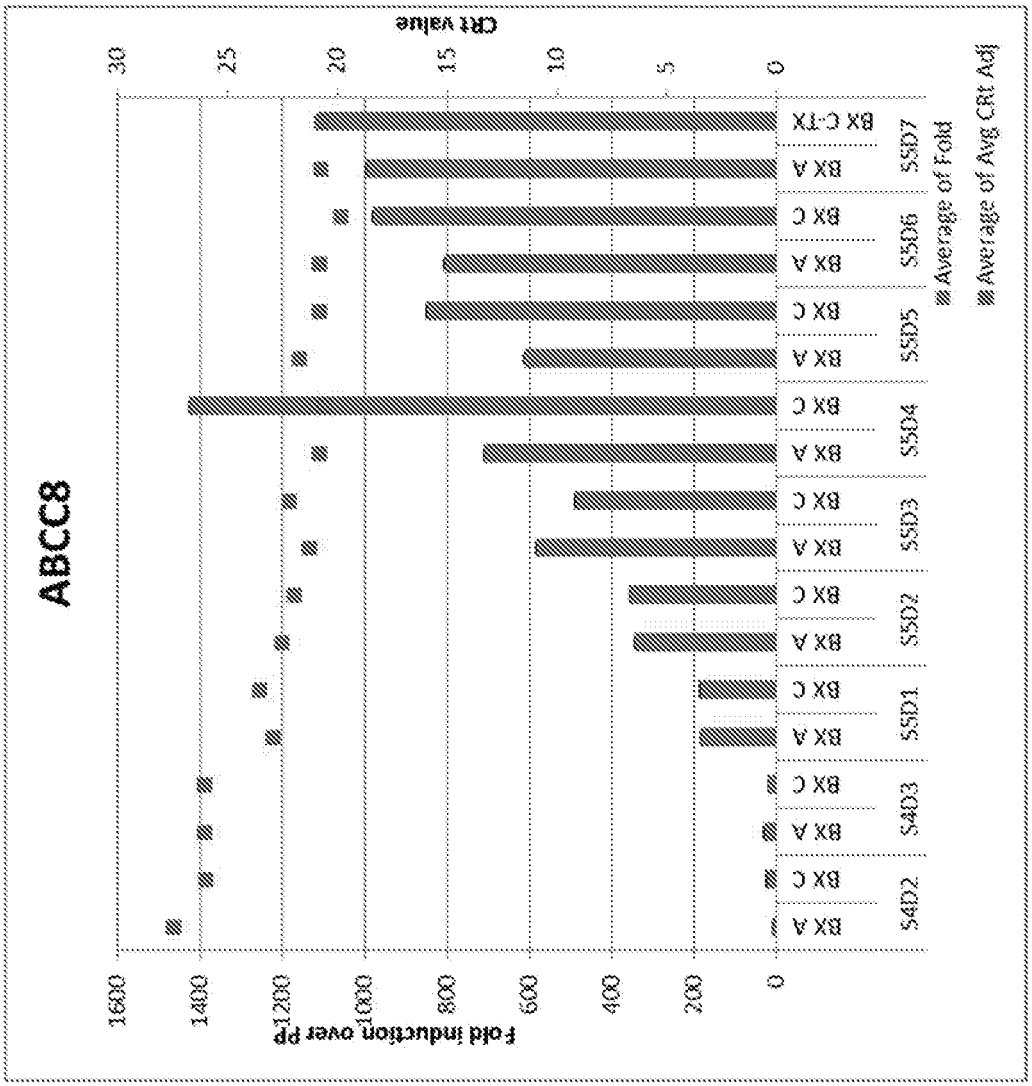

ABCC8
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
1600
1400
1200
1000
800
600
400
200
0
30
25
20
15
10
5
0
S4D2
S4D3
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
BX A
BX C
BX C-TX

Figure 21H

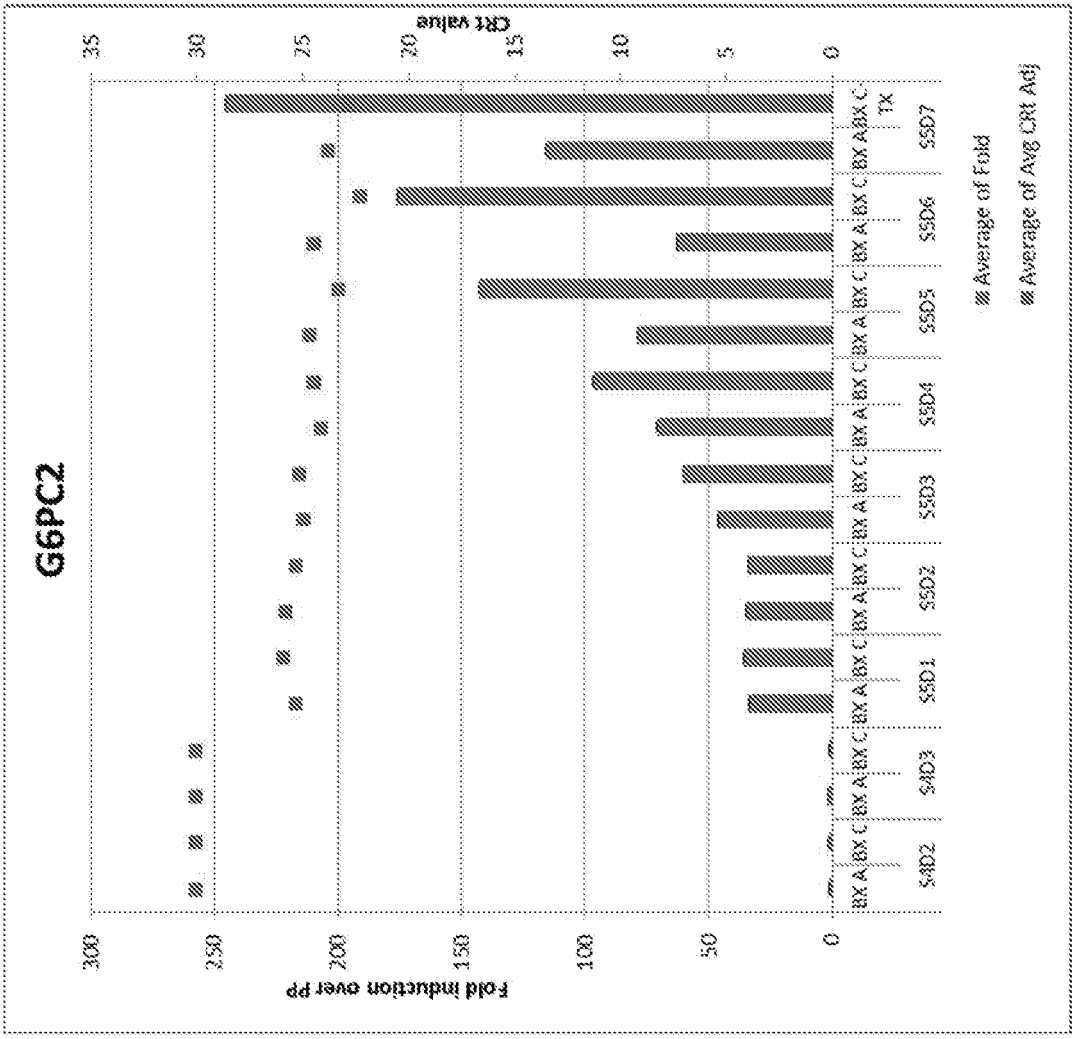

G6PC2
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
0
50
100
150
200
250
300
0
5
10
15
20
25
30
35
S4D2
S4D3
SSD1
SSD2
SSD3
SSD4
SSD5
SSD6
SSD7
BX A
BX C
TX

Figure 21I

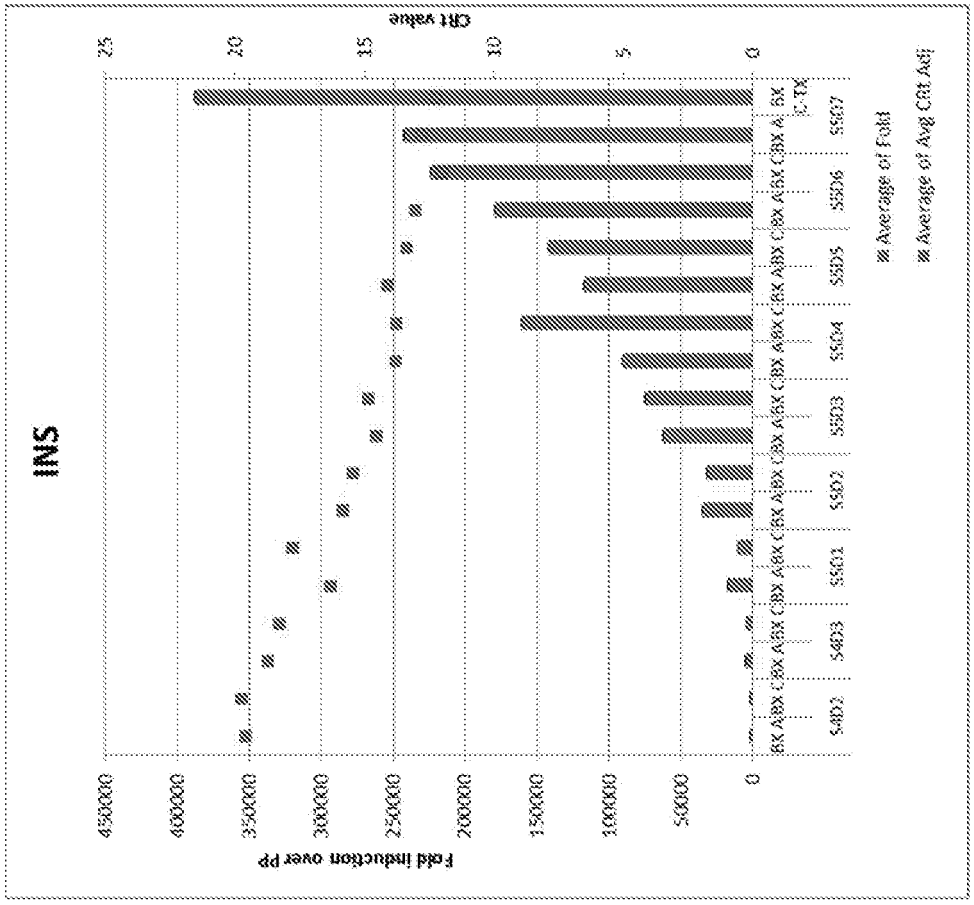

INS
Fold induction over PP
450000
400000
350000
300000
250000
200000
150000
100000
50000
0
25
20
15
10
5
0
CRI value
5403
5403
5501
5502
5503
5504
5505
5506
5507
Average of Fold1
Average of Avg CRI Adj

Figure 21J

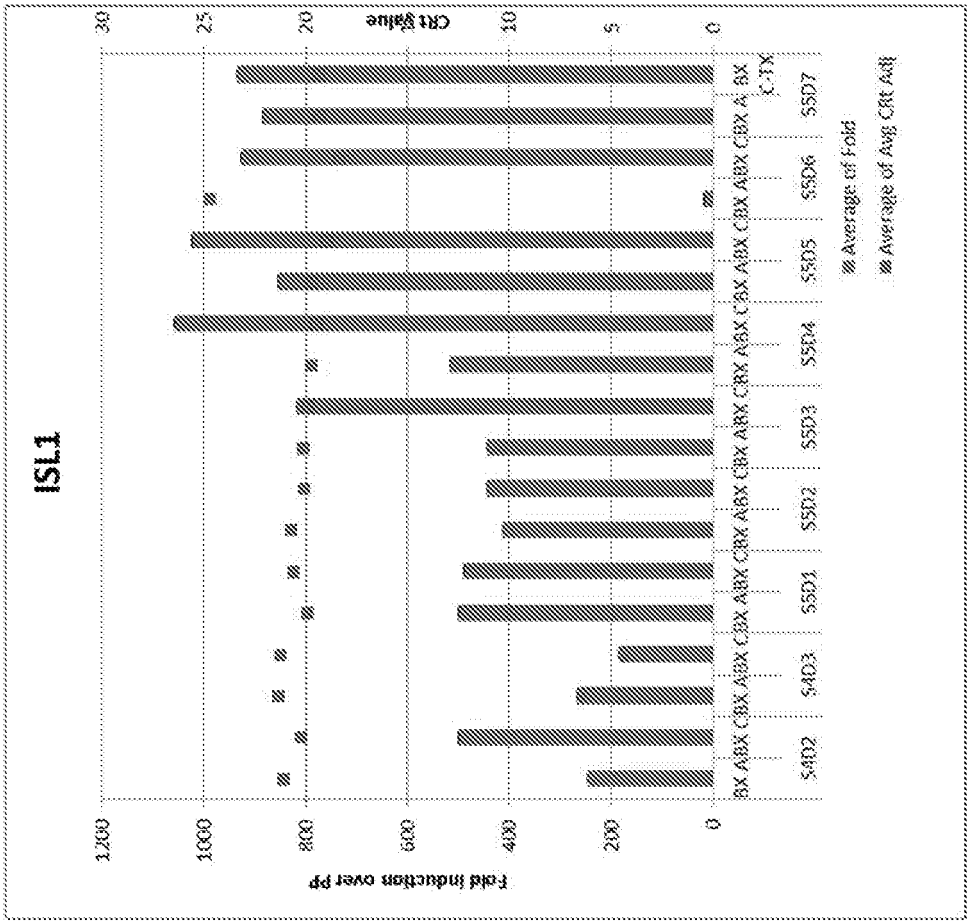

ISL1
Fold Induction over PP
CRT Value
Average of Fold
Average of Avg CRT Adj
SSD2
SSD3
SSD1
SSD2
SSD3
SSD4
SSD5
SSD6
SSD7

Figure 21K

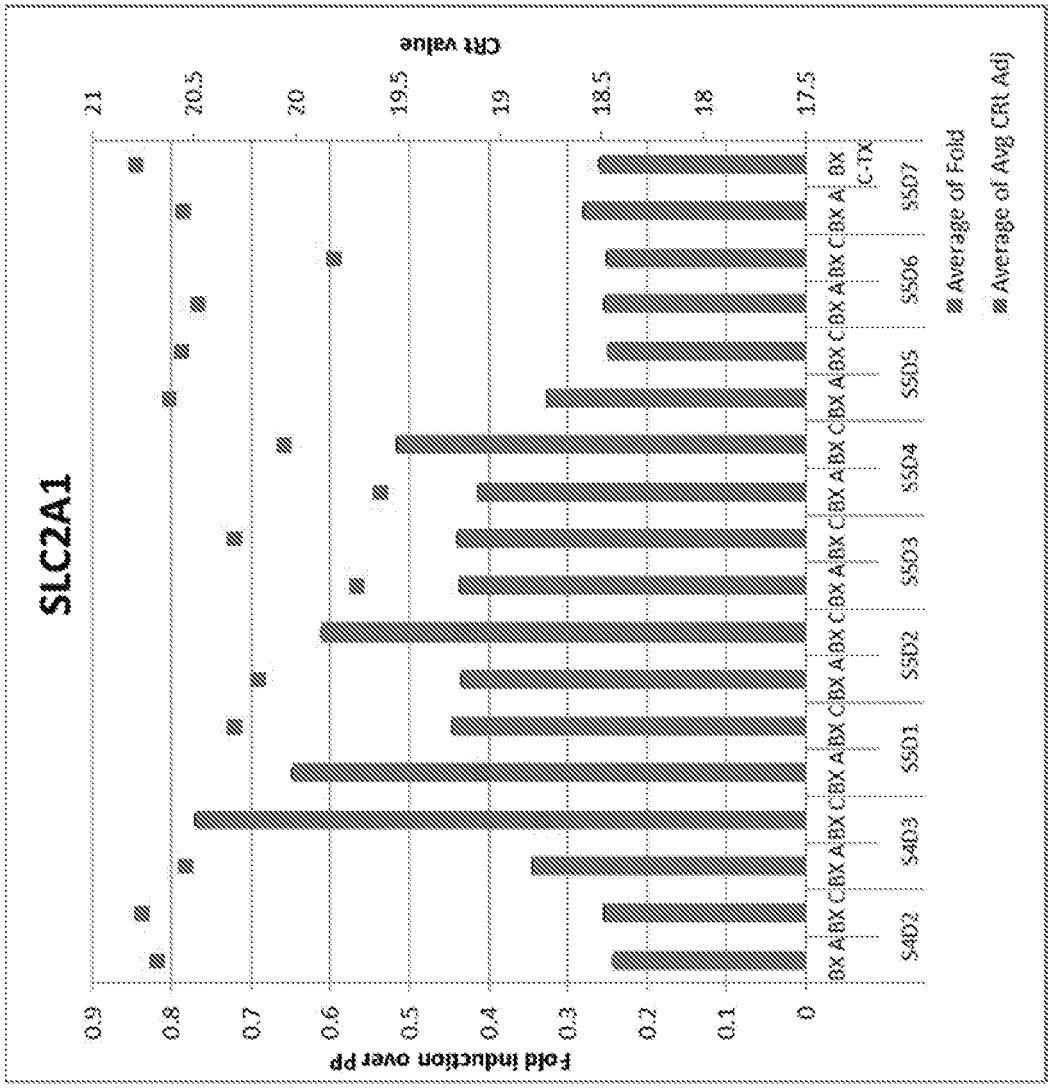

SLC2A1
Fold induction over PP
CRT value
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
21
20.5
20
19.5
19
18.5
18
17.5
Average of Fold
Average of Avg CRt Adj
S4D2
S4D3
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7

Figure 21L

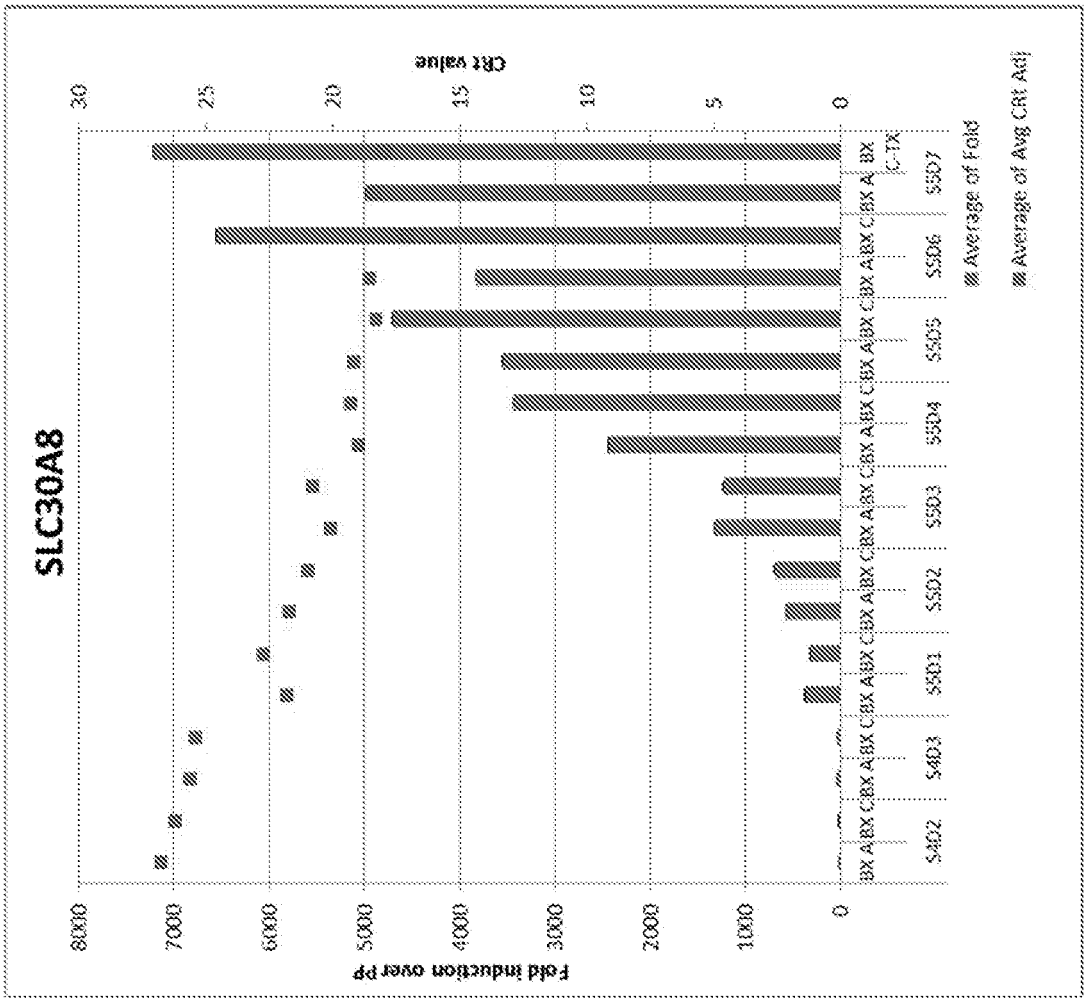

SLC30A8
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S402
S403
S501
S502
S503
S504
S505
S506
S507

Figure 21M

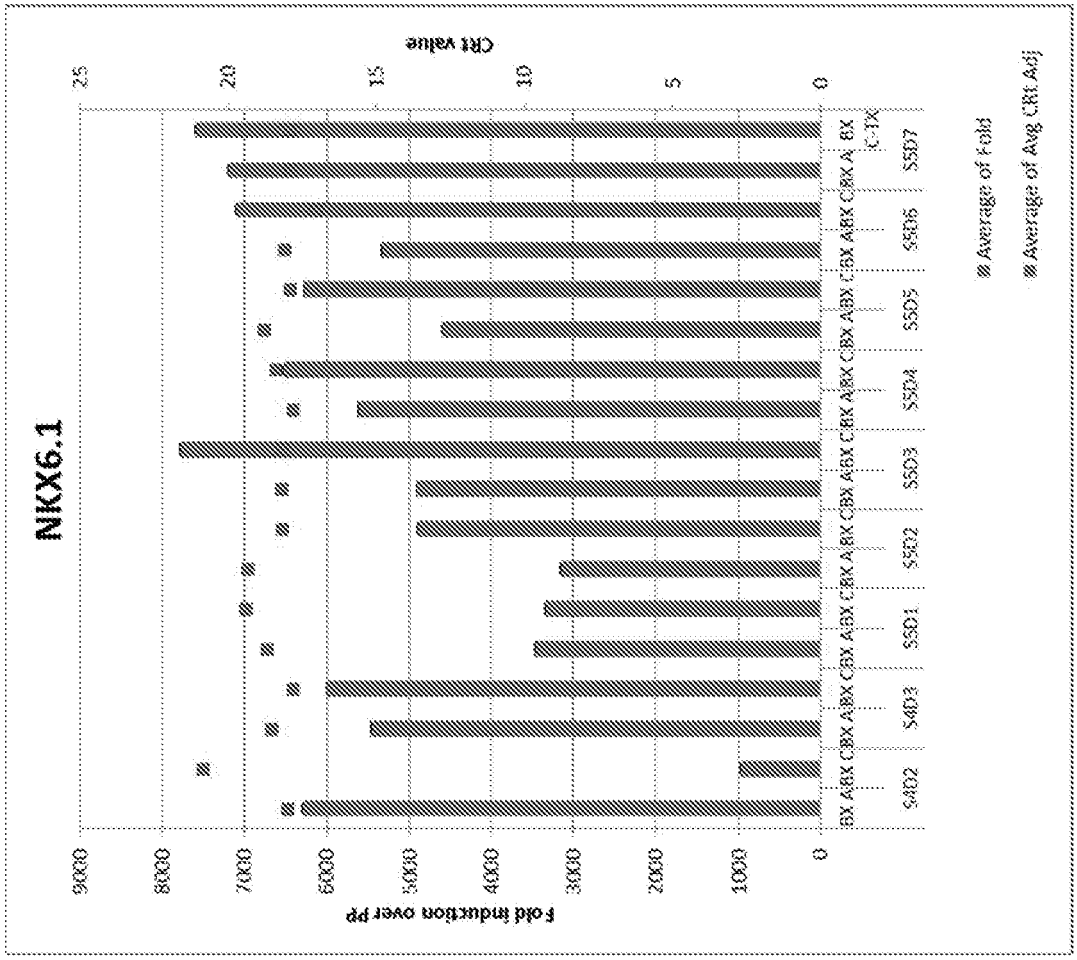

NKX6.1
Fold induction over PP
CRI value
Average of Fold
Average of Avg CRI Adj
S402
S403
S501
S502
S503
S504
S505
S506
S507

Figure 21N

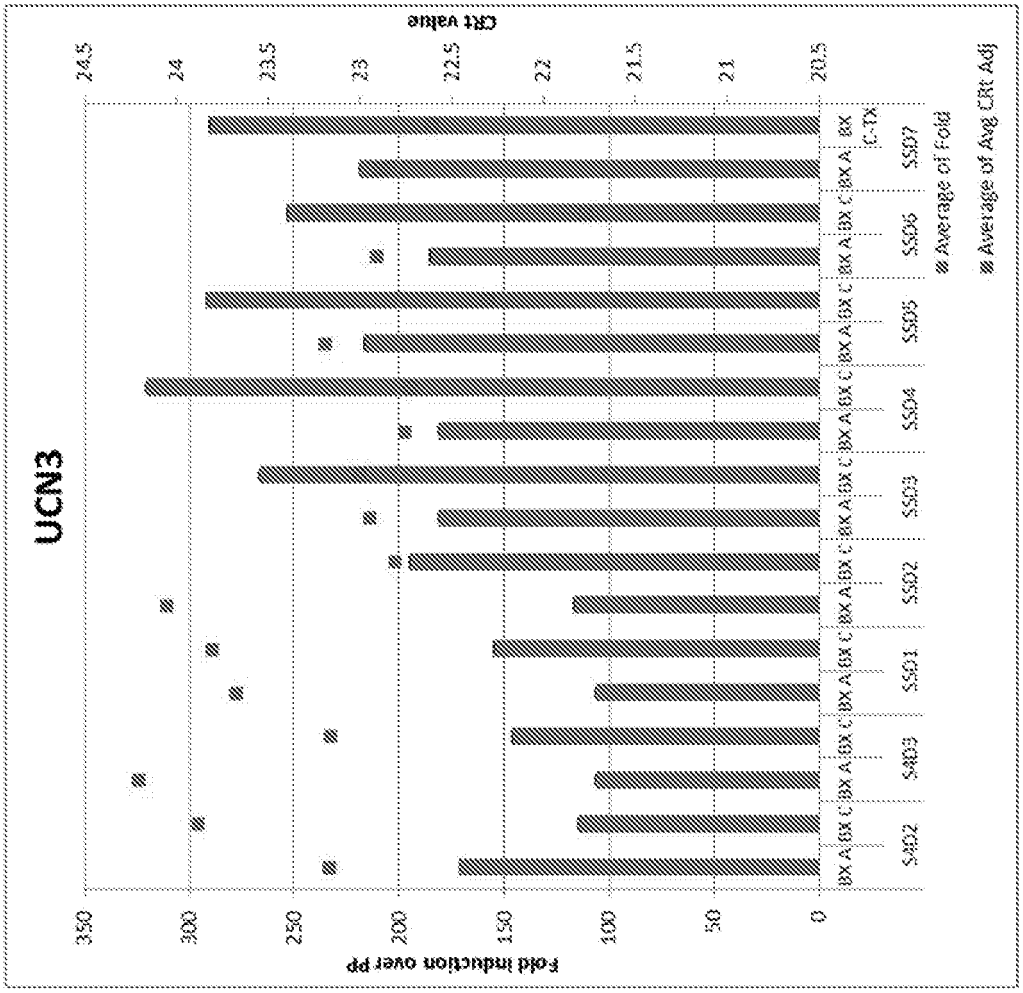

UCN3
Fold induction over PP
CRt value
350
300
250
200
150
100
50
0
24.5
24
23.5
23
22.5
22
21.5
21
20.5
SA02
SA03
SS01
SS02
SS03
SS04
SS05
SS06
SS07
Average of Fold
Average of Avg CRt Adj

Figure 21O

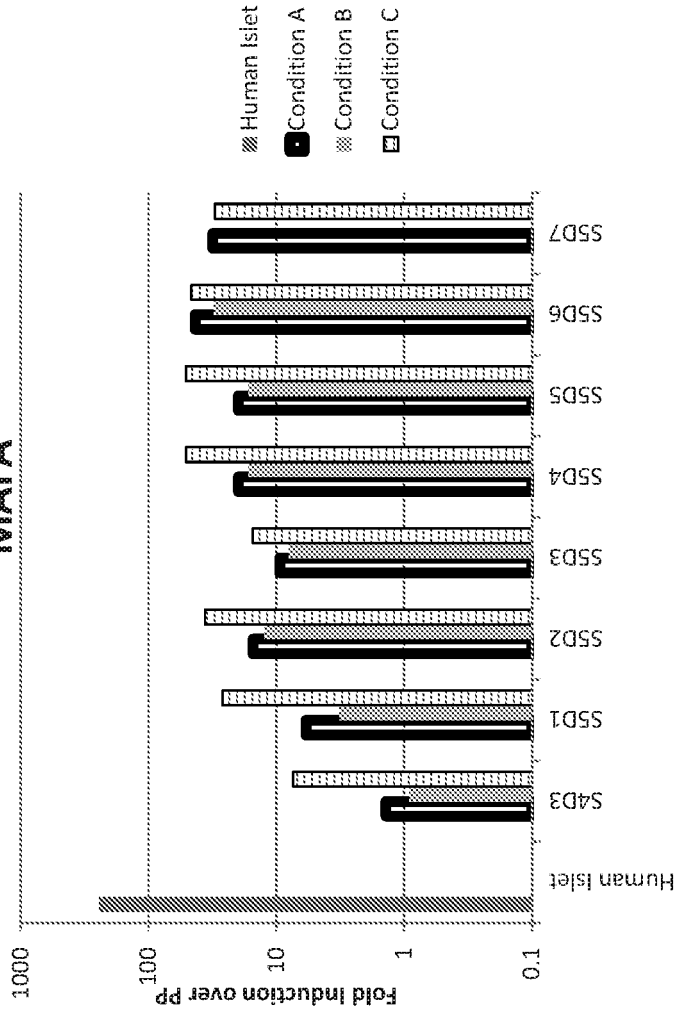

Human Islet
Condition A
Condition B
Condition C
MAFA
Fold Induction over PP
1000
100
10
1
0.1
Human Islet
S4D3
SSD1
SSD2
SSD3
SSD4
SSD5
SSD6
SSD7

Figure 21P

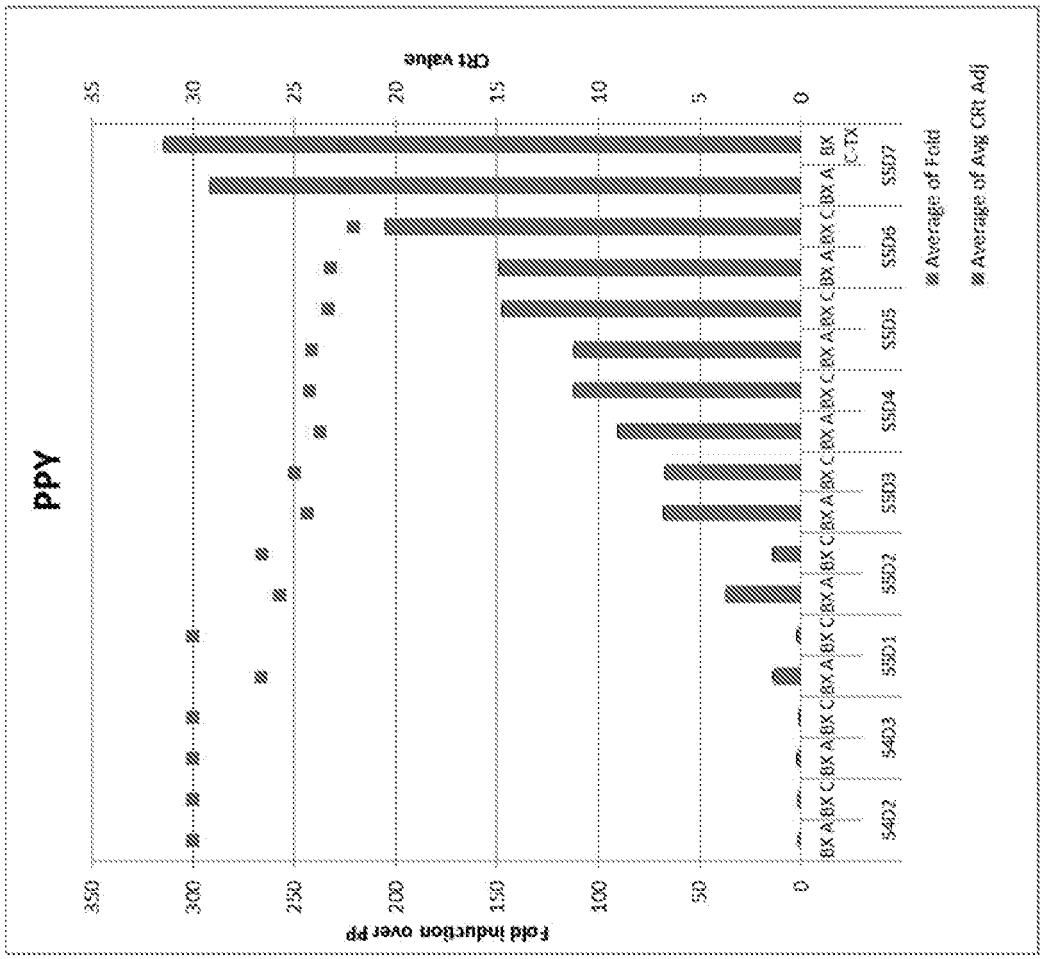

PPY
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S402
S403
S501
S502
S503
S504
S505
S506
S507
ECTX

Figure 21Q

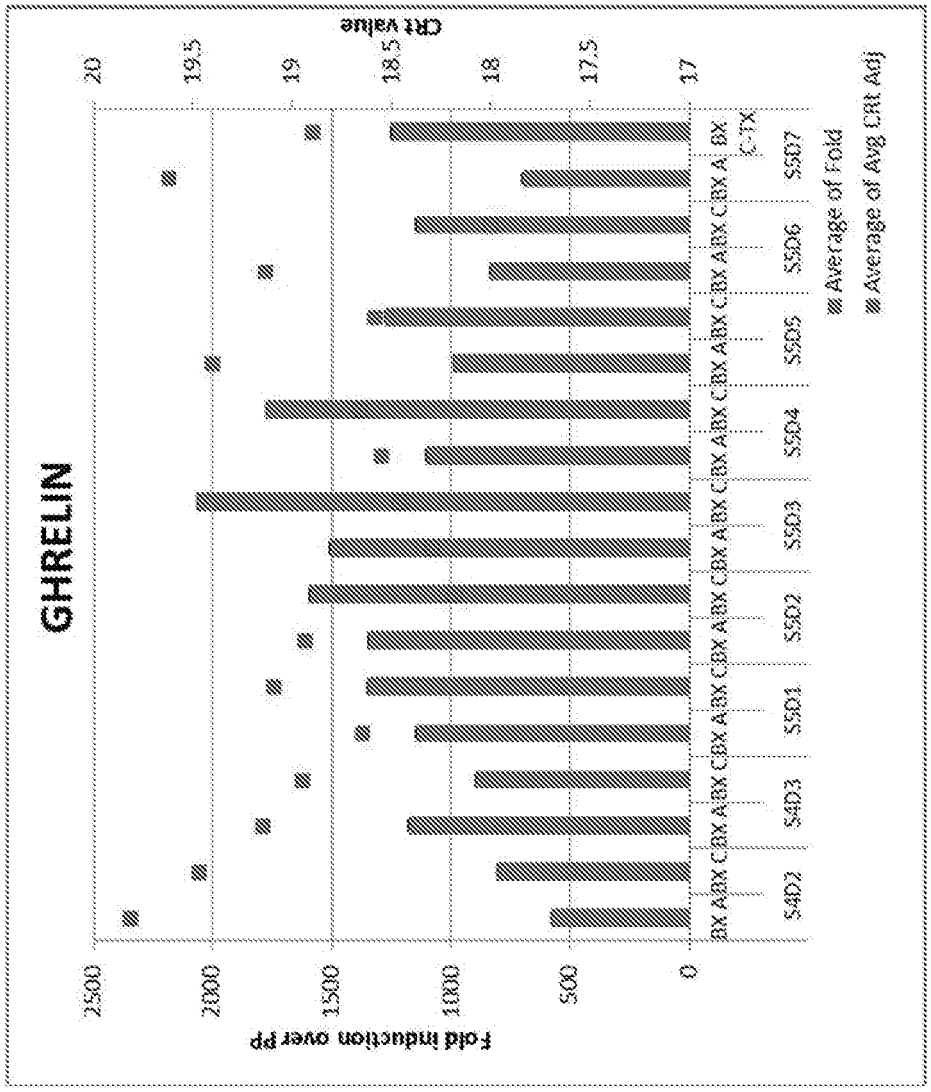

GHRELIN
Fold induction over PP
CRt value
2500
2000
1500
1000
500
0
20
19.5
19
18.5
18
17.5
17
S4D2
S4D3
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
C-TX
Average of Fold
Average of Avg CRt Adj

Figure 21R

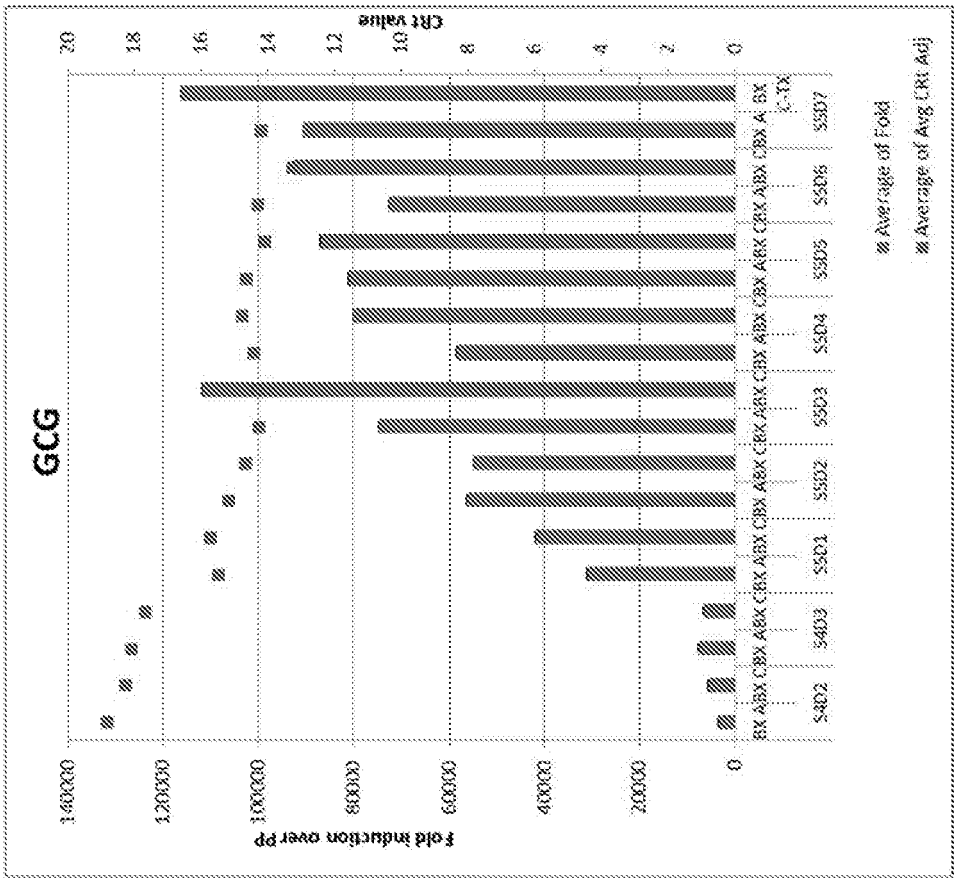

GCG
fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S402
S403
SSD1
SSD2
SSD3
SSD4
SSD5
SSD6
SSD7

Figure 21S

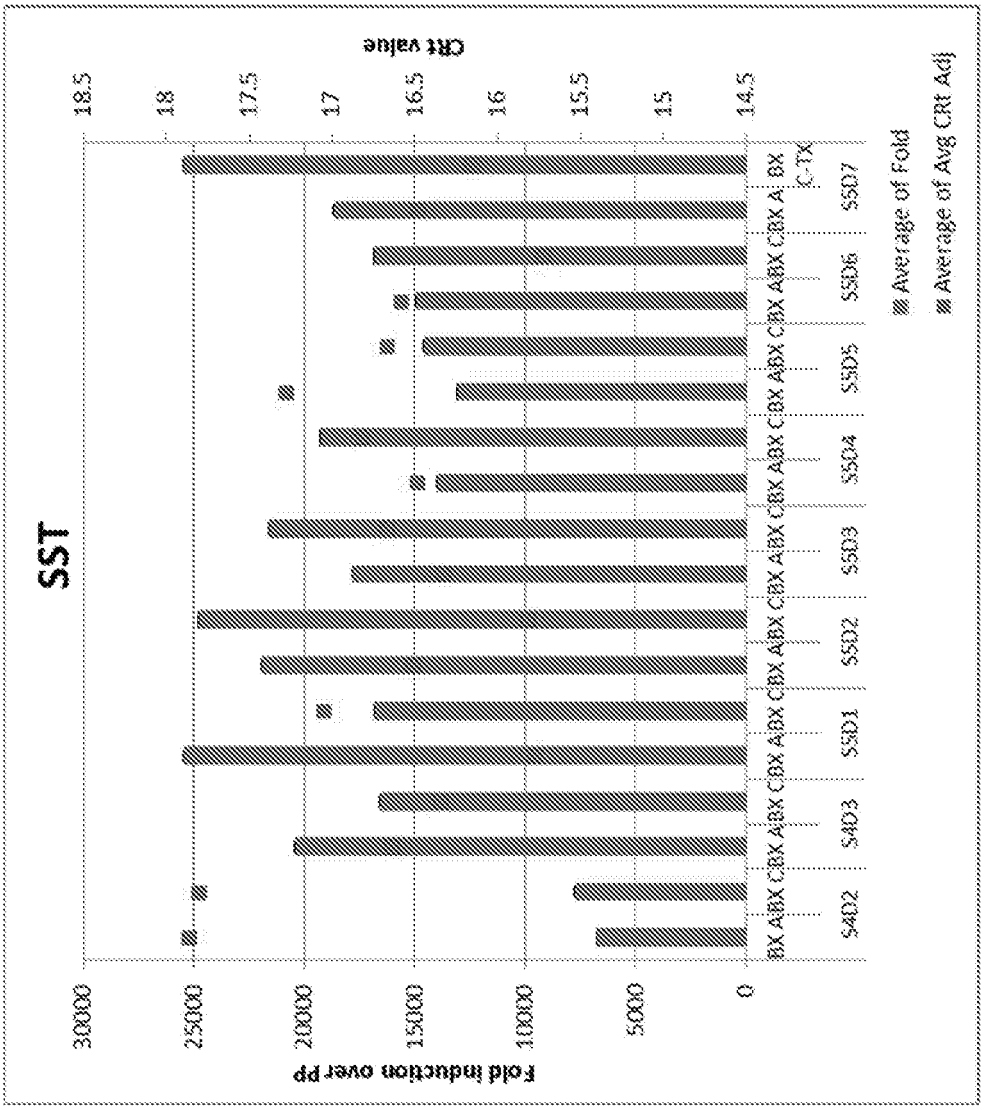

SST
Fold induction over PP
CRt value
30000
25000
20000
15000
10000
5000
0
18.5
18
17.5
17
16.5
16
15.5
15
14.5
S402
S403
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
Average of Fold
Average of Avg CRt Adj

Figure 22

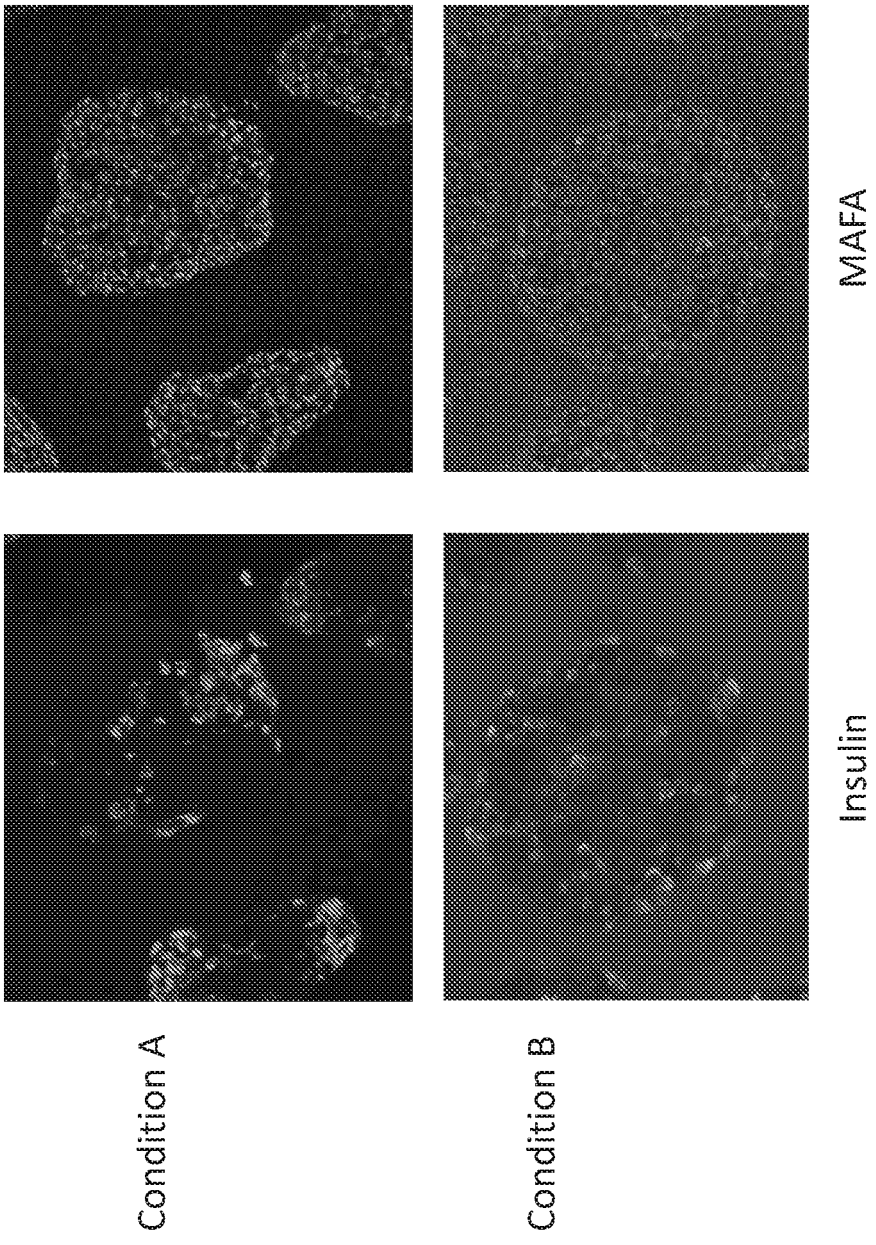


Figure 23

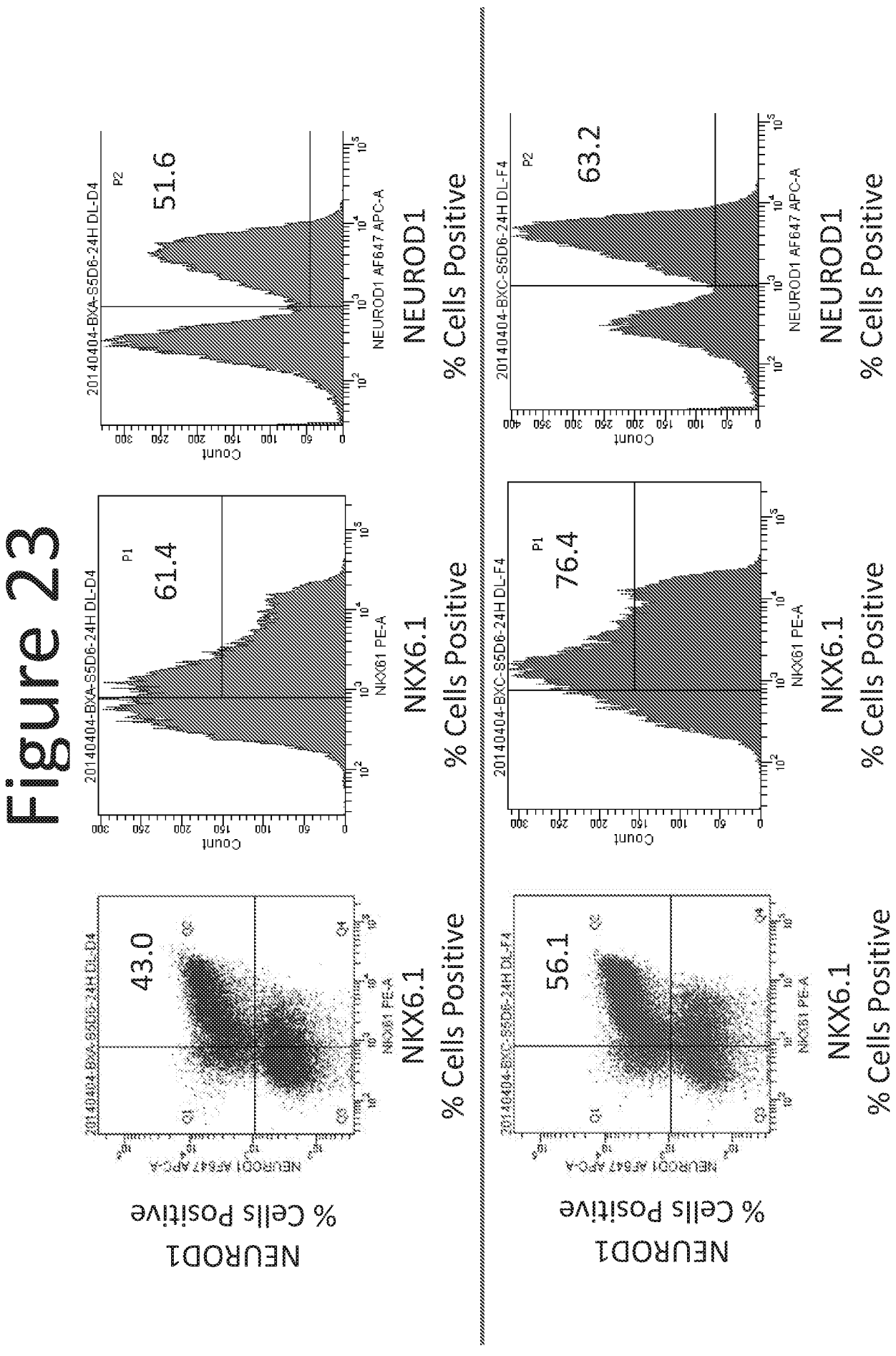

NEUROD1
% Cells Positive
NKX6.1
% Cells Positive
43.0
56.1
20140404-BXA-S5D6-24H DL-D4
20140404-BXC-S5D6-24H DL-F4
NEUROD1 AF647 APC-A
NKX6.1 PE-A
NKX6.1
% Cells Positive
NEUROD1
% Cells Positive
61.4
76.4
P1
Count
NEUROD1
% Cells Positive
51.6
63.2
P2

Figure 24A

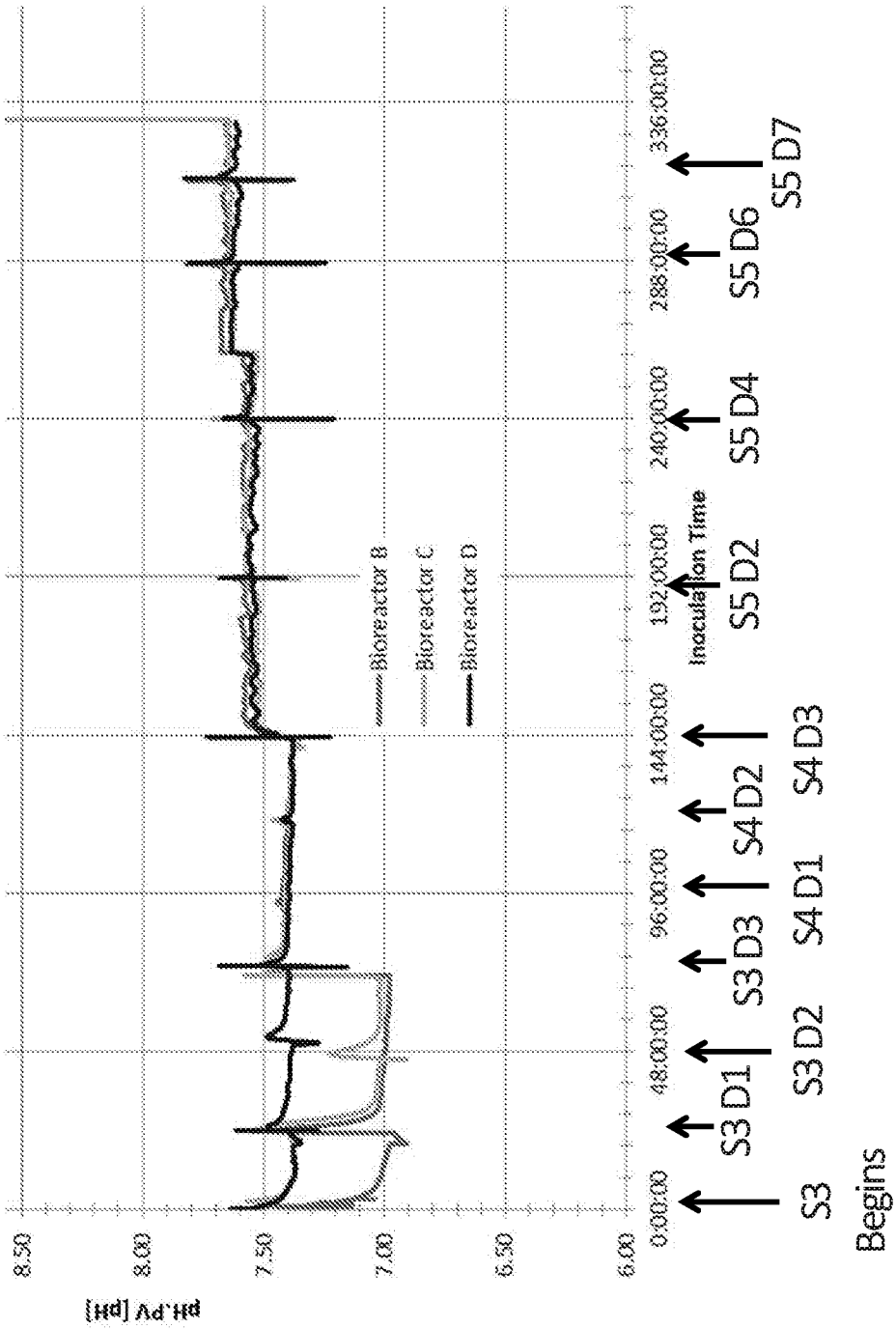

pH_PV [pH]
8.50
8.00
7.50
7.00
6.50
6.00
0:00:00
48:00:00
96:00:00
144:00:00
192:00:00
240:00:00
288:00:00
336:00:00
Inoculation Time
Bioreactor B
Bioreactor C
Bioreactor D
S3
Begins
S3 D1
S3 D2
S3 D3
S4 D1
S4 D2
S4 D3
S5 D2
S5 D4
S5 D6
S5 D7

Figure 24B

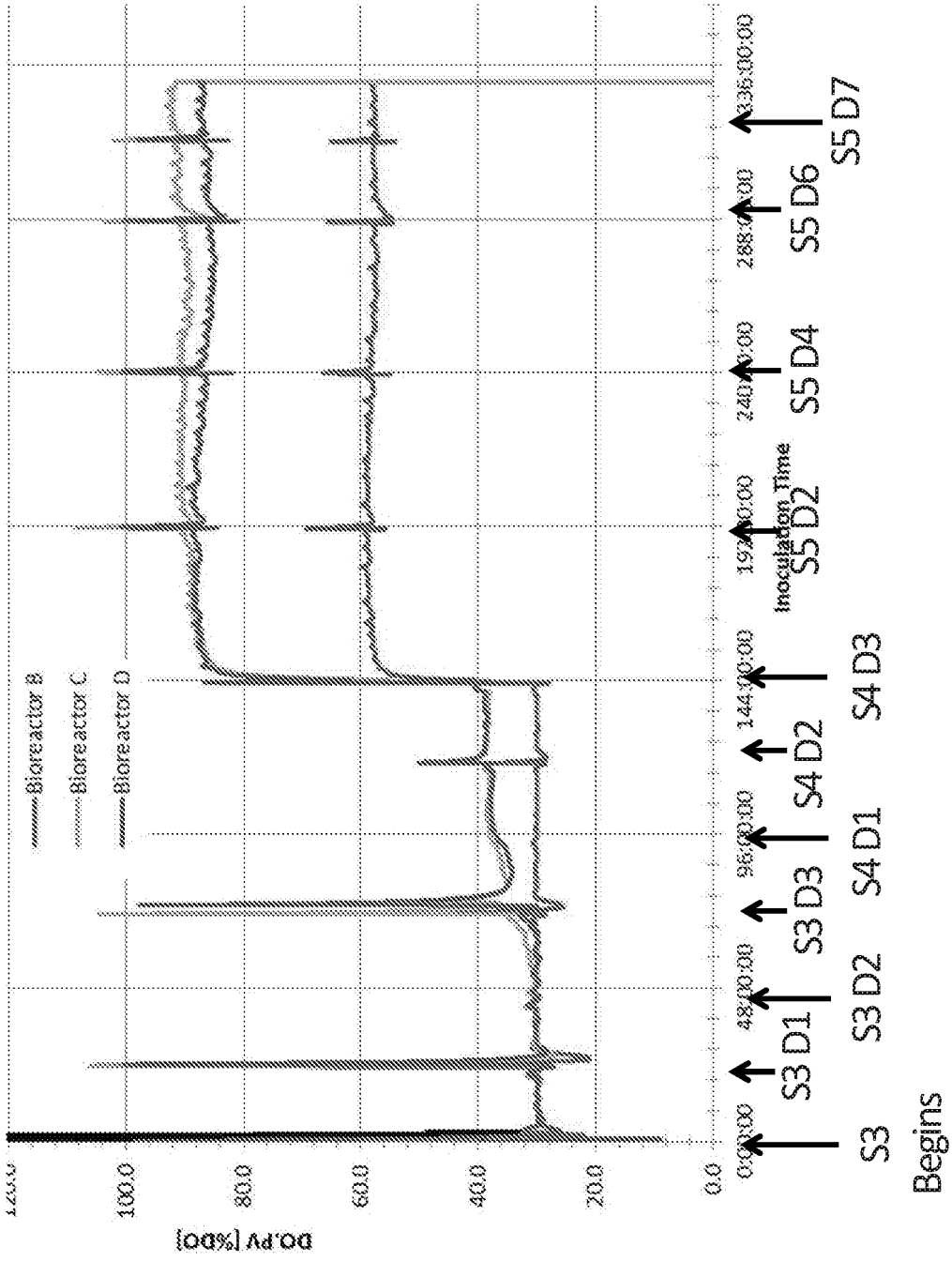

Bioreactor B
Bioreactor C
Bioreactor D
DO.PV [%DO]
100.0
80.0
60.0
40.0
20.0
0.0
Inoculation Time
Begins
S3
S3 D1
S3 D2
S3 D3
S4 D1
S4 D2
S4 D3
S5 D2
S5 D4
S5 D6
S5 D7

Figure 25

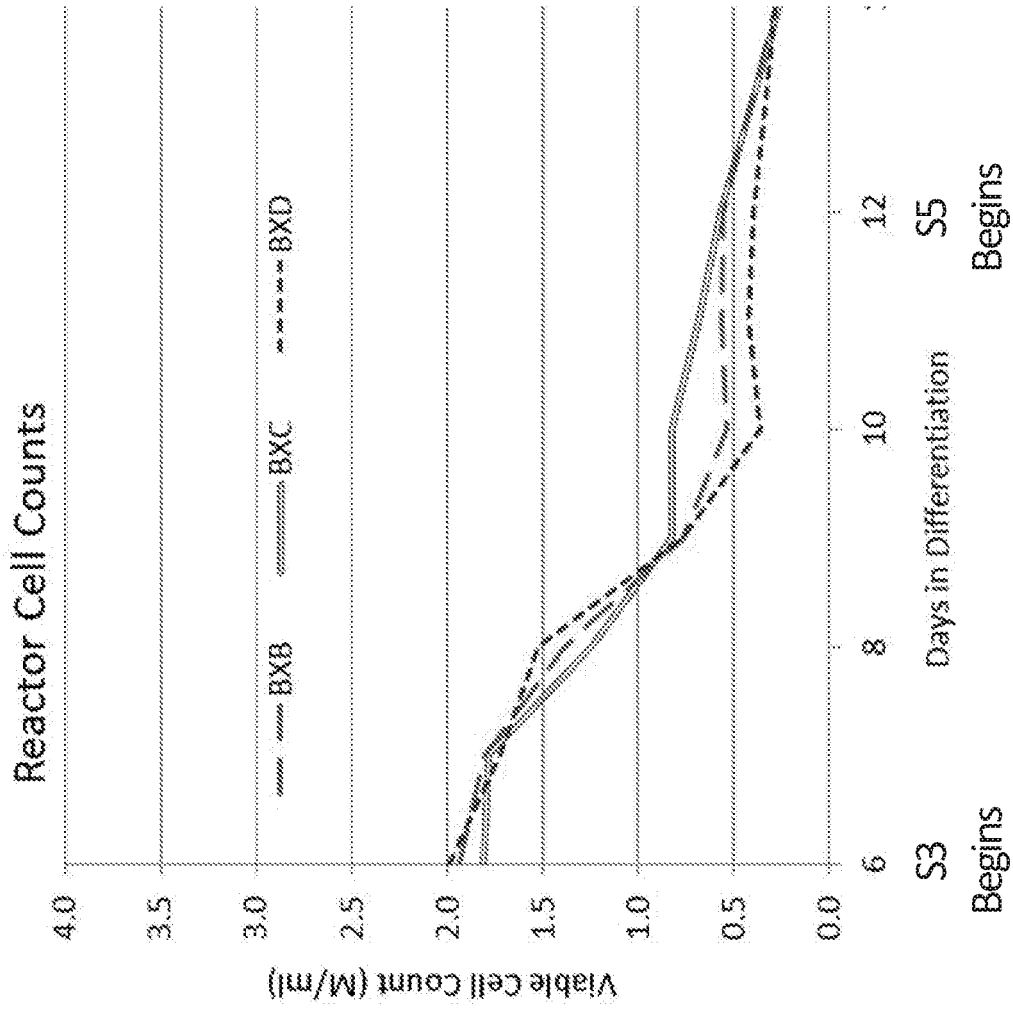

Reactor Cell Counts
BXB
BXC
BXD
Viable Cell Count (M/ml)
4.0
3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
6
8
10
12
Days in Differentiation
S3
Begins
S5
Begins

Figure 26A

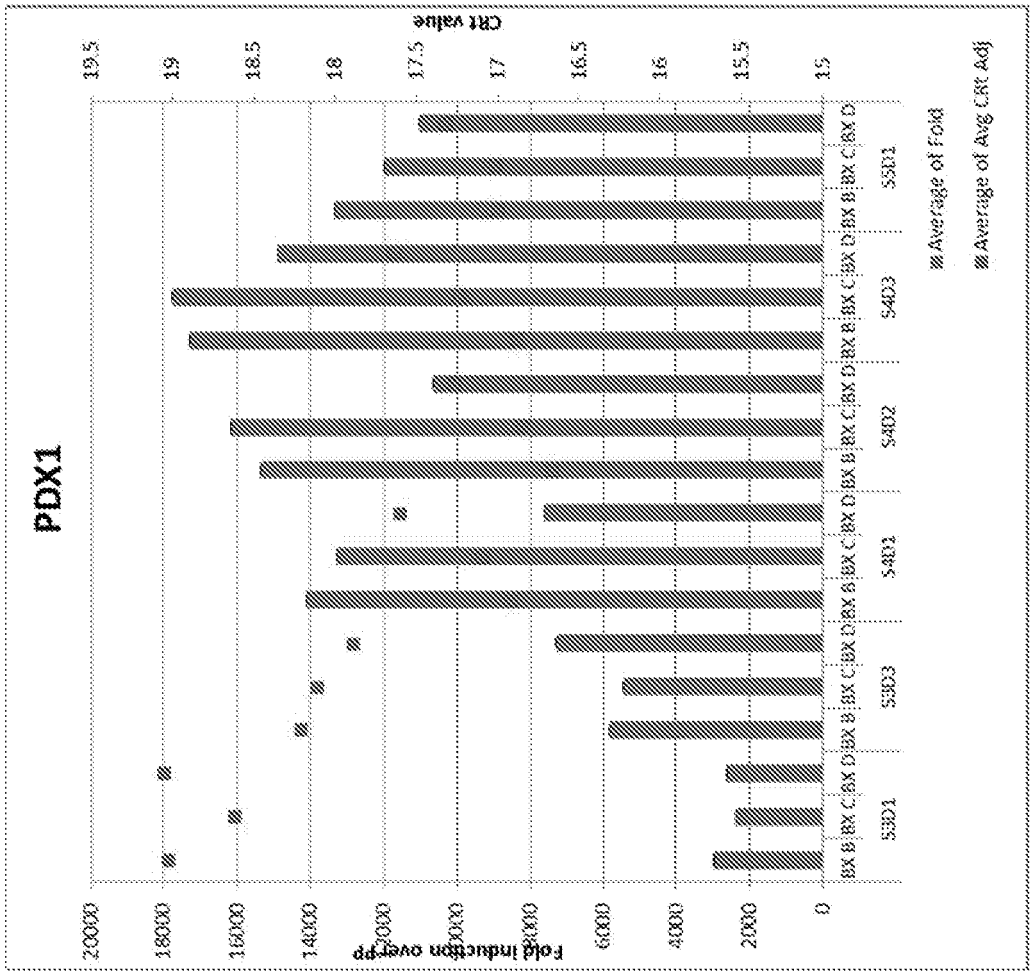

PDX1
Fold induction over PP
CRT value
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
19.5
19
18.5
18
17.5
17
16.5
16
15.5
15
S3D1
S3D3
S4D1
S4D2
S4D3
S5D1
Average of Fold
Average of Avg CRT Adj

Figure 26B

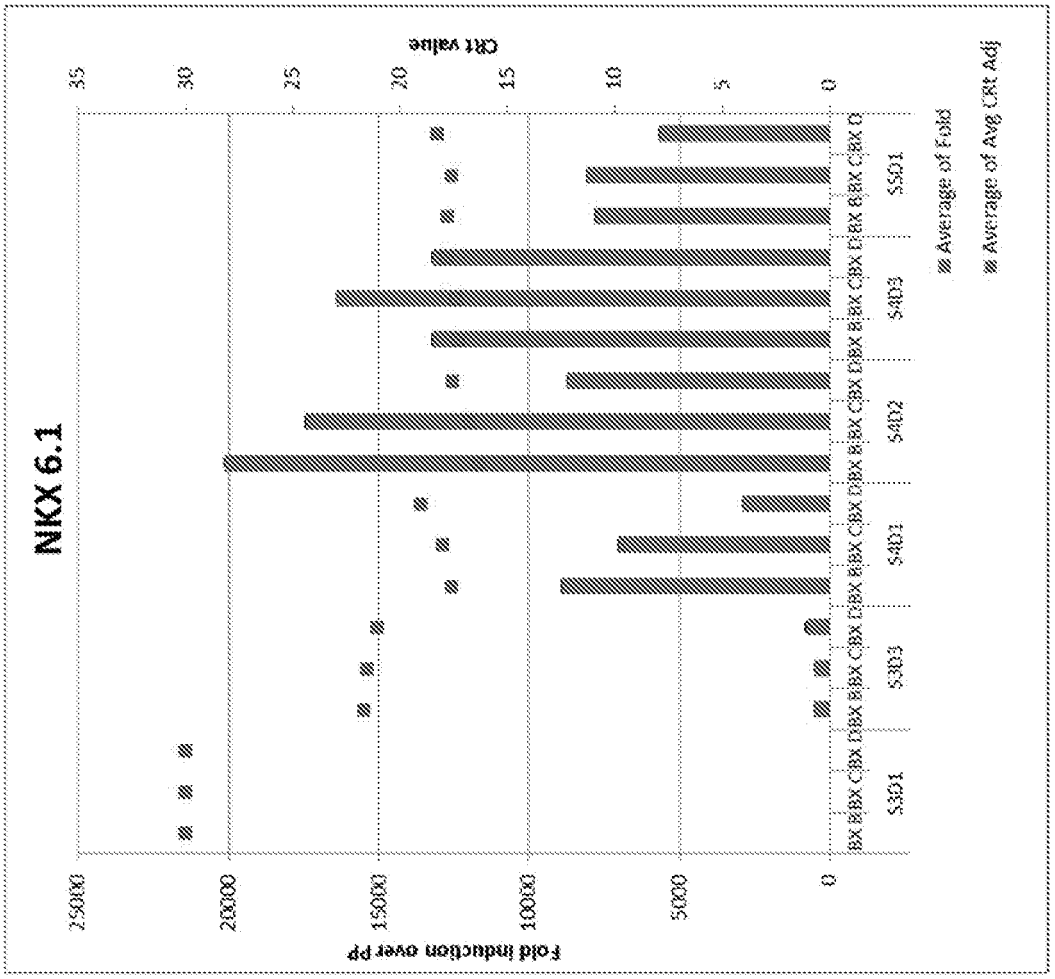

NKX 6.1
Fold induction over PP
CRt value
25000
20000
15000
10000
5000
0
35
30
25
20
15
10
5
0
5303
5303
5402
5402
5403
5501
Average of Fold
Average of Avg CRt Adj

Figure 26C

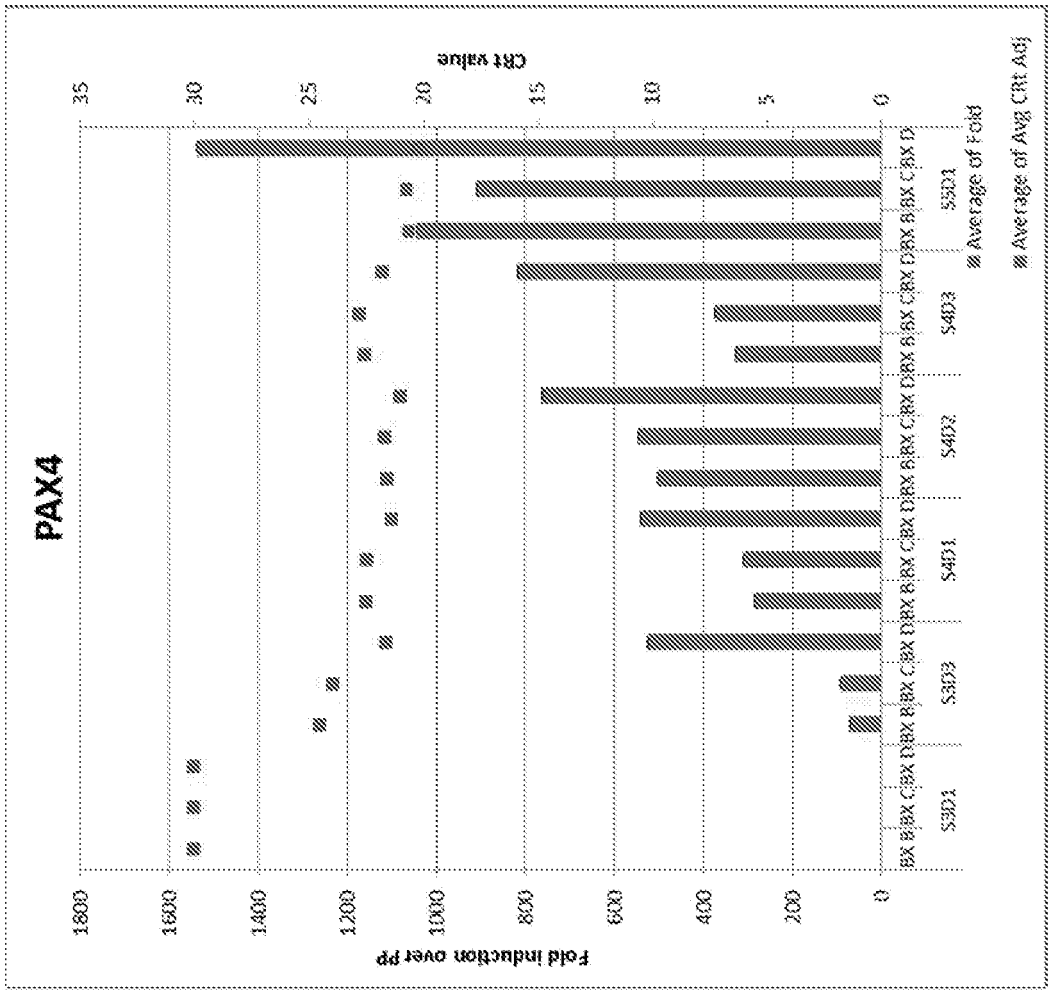

PAX4
Fold induction over PP
CRt value
1800
1600
1400
1200
1000
800
600
400
200
0
35
30
25
20
15
10
5
0
S3D1
S3D3
S4D1
S4D2
S4D3
S5D1
Average of Fold
Average of Avg CRt Adj

Figure 26D

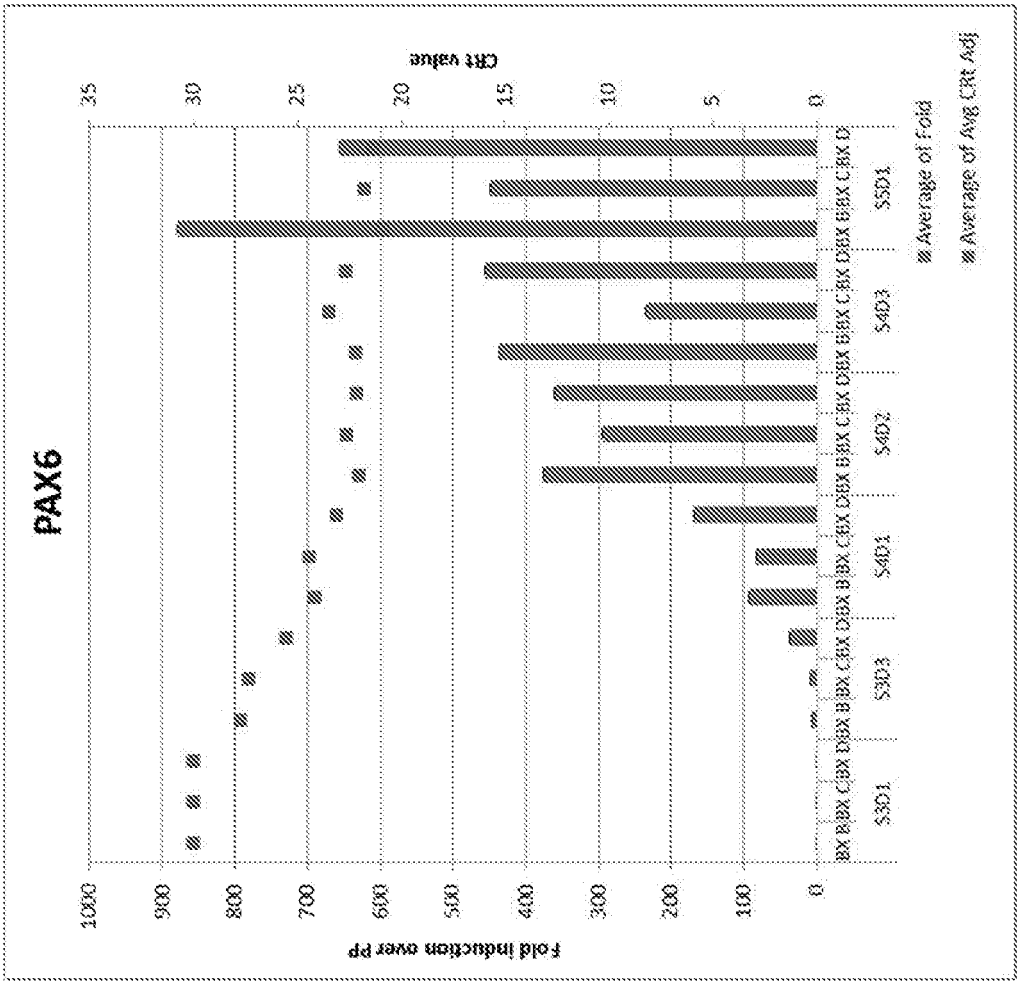

PAX6
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S3D1
S3D3
S4D1
S4D2
S4D3
S5D1

Figure 26E

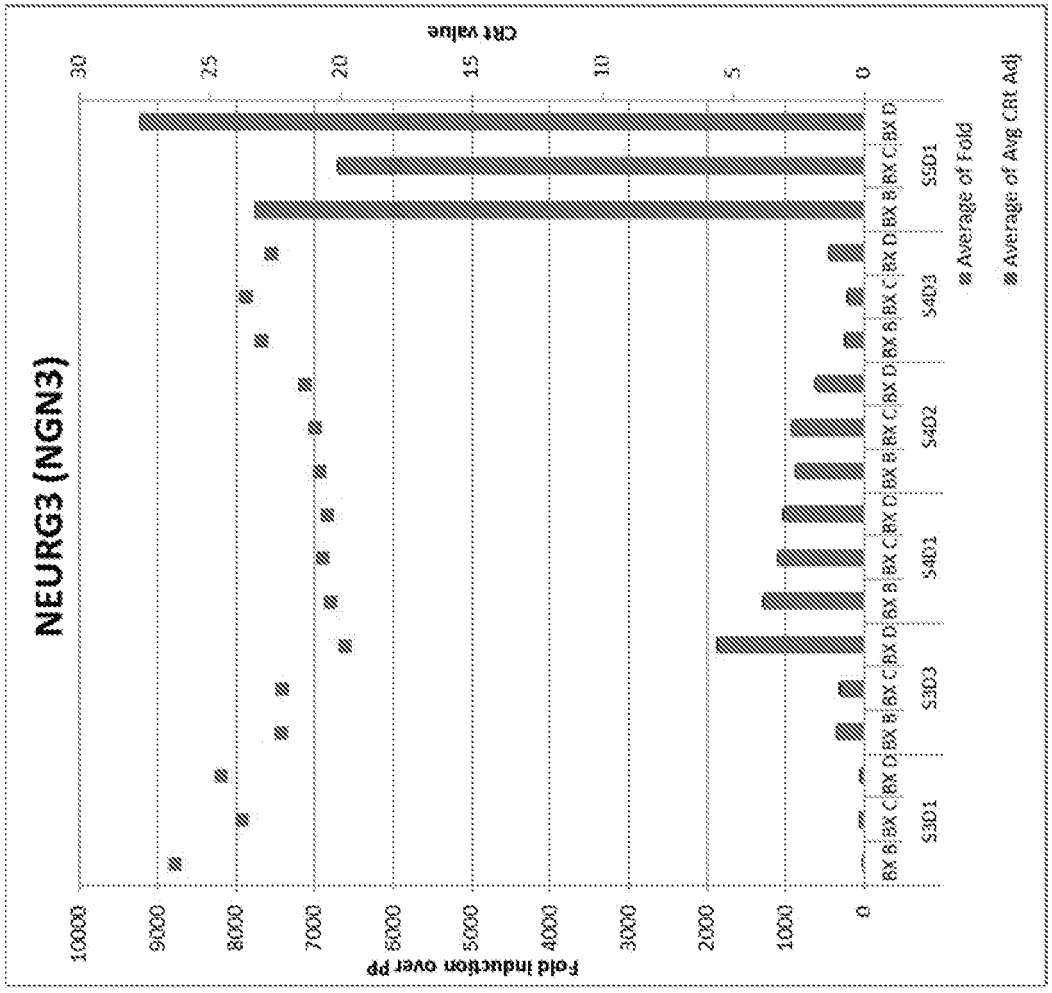

NEURG3 (NGN3)
Fold induction over PP
CRt value
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
30
25
20
15
10
5
0
S3D1
S3D3
S4D1
S4D2
S4D3
S5D1
Average of Fold
Average of Avg CRt Adj

Figure 26F

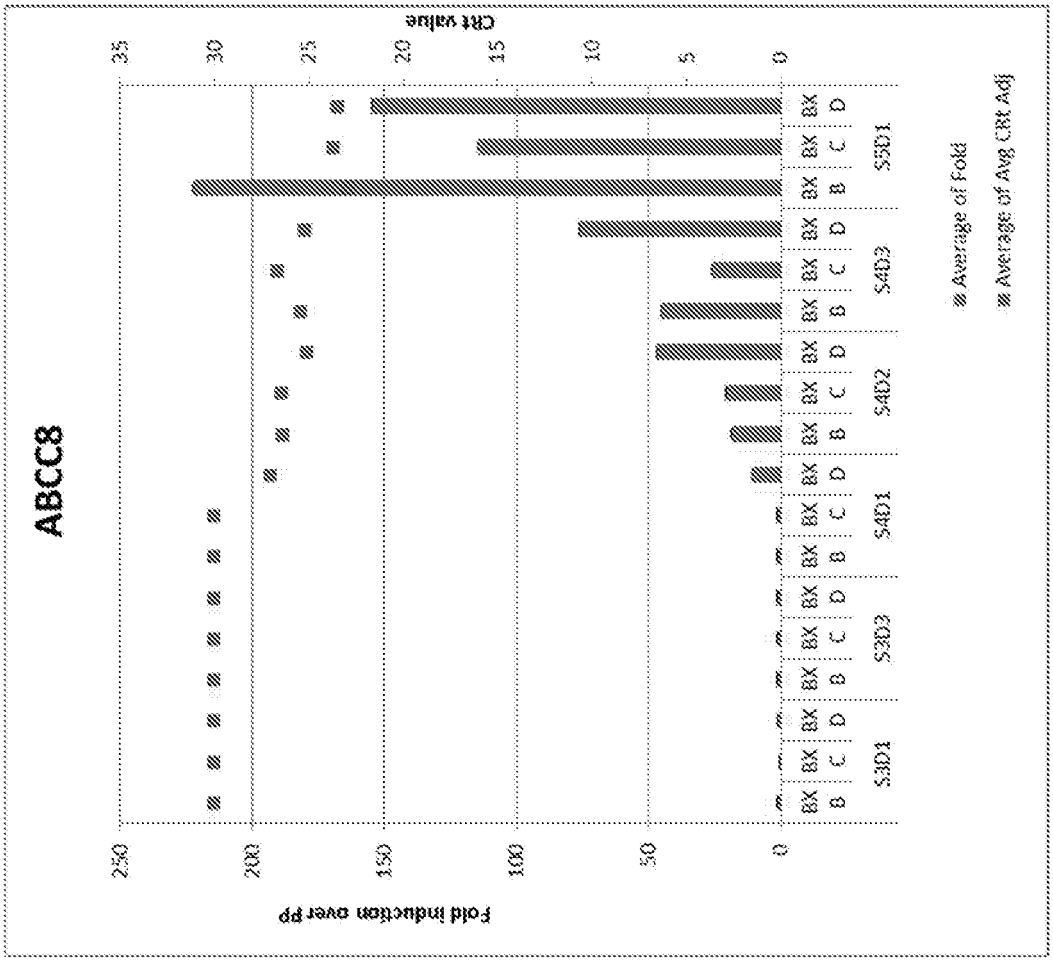

ABCC8
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S3D1
S3D3
S4D1
S4D2
S4D3
S5D1

Figure 26G

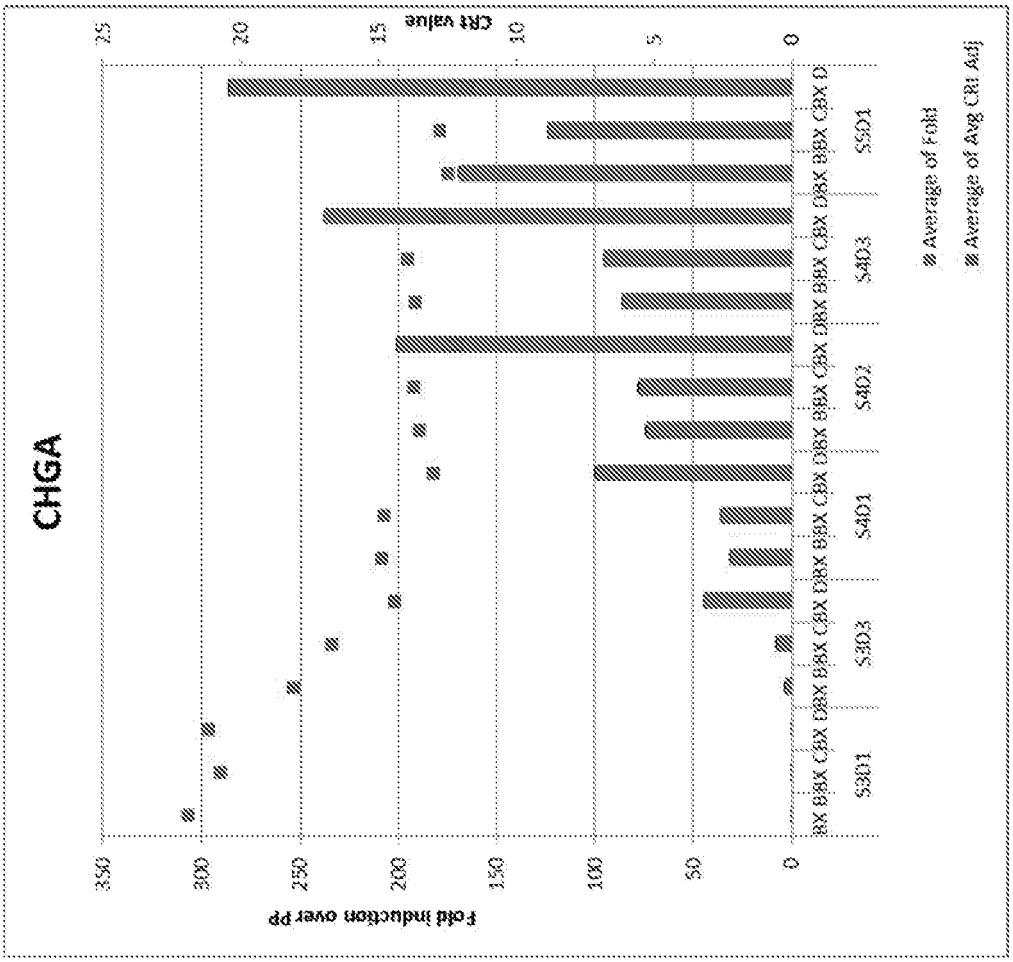

CHGA
Fold induction over PP
CRT value
Average of Fold
Average of Avg CRT Adj
S3D1
S3D3
S4D1
S4D2
S4D3
S5D1

Figure 26H

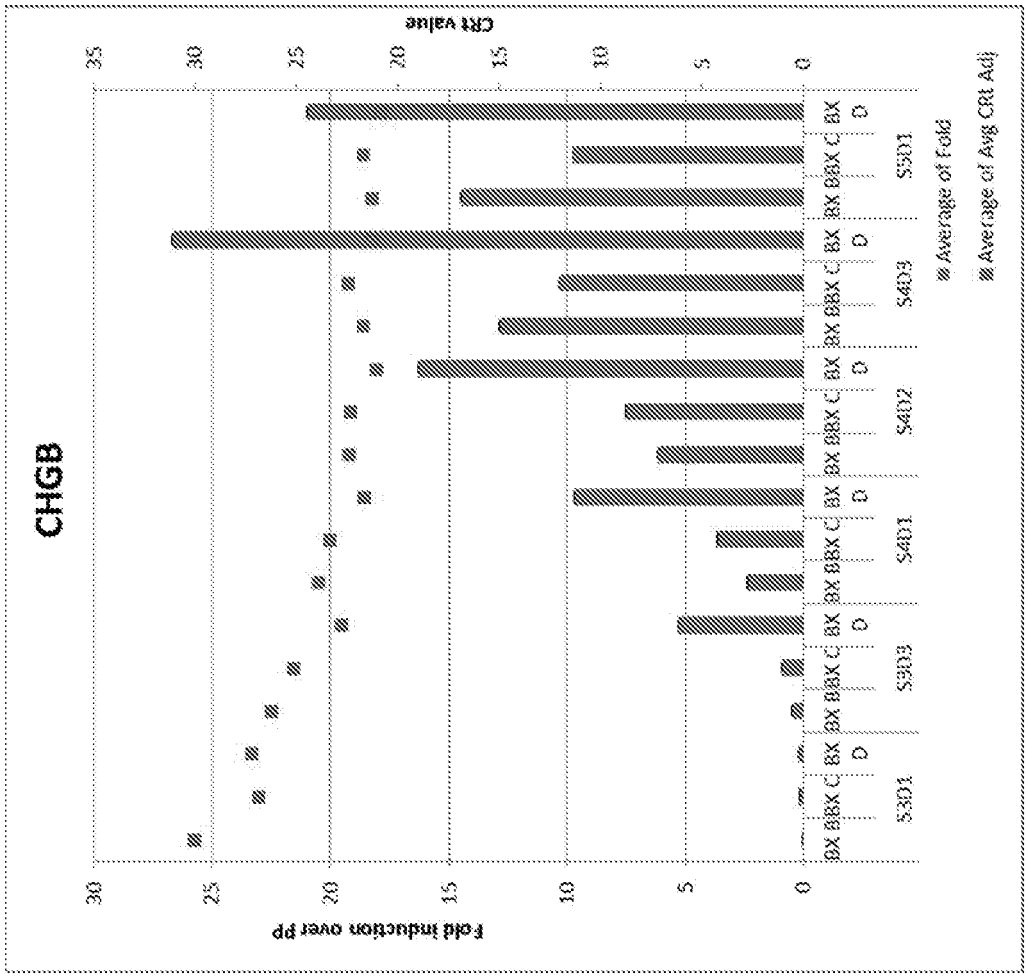

CHGB
Fold induction over PP
CRT value
0
5
10
15
20
25
30
35
BX BBX C BX D
S301
S303
S401
S402
S403
S501
Average of Fold
Average of Avg CRT Adj

Figure 26I

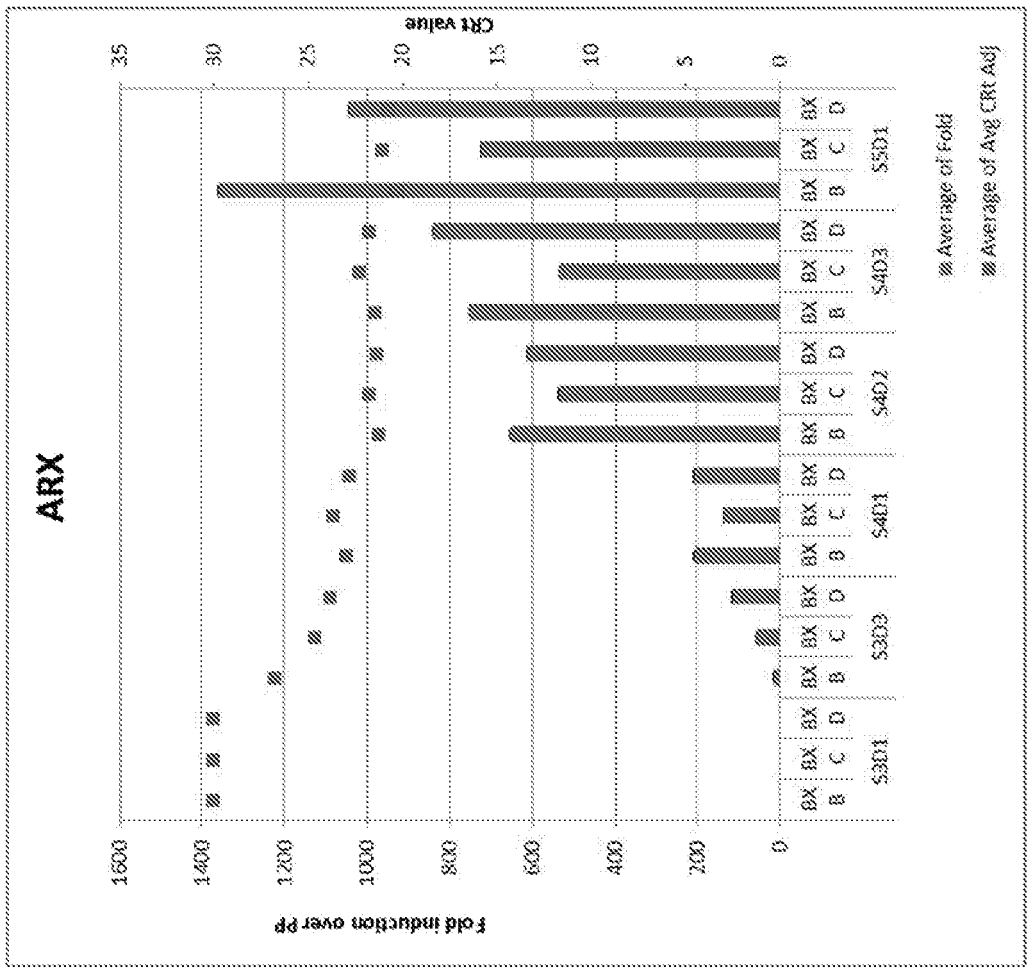

ARX
Fold induction over PP
CRt value
1600
1400
1200
1000
800
600
400
200
0
35
30
25
20
15
10
5
0
S3D1
S3D3
S4D1
S4D2
S4D3
S5D1
BX
B
C
D
Average of Fold
Average of Avg CRt Adj

Figure 26J

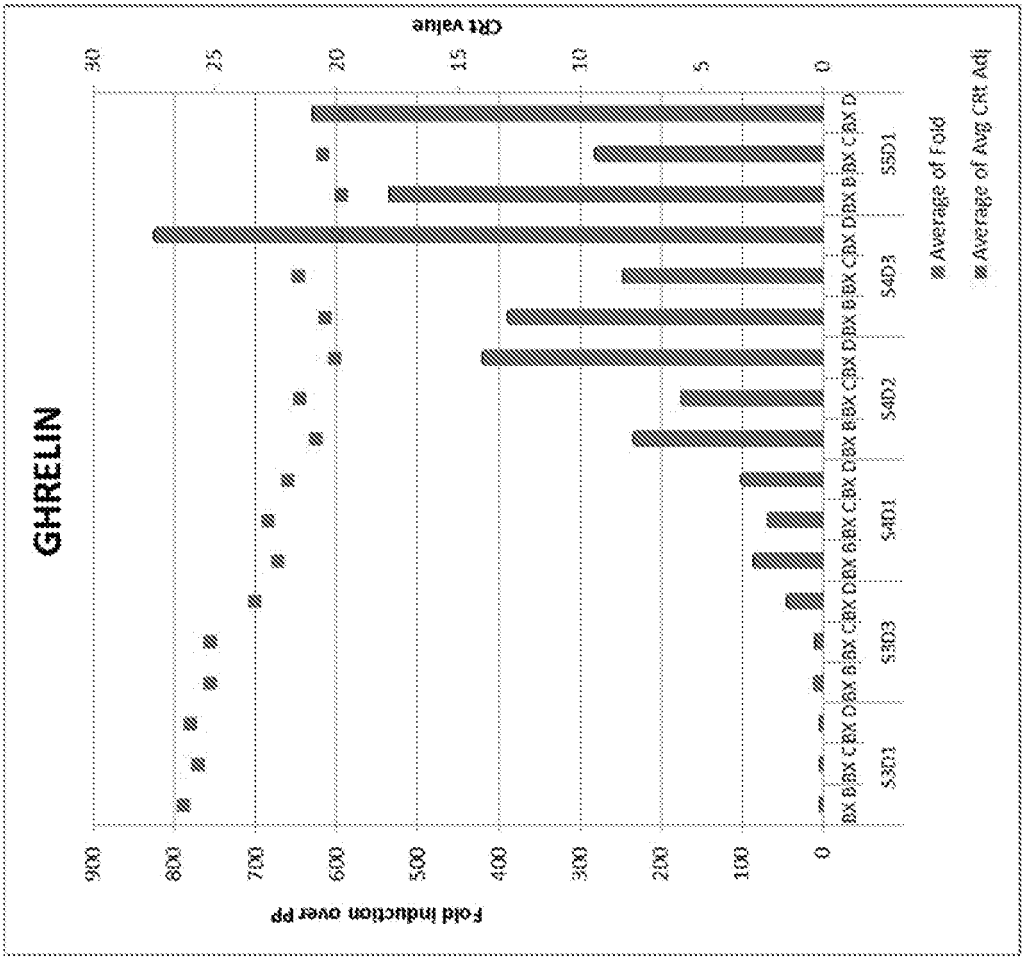

GHRELIN
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S3D1
S4D3
S4D2
S4D1
S3D3
S3D1

Figure 26K

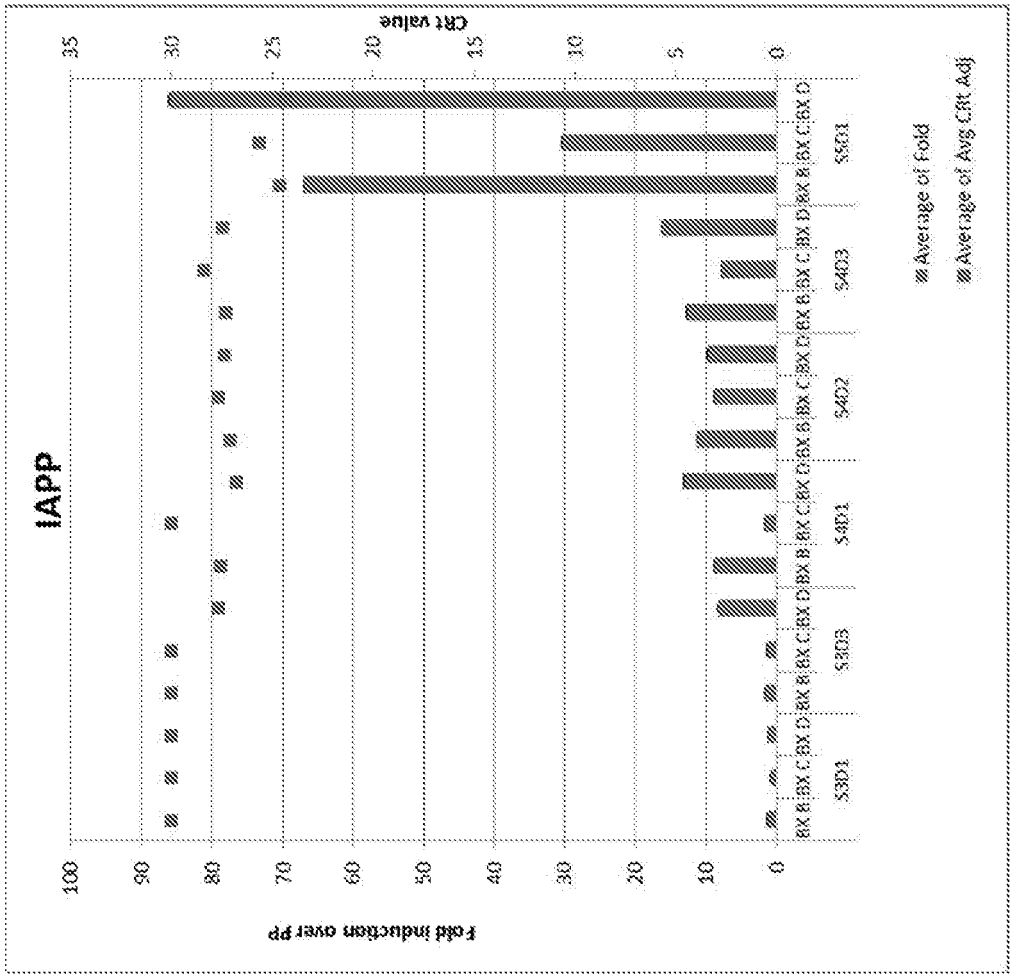

!APP
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S3D1
S3D3
S4D1
S4D2
S4D3
S5D1

Figure 26L

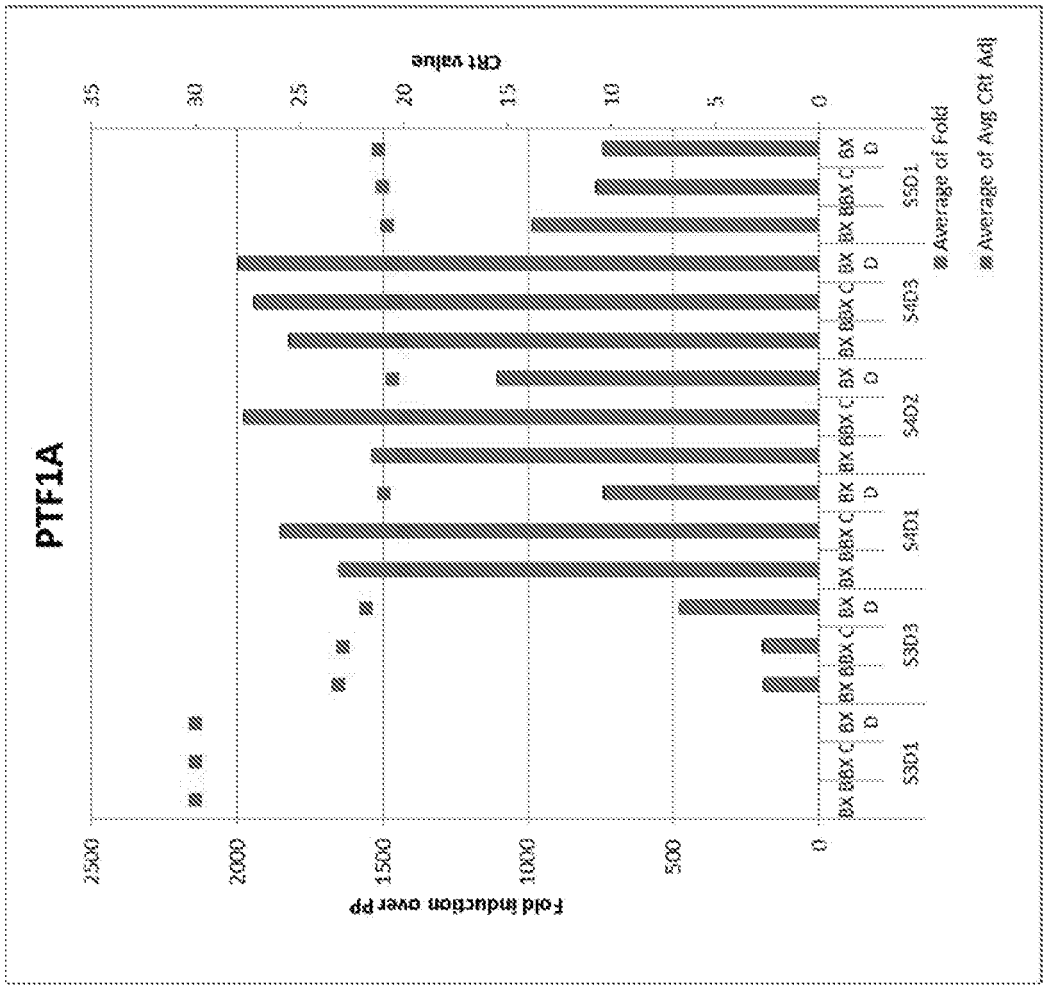

PTF1A
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
0
500
1000
1500
2000
2500
0
5
10
15
20
25
30
35
S3D1
S3D3
S4D1
S4D2
S4D3
S5D1
BX
BBX
C
D

Figure 26M

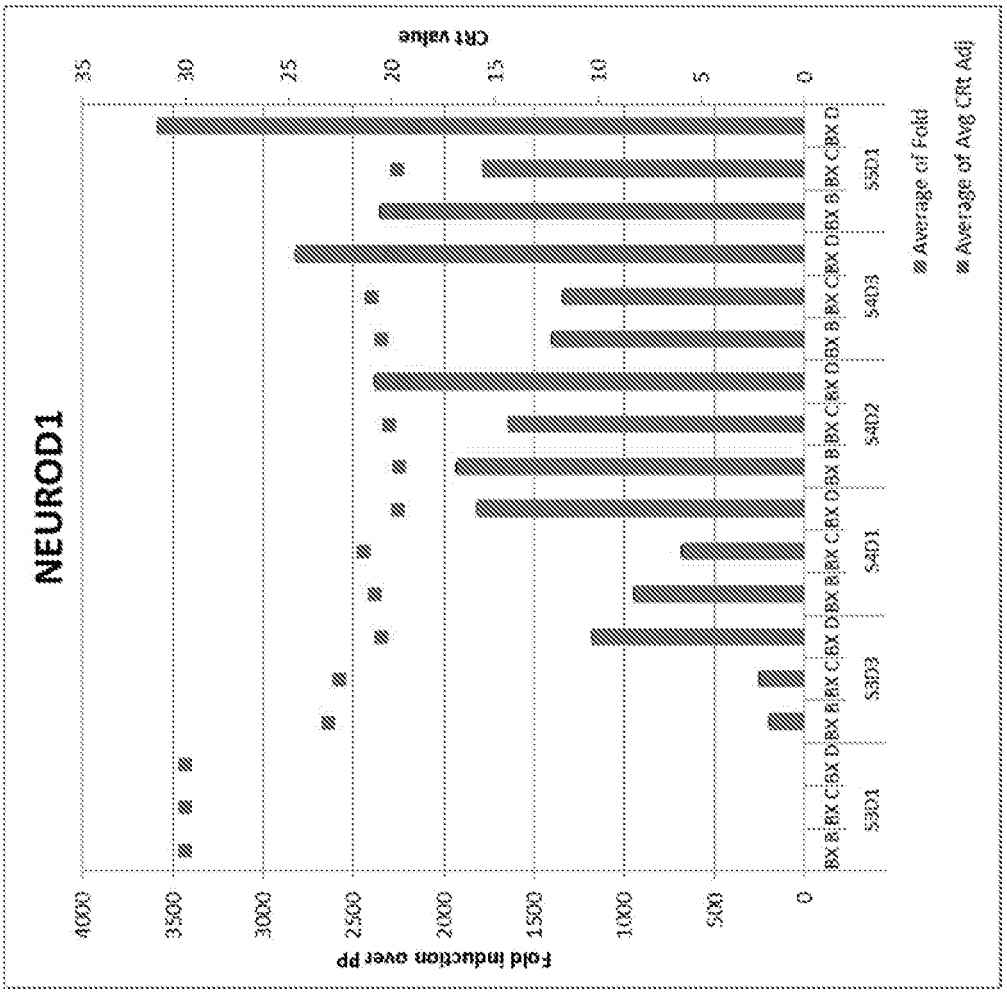

NEUROD1
fold induction over PP
CRT value
Average of Fold
Average of Avg CRt Adj
5SD1
5SD3
5AD1
5AD2
5AD3
5SD1

Figure 26N

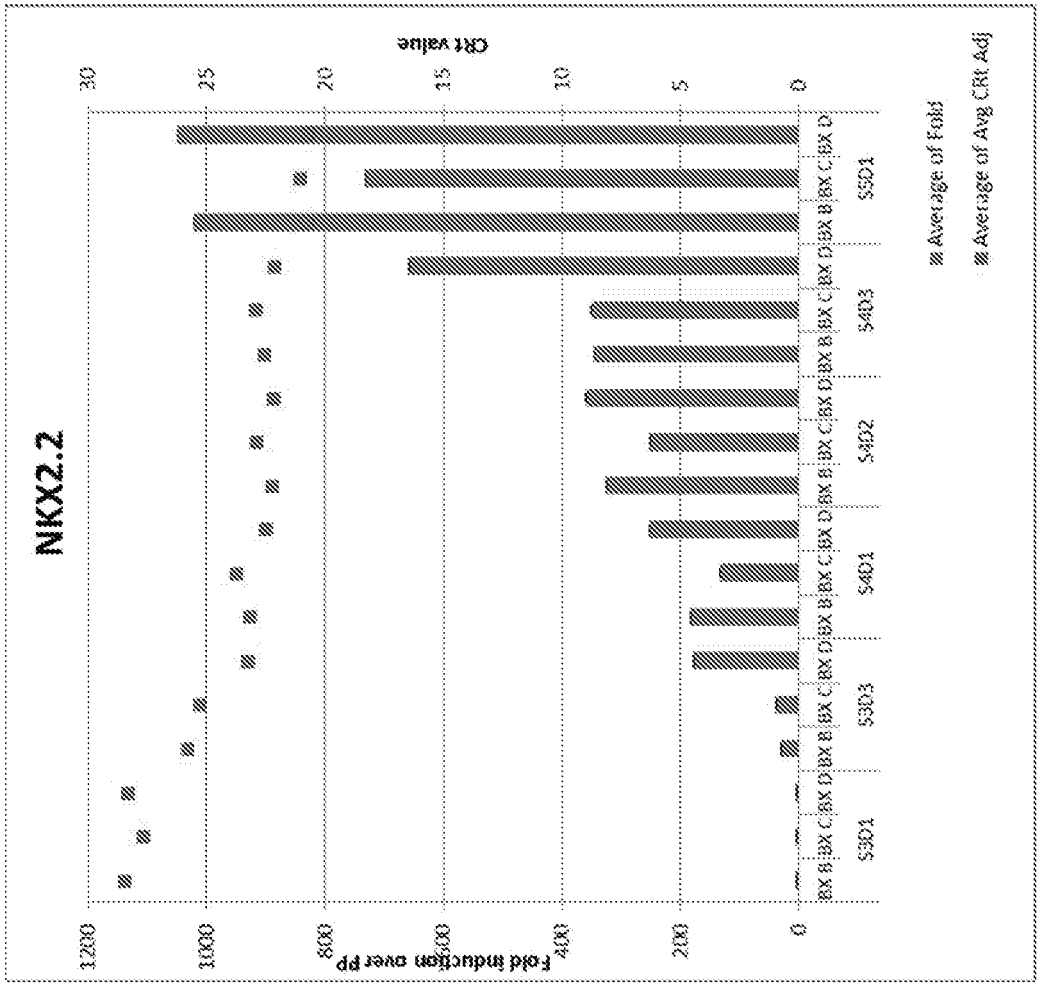

NKX2.2
Fold induction over PP
CRt value
1200
1000
800
600
400
200
0
30
25
20
15
10
5
0
Average of Fold
Average of Avg CRt Adj
5301
5303
5401
5402
5403
5501

Figure 27A

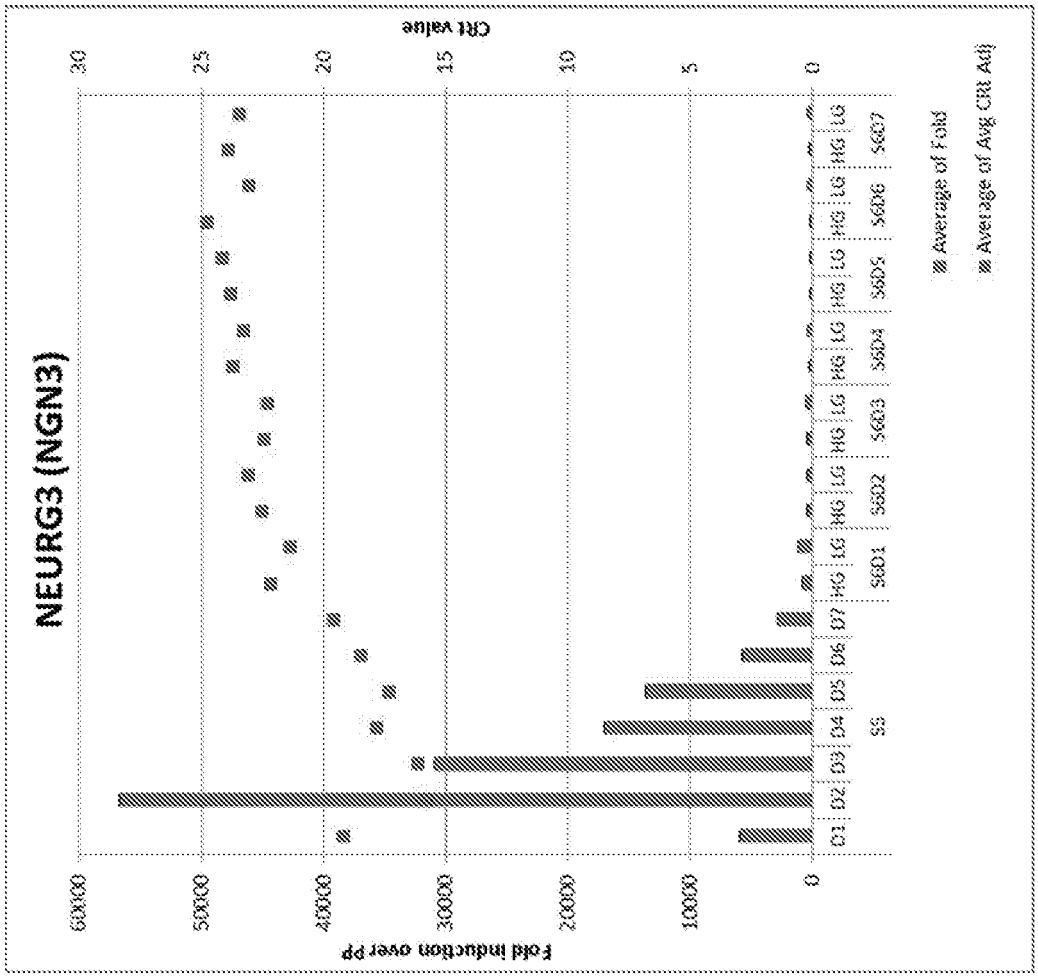

NEURG3 (NGN3)
Fold induction over PP
CRt value
60000
50000
40000
30000
20000
10000
0
30
25
20
15
10
5
0
D1
D2
D3
D4
D5
D6
D7
SS
HG
LG
S601
S602
S603
S604
S605
S606
S607
Average of Fold
Average of Avg CRt Adj

Figure 27B

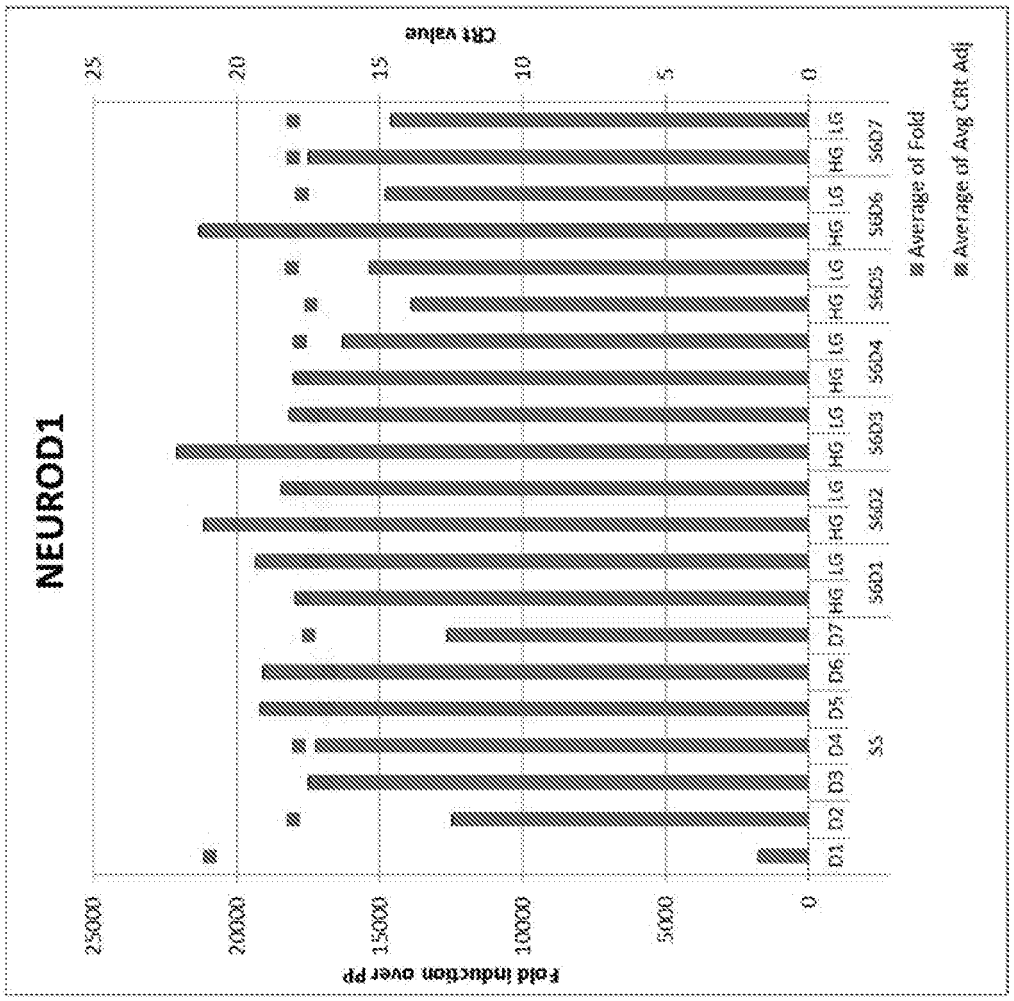

NEUROD1
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
SS
D1 D2 D3 D4 D5 D6 D7 HG LG
S602
S603
S604
S605
S606
S607

Figure 27C

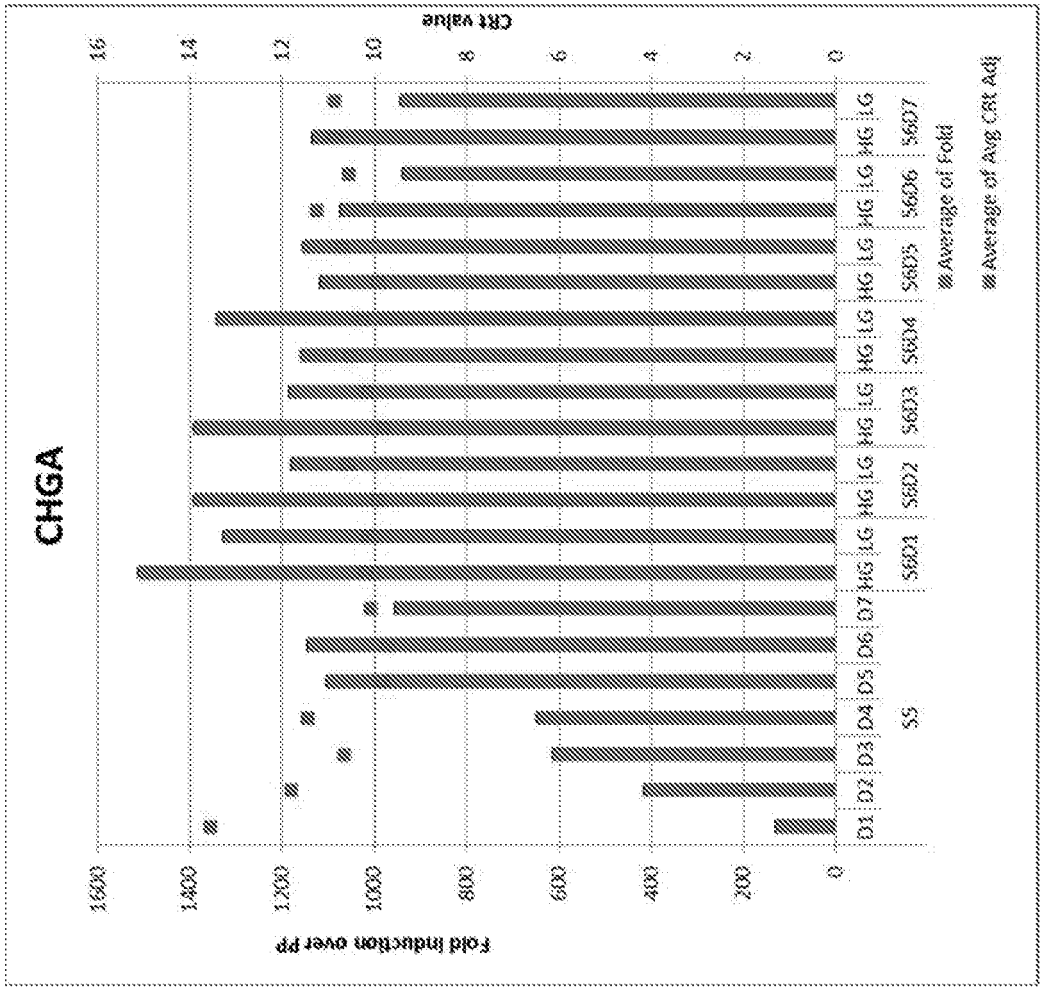

CHGA
Fold induction over PP
CRt value
1600
1400
1200
1000
800
600
400
200
0
16
14
12
10
8
6
4
2
0
D1 D2 D3 D4 D5 D6 D7 HG LG HG LG HG LG HG LG HG LG HG LG HG LG
SS S6D1 S6D2 S6D3 S6D4 S6D5 S6D6 S6D7
Average of Fold
Average of Avg CRt Adj

Figure 27D

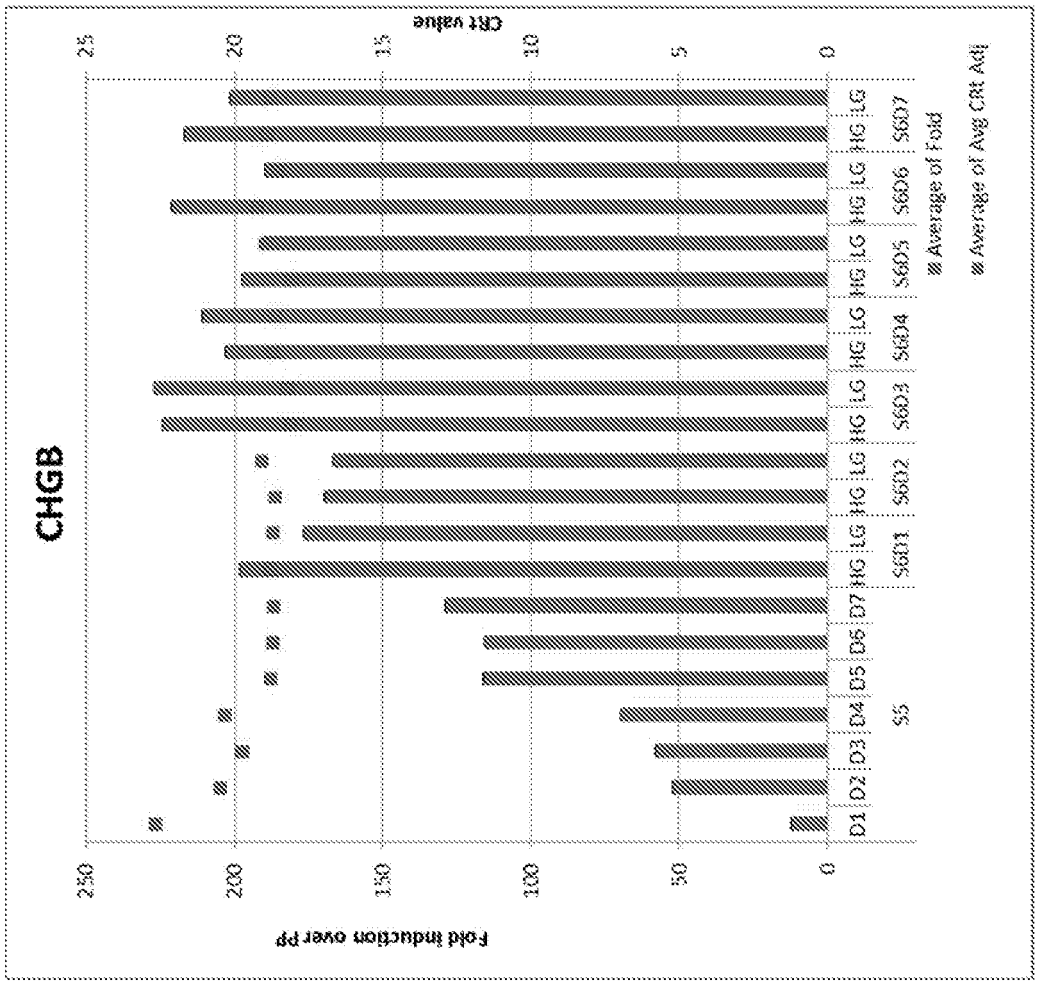

CHGB
Fold induction over PP
CRT value
250
200
150
100
50
0
25
20
15
10
5
0
D1 D2 D3 D4 D5 D6 D7 S5 S6D1 S6D2 S6D3 S6D4 S6D5 S6D6 S6D7
HG LG
Average of Fold
Average of Avg CRt Adj

Figure 27E

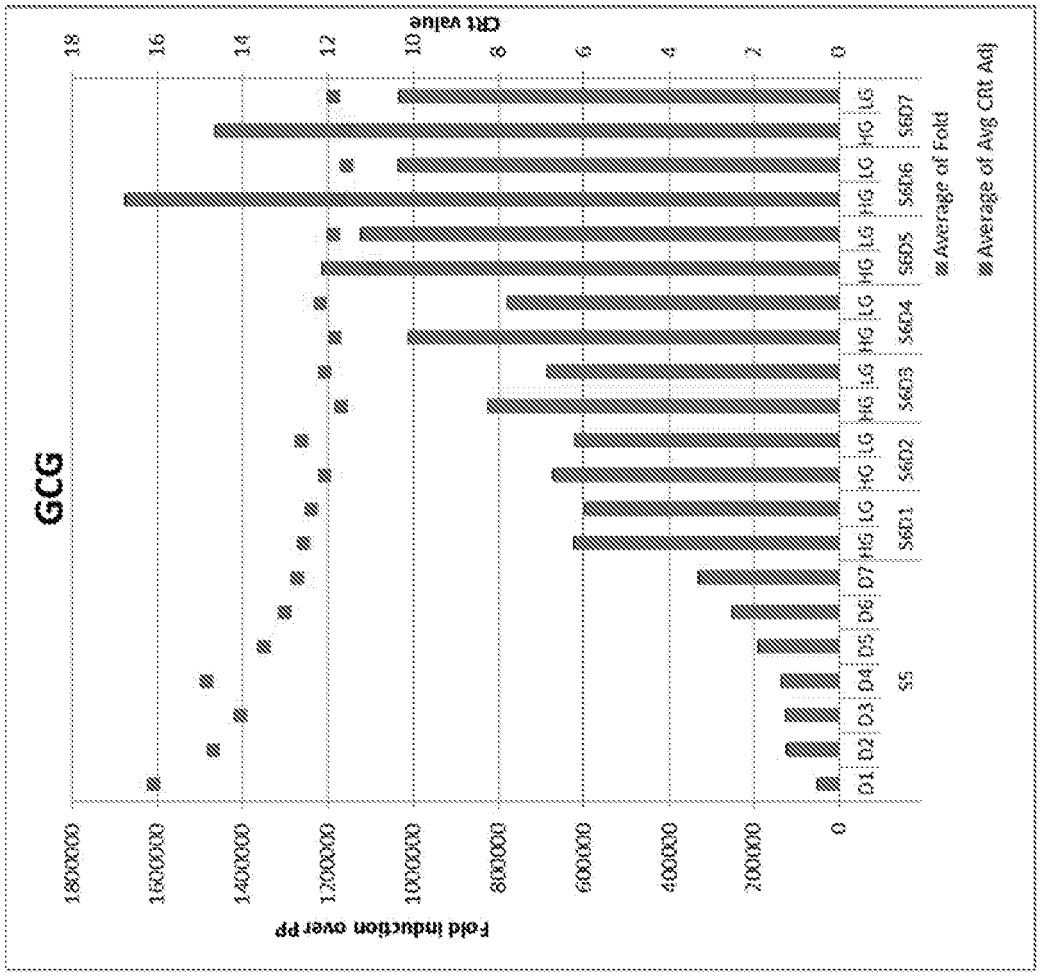

GCG
Fold induction over PP
Crit value
Average of Fold
Average of Avg Crit Adj
S5
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
S6E1
S6E2
S6E3
S6E4
S6E5
S6E6
S6E7
HG
LG

Figure 27F

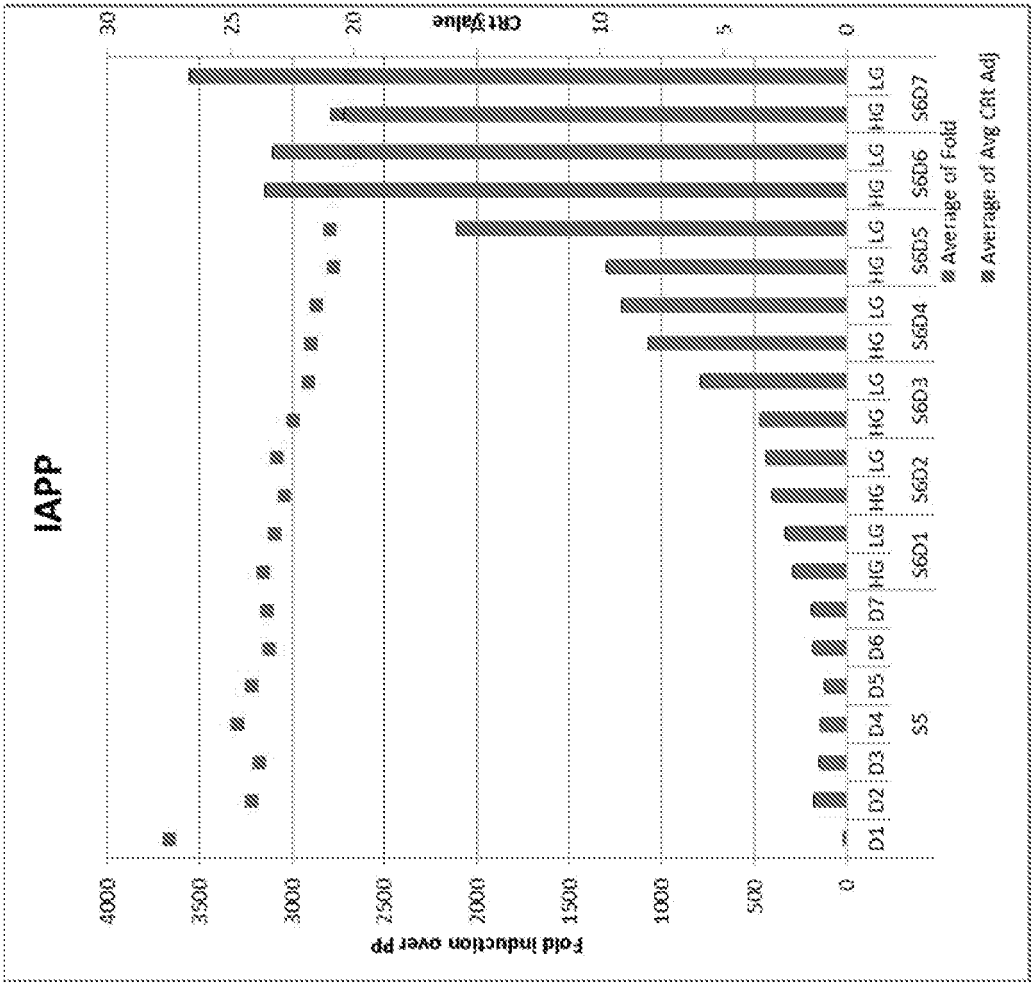

IAPP
Fold induction over PP
CRT Value
Average of Fold
Average of Avg CRT Adj
S5
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
D1
D2
D3
D4
D5
D6
D7
HG
LG

Figure 27G

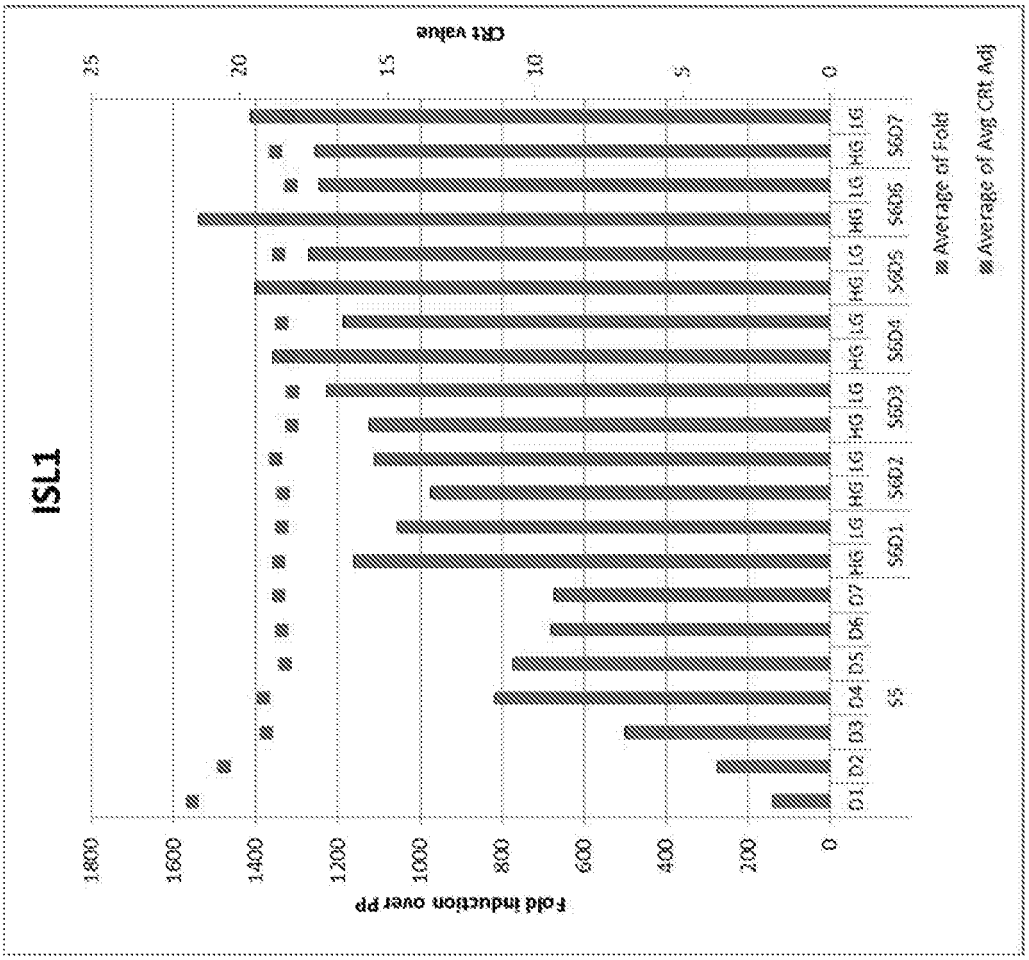

ISL1
Fold induction over PP
CRt value
Average of Fold
Average of Avg Crt Adj
0
200
400
600
800
1000
1200
1400
1600
1800
0
5
10
15
20
25
D1
D2
D3
D4
D5
D6
D7
HG 1G
SG1
SG2
SG3
SG4
SG5
SG6
SG7

Figure 27H

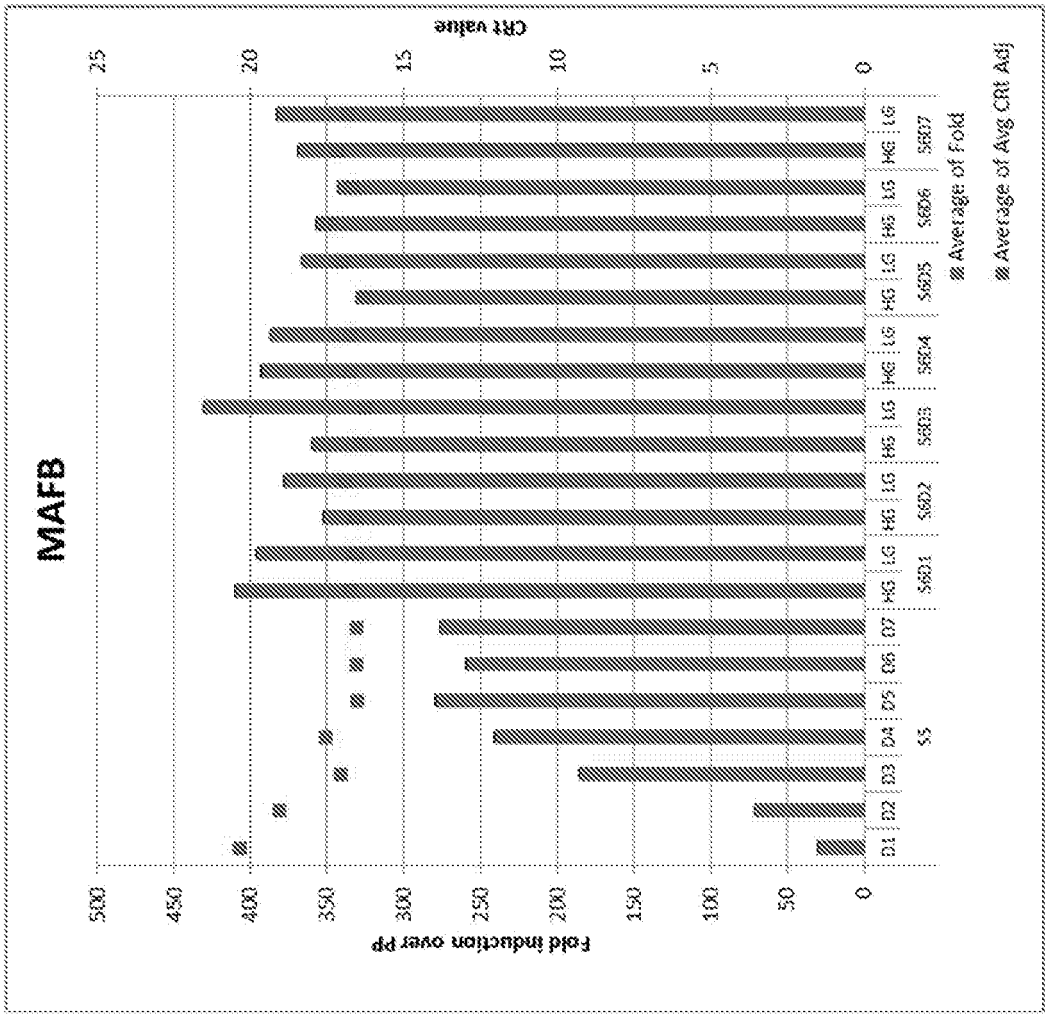

MAFB
Fold induction over PP
CRt value
0
50
100
150
200
250
300
350
400
450
500
0
5
10
15
20
25
D1
D2
D3
D4
D5
D6
D7
HG
LG
S5
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
Average of Fold
Average of Avg CRt Adj

Figure 27I

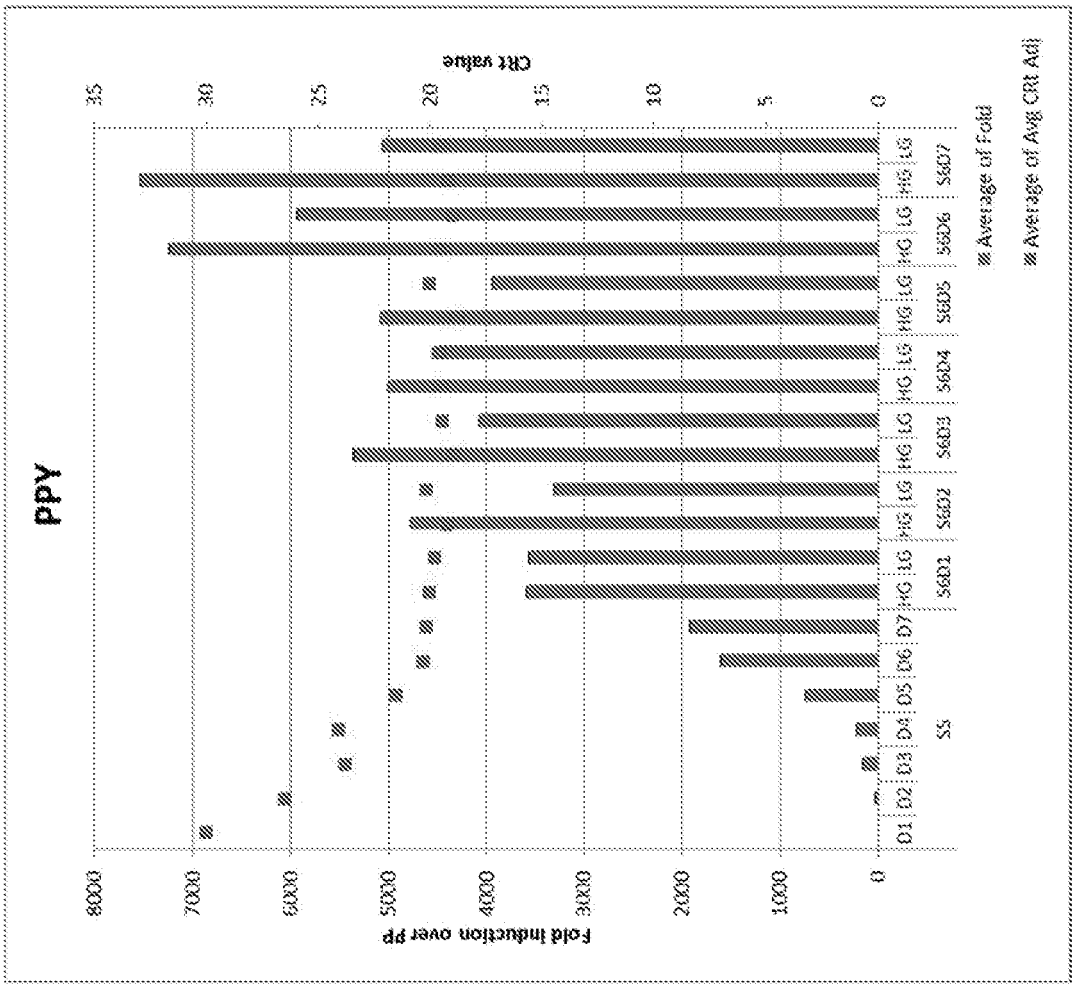

PPY
Fold Induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S5
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7

Figure 27J

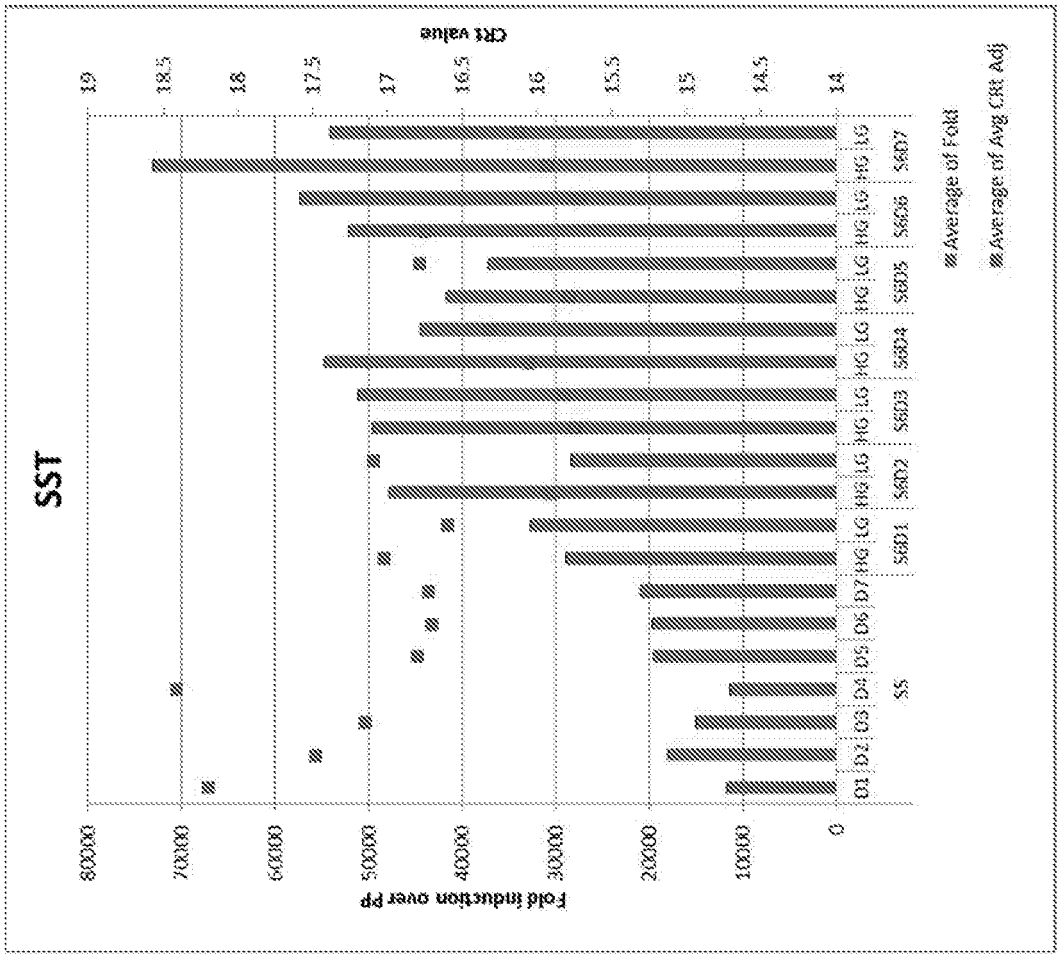

SST
Fold induction over PP
CRt value
80000
70000
60000
50000
40000
30000
20000
10000
0
19
18.5
18
17.5
17
16.5
16
15.5
15
14.5
14
D1 D2 D3 D4 D5 D6 D7 HG LG HG LG HG LG HG LG HG LG HG LG HG LG
SS
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
Average of Fold
Average of Avg CRt Adj

Figure 27K

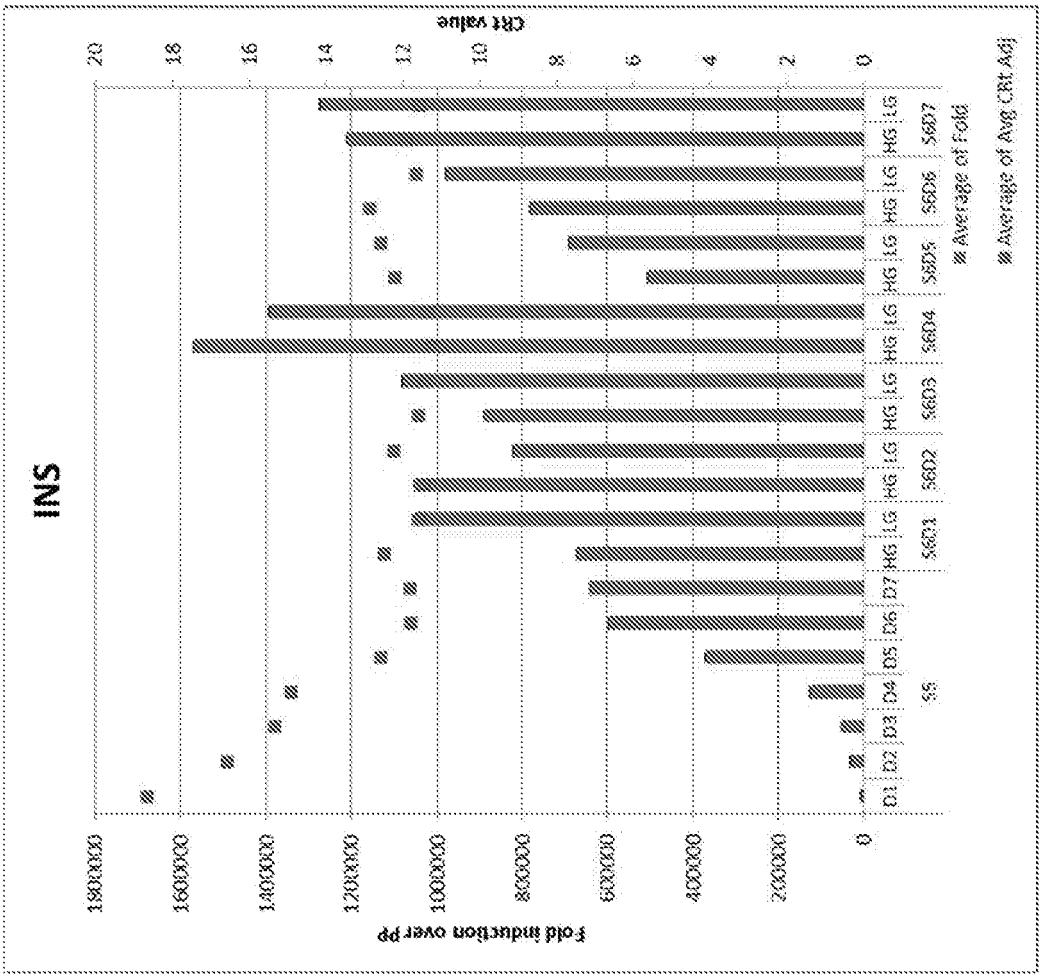

INS
fold induction over PP
CRt value
1800000
1600000
1400000
1200000
1000000
800000
600000
400000
200000
0
20
18
16
14
12
10
8
6
4
2
0
D1 D2 D3 D4 D5 D6 D7 HG LG
S5
S6D1 S6D2 S6D3 S6D4 S6D5 S6D6 S6D7
Average of Fold
Average of Avg CRt Adj

Figure 27L

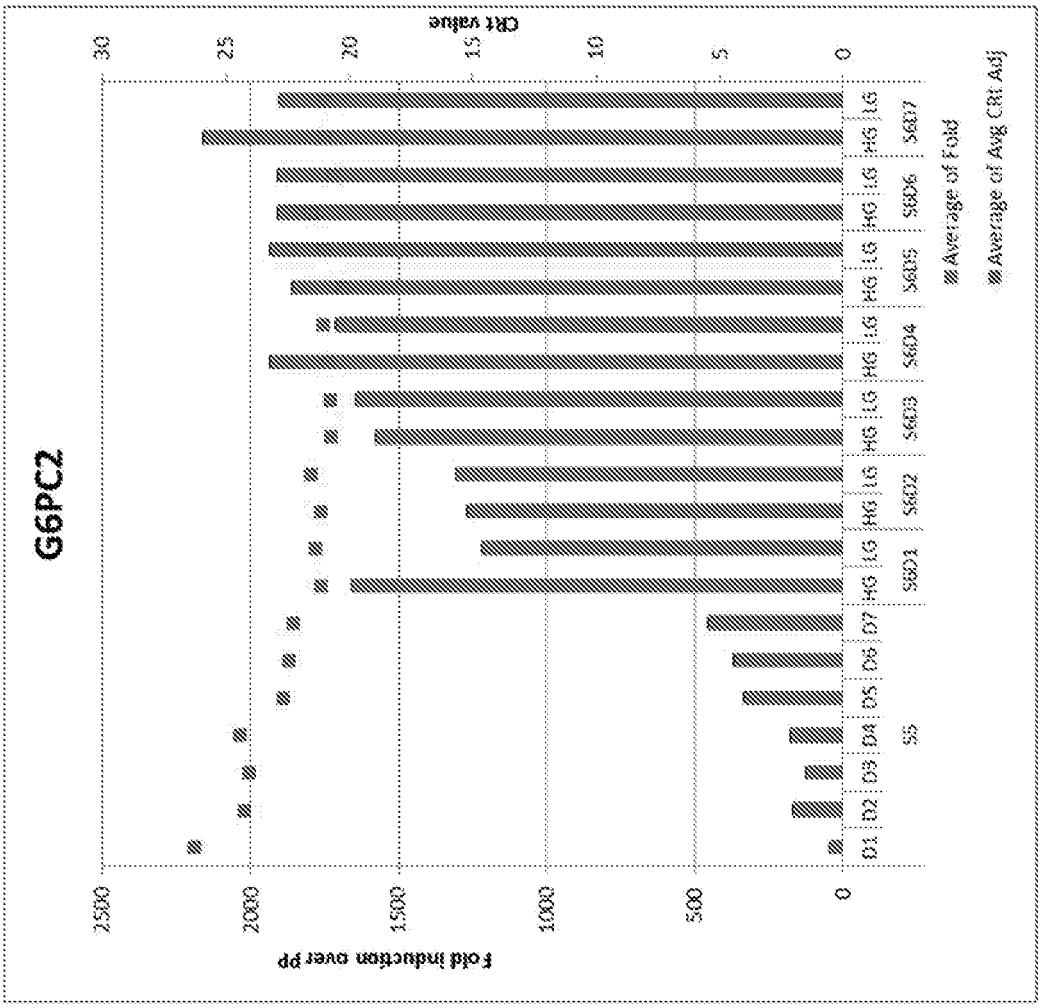

G6PC2
Fold induction over PP
CRt value
2500
2000
1500
1000
500
0
30
25
20
15
10
5
0
D1
D2
D3
D4
D5
D6
D7
S5
S601
S602
S603
S604
S605
S606
S607
HG
LG
Average of Fold
Average of Avg CRt Adj

Figure 27M

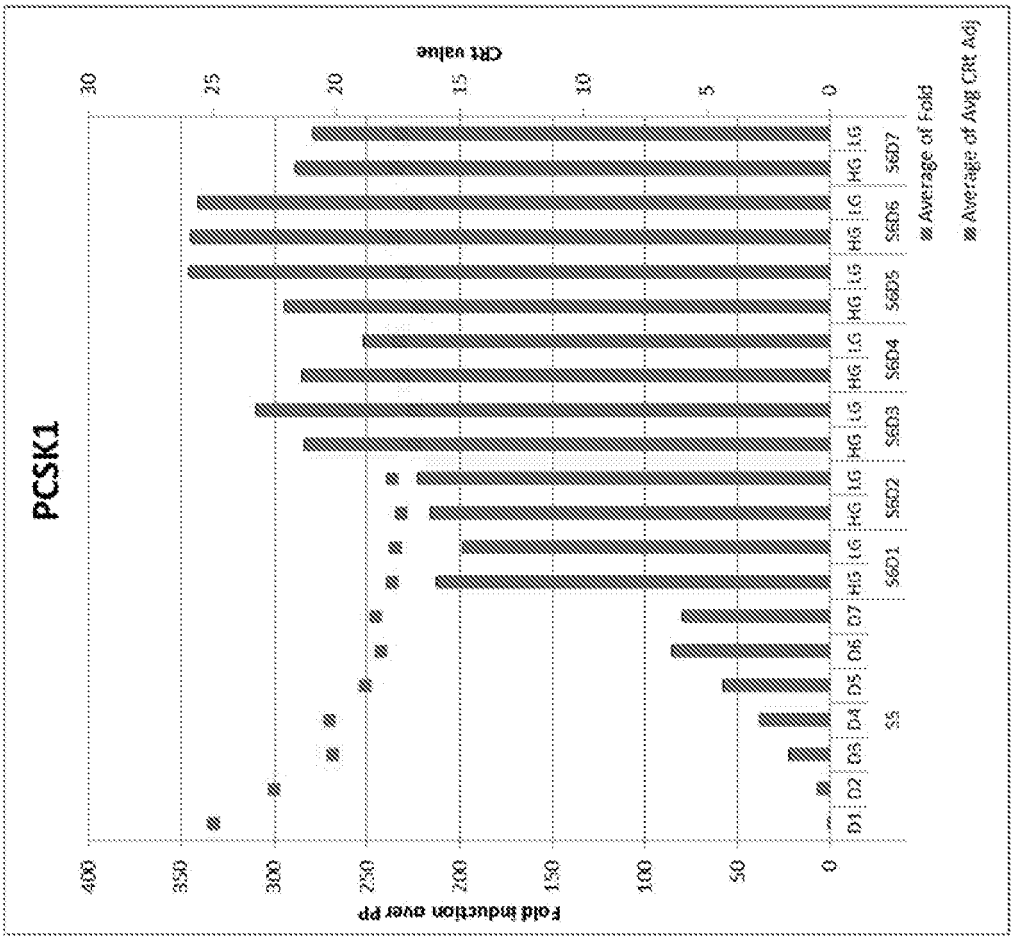

PCSK1
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
400
350
300
250
200
150
100
50
0
30
25
20
15
10
5
0
D1
D2
D3
D4
D5
D6
D7
H5
I6
H6
I5
S5
S601
S602
S603
S604
S605
S606
S607

Figure 27N

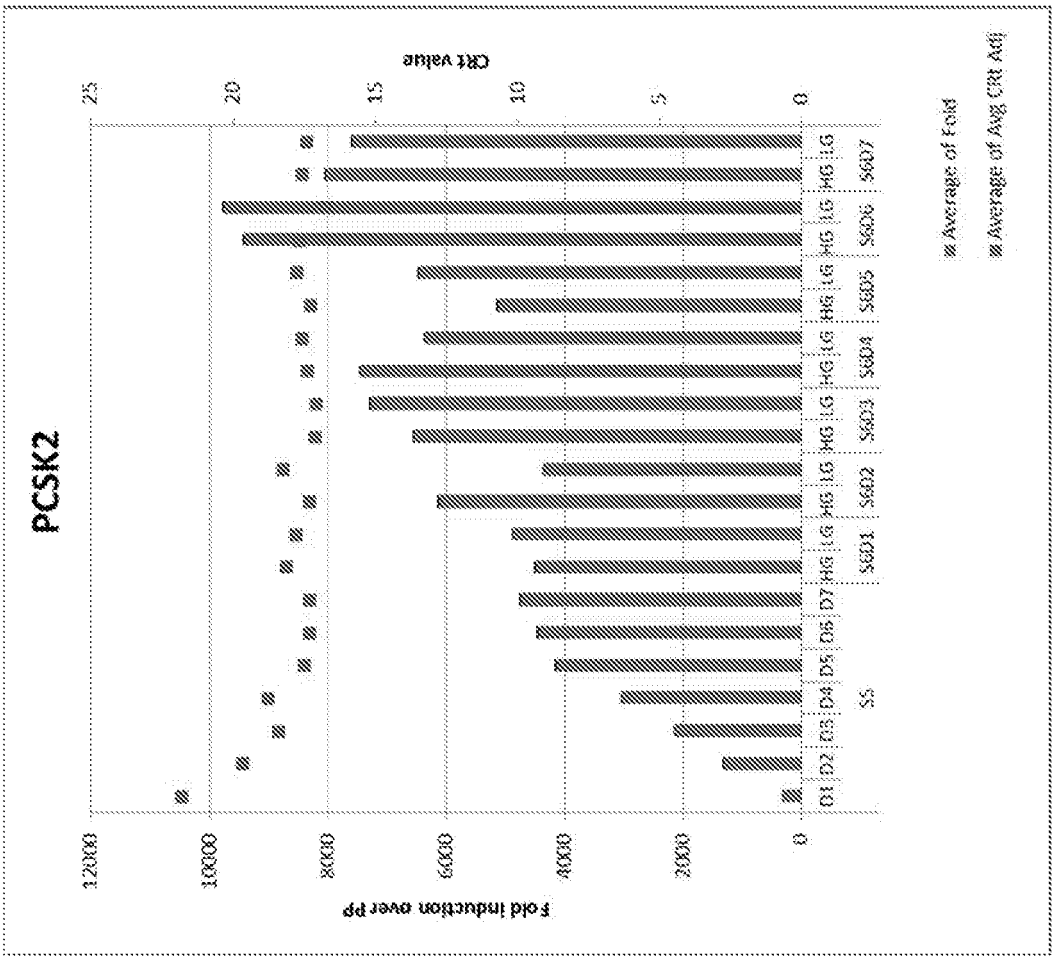

PCSK2
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
S5
S6G1
S6G2
S6G3
S6G4
S6G5
S6G6
S6G7

Figure 27O

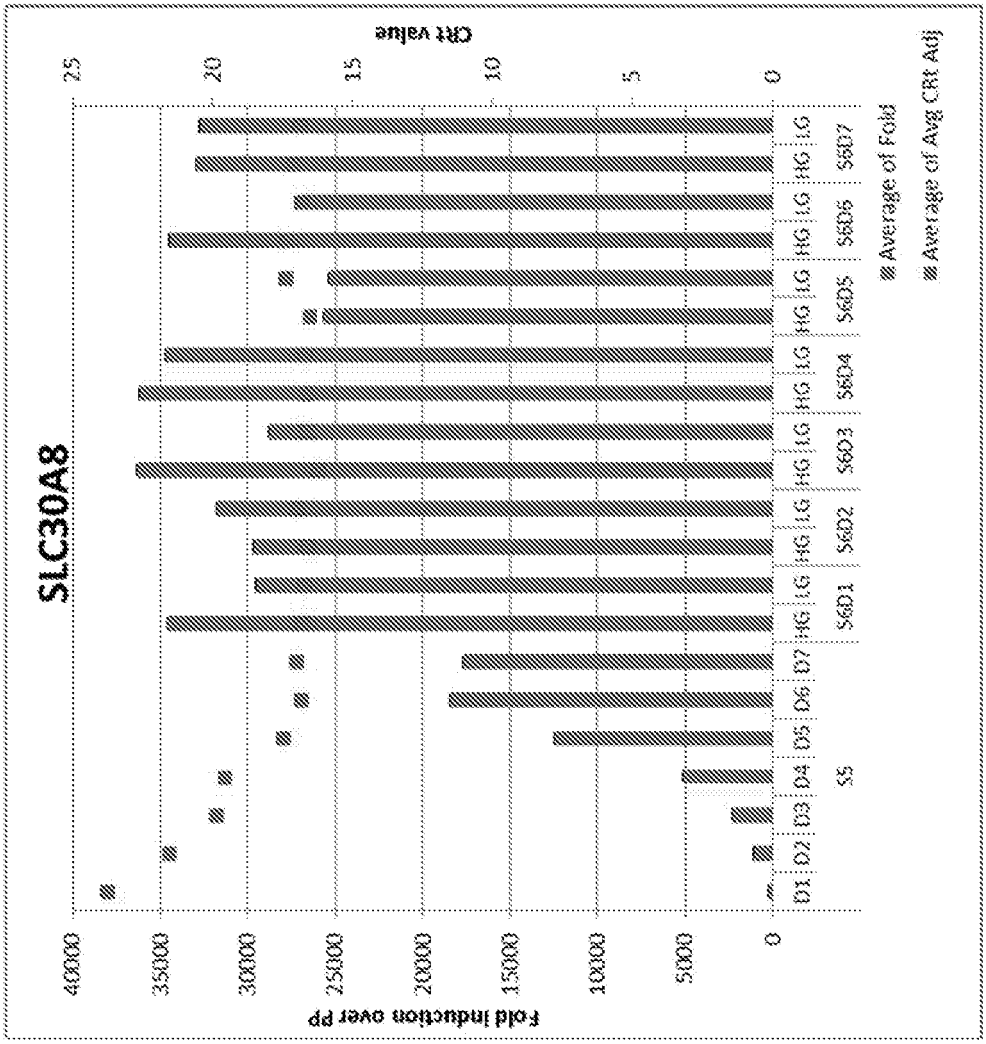

SLC30A8
Fold induction over PP
CRT value
Average of Fold
Average of Avg CRT Adj
S5
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
D1 D2 D3 D4 D5 D6 D7
HG LG

Figure 27P

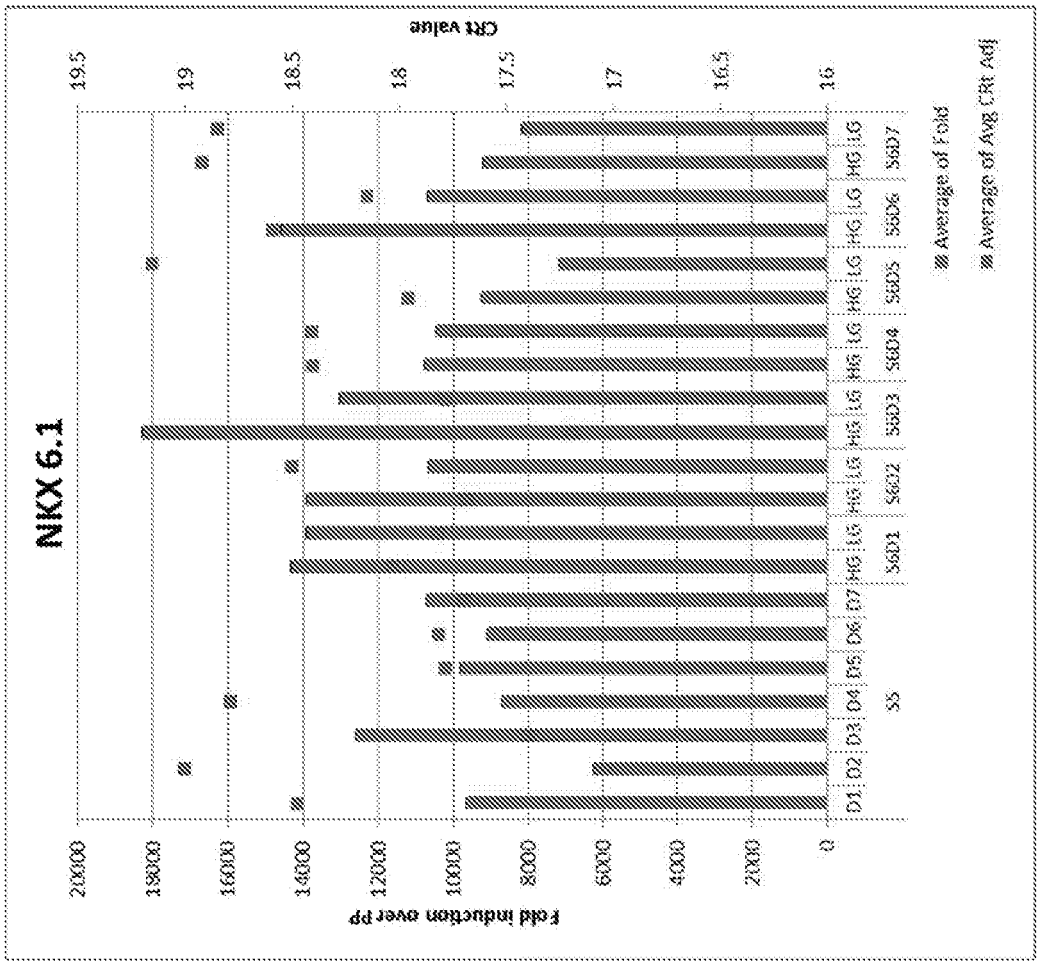

NKX 6.1
Fold induction over PP
CRt value
20000
18000
16000
14000
12000
10000
8000
6000
4000
2000
0
19.5
19
18.5
18
17.5
17
16.5
16
D1 D2 D3 D4 D5 D6 D7 HG LG HG LG HG LG HG LG HG LG HG LG HG LG
SS S6D1 S6D2 S6D3 S6D4 S6D5 S6D6 S6D7
Average of Fold
Average of Avg CRt Adj

Figure 27Q

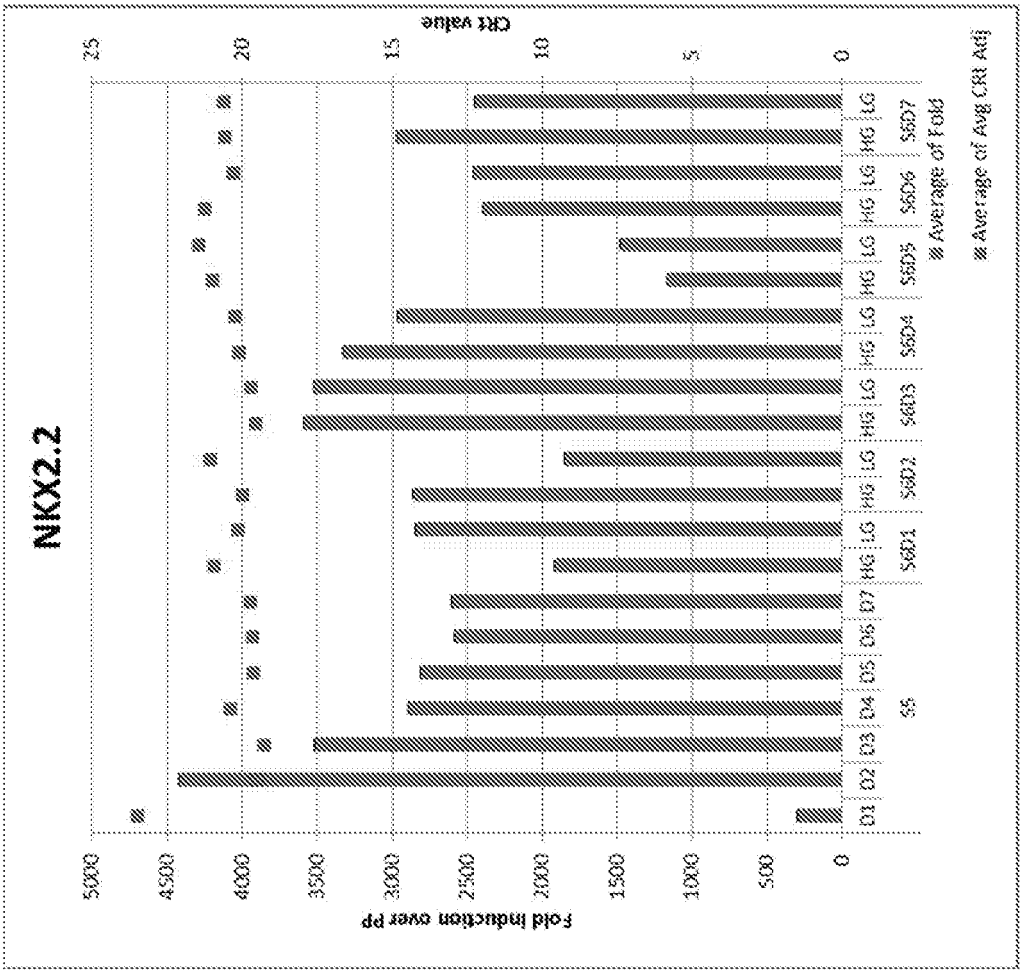

NKX2.2
Fold Induction over PP
CRT value
Average of Fold
Average of Avg CRT Adj
S5
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
HG
LG

Figure 27R

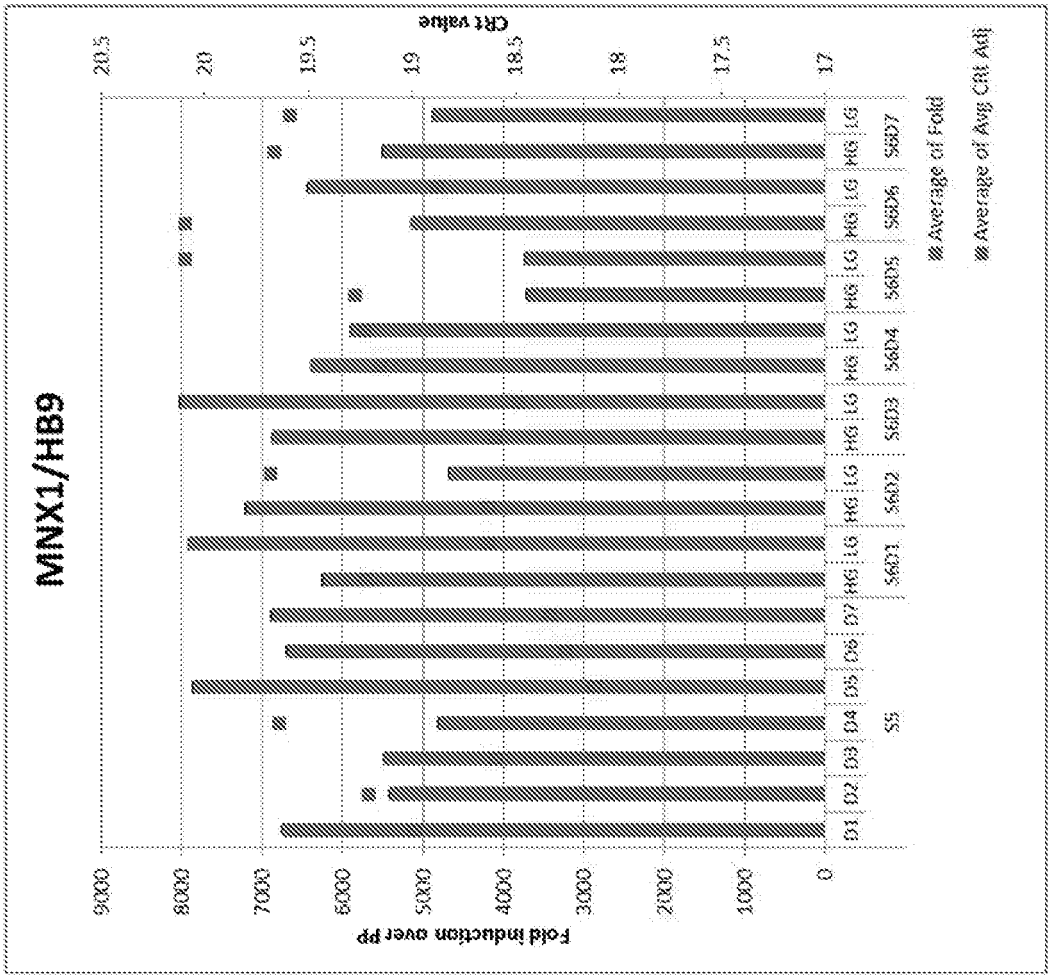

MNX1/HB9
Fold induction over PP
CRt value
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
20.5
20
19.5
19
18.5
18
17.5
17
S5
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
Average of Fold
Average of Avg Crt Adj

Figure 27S

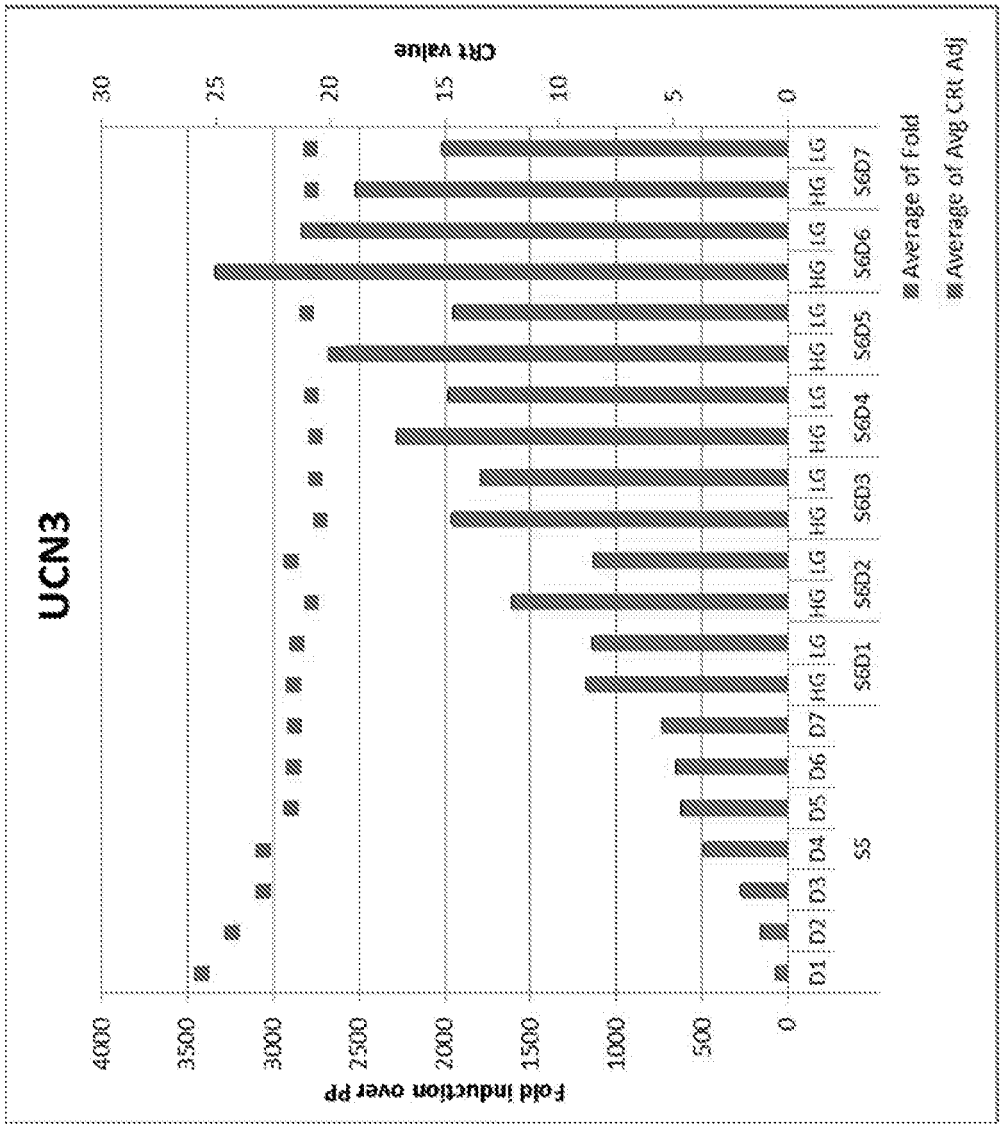

UCN3
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
0
500
1000
1500
2000
2500
3000
3500
4000
0
5
10
15
20
25
30
D1 D2 D3 D4 D5 D6 D7 HG LG
S5
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7

Figure 28A

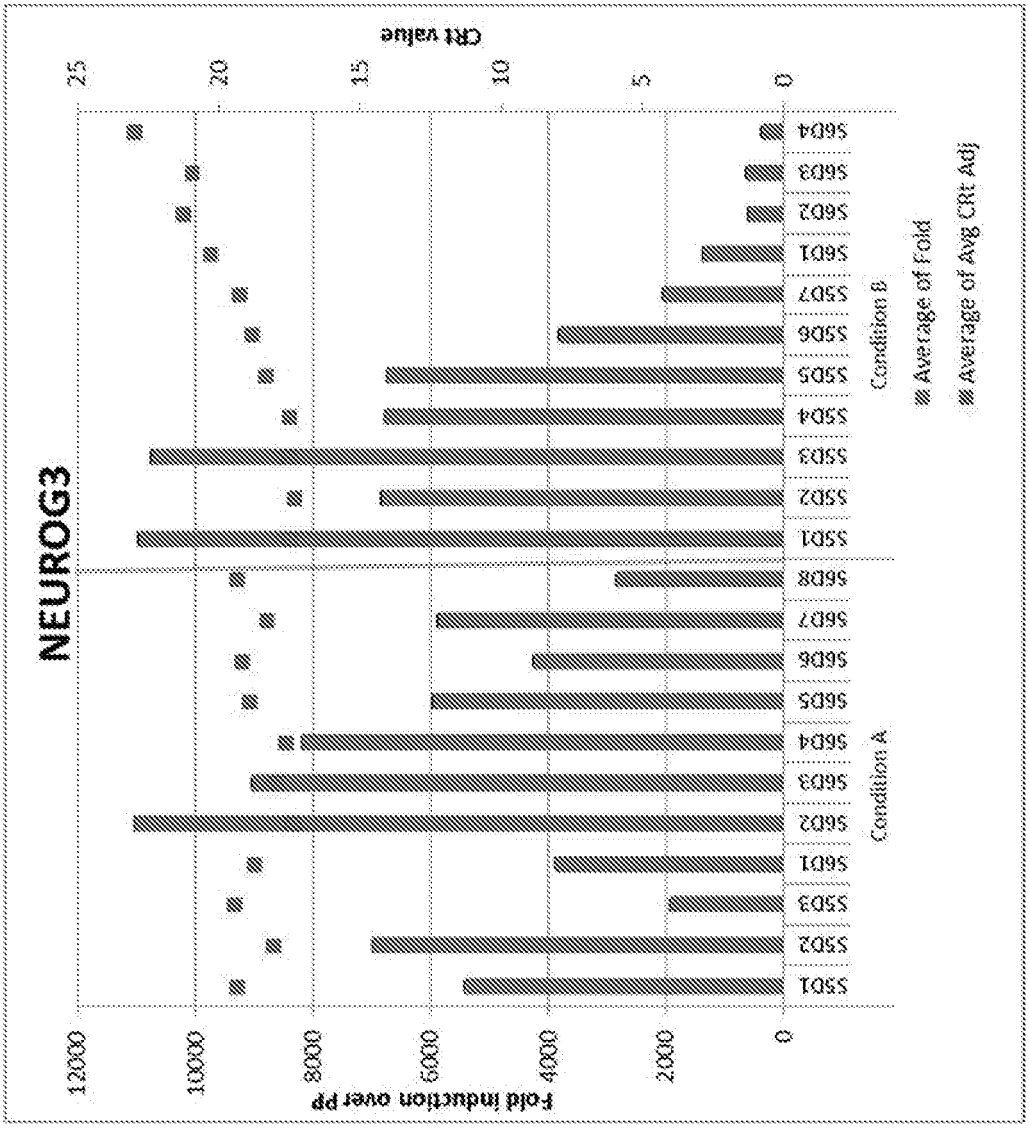

NEUROG3
Fold induction over PP
CRt value
12000
10000
8000
6000
4000
2000
0
25
20
15
10
5
0
S5D1
S5D2
S5D3
S6D1
S6D2
S6D3
S6D4
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
S6D8
Condition A
Condition B
Average of Fold
Average of Avg CRt Adj

Figure 28B

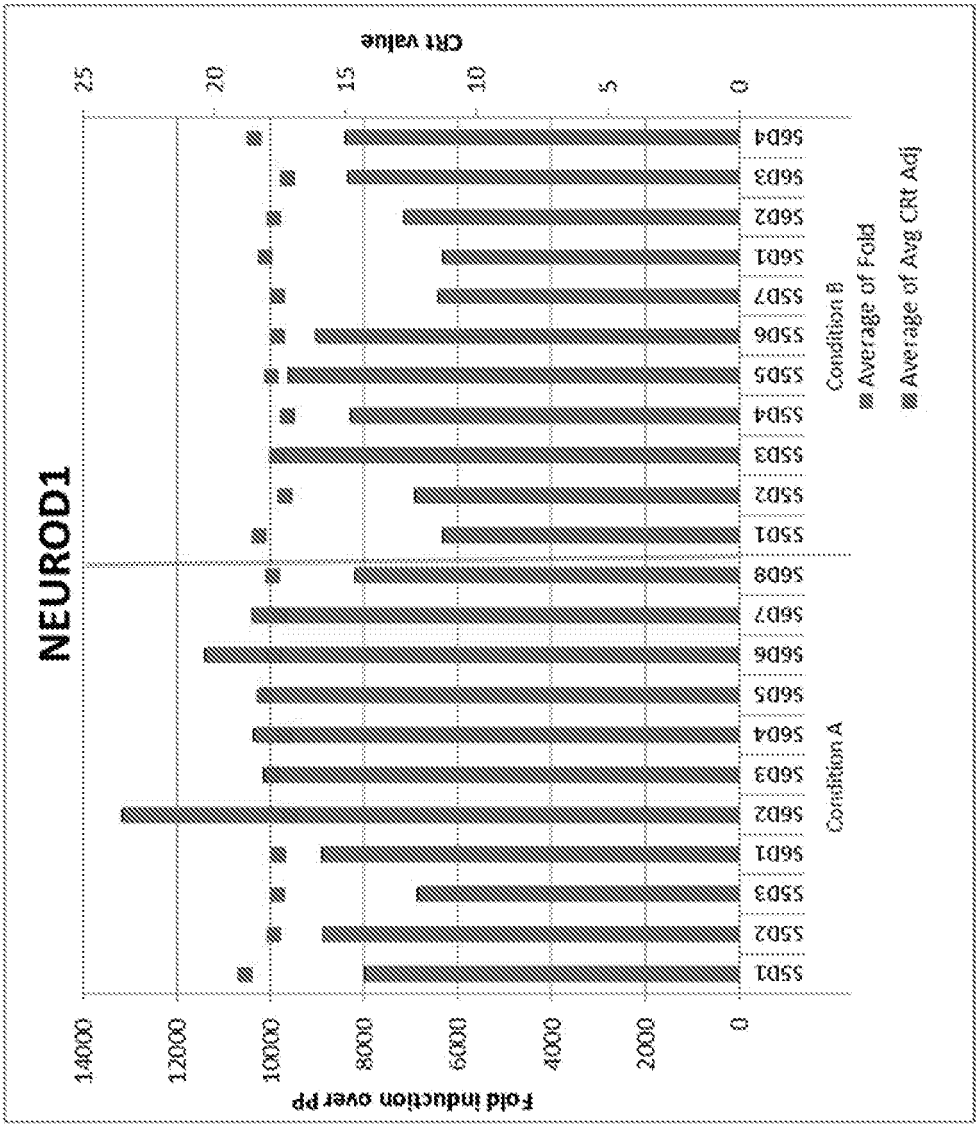

NEUROD1
Fold induction over PP
CRt value
Condition A
Condition B
Average of Fold
Average of Avg CRt Adj
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
S6D8
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
S5D8

Figure 28C

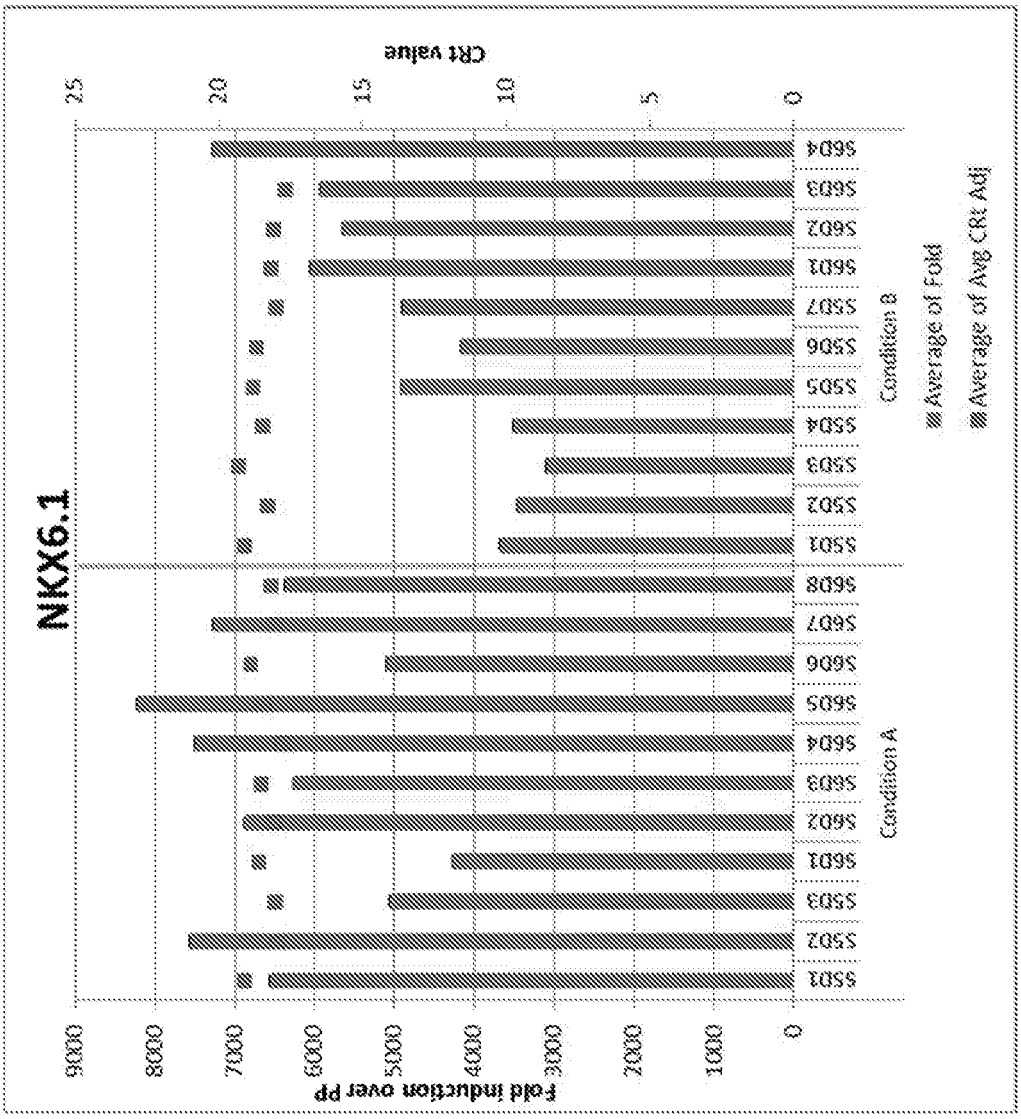

NKX6.1
Fold induction over PP
CRt value
Condition A
Condition B
Average of Fold
Average of Avg CRt Adj
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
S6D8
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
S5D8

Figure 28D

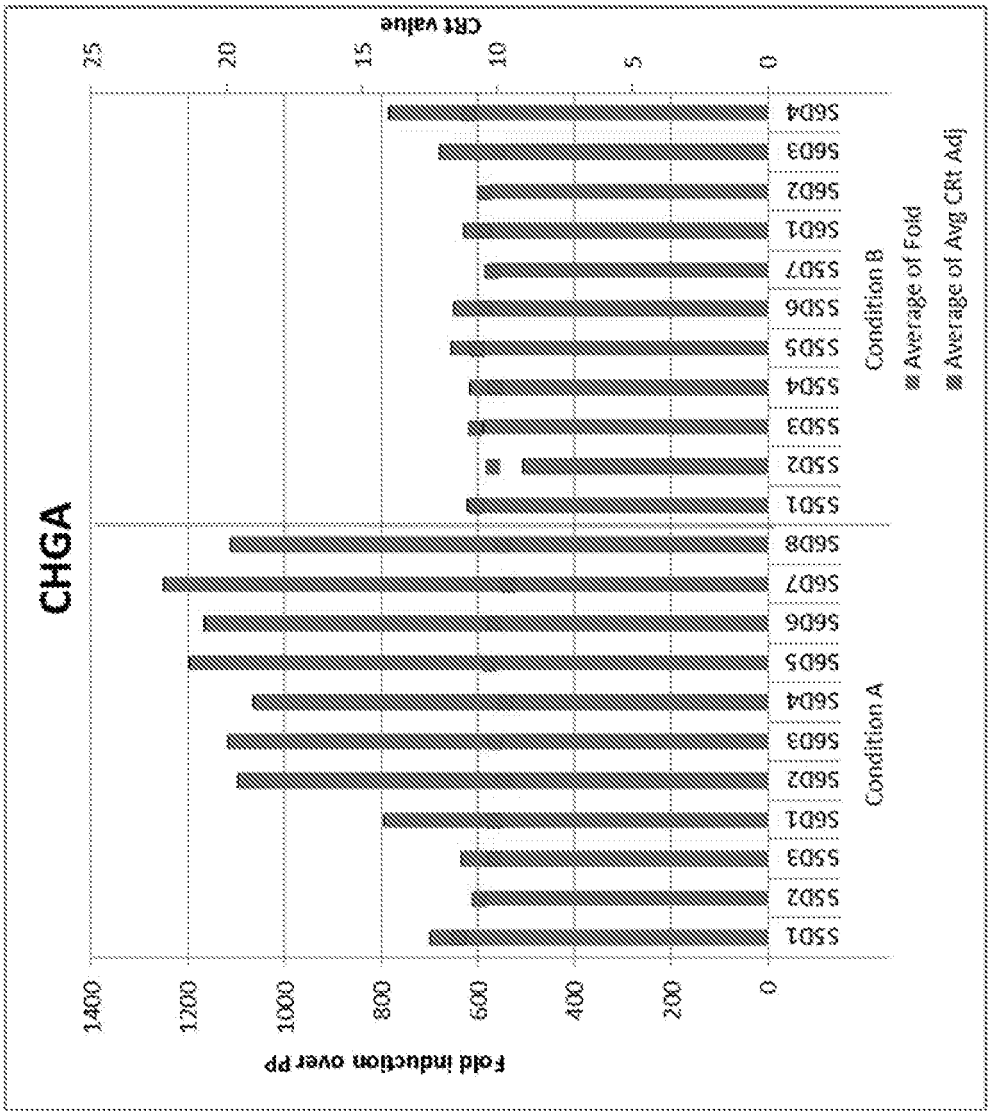

CHGA
Fold induction over PP
1400
1200
1000
800
600
400
200
0
CRt value
25
20
15
10
5
0
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
S5D8
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
S6D8
Condition A
Condition B
Average of Fold
Average of Avg CRt Adj

Figure 28E

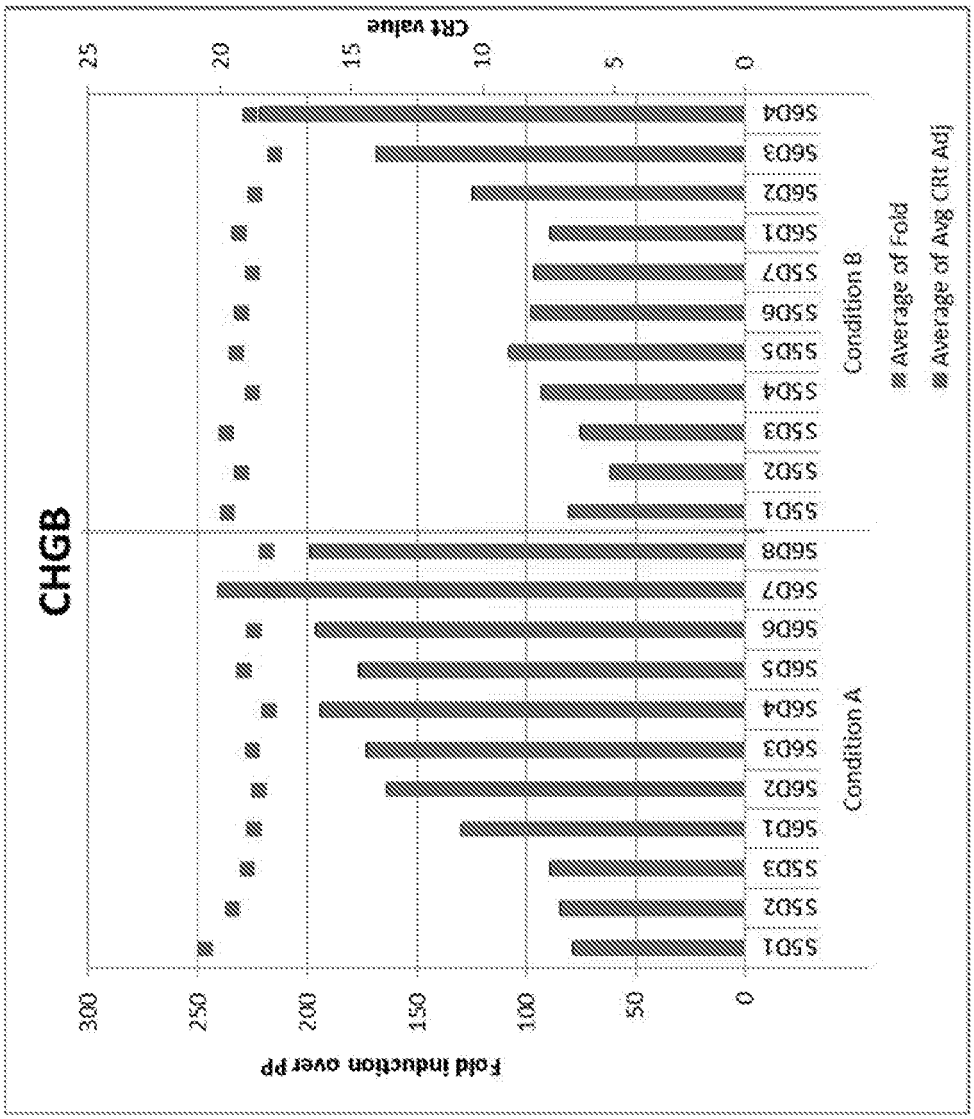

CHGB
Fold induction over PP
CRt value
300
250
200
150
100
50
0
25
20
15
10
5
0
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
S6D1
S6D2
S6D3
S6D4
Condition B
S6D8
S6D7
S6D6
S6D5
S6D4
S6D3
S6D2
S6D1
Condition A
Average of Fold
Average of Avg CRt Adj

Figure 28F

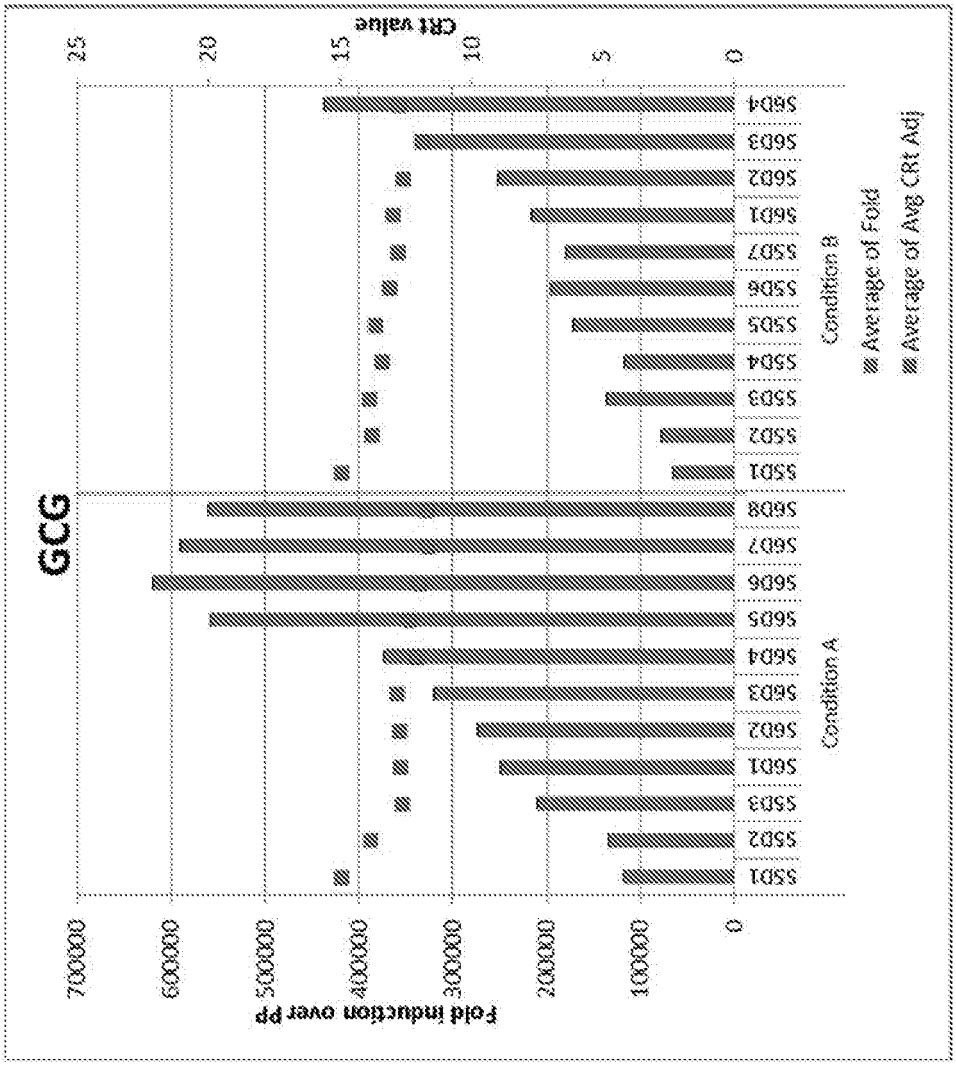

GCG
Fold induction over PP
CRt value
Condition A
Condition B
Average of Fold
Average of Avg CRt Adj
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
S6D8
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
S6D1
S6D2
S6D3
S6D4

Figure 28G

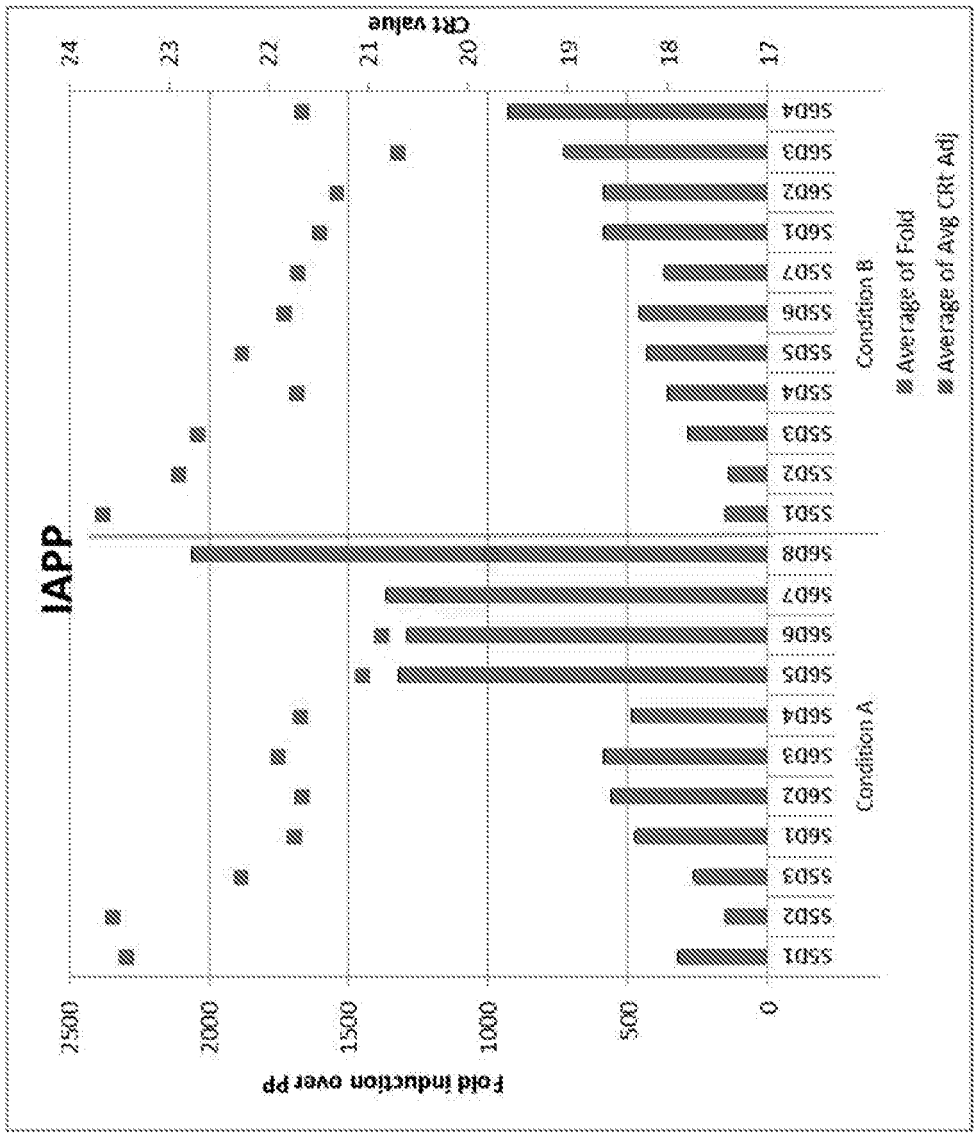

IAPP
Fold induction over PP
CRt value
2500
2000
1500
1000
500
0
24
23
22
21
20
19
18
17
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
S5D8
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
S6D8
Condition A
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
S6D1
S6D2
S6D3
S6D4
Condition B
Average of Fold
Average of Avg CRt Adj

Figure 28H

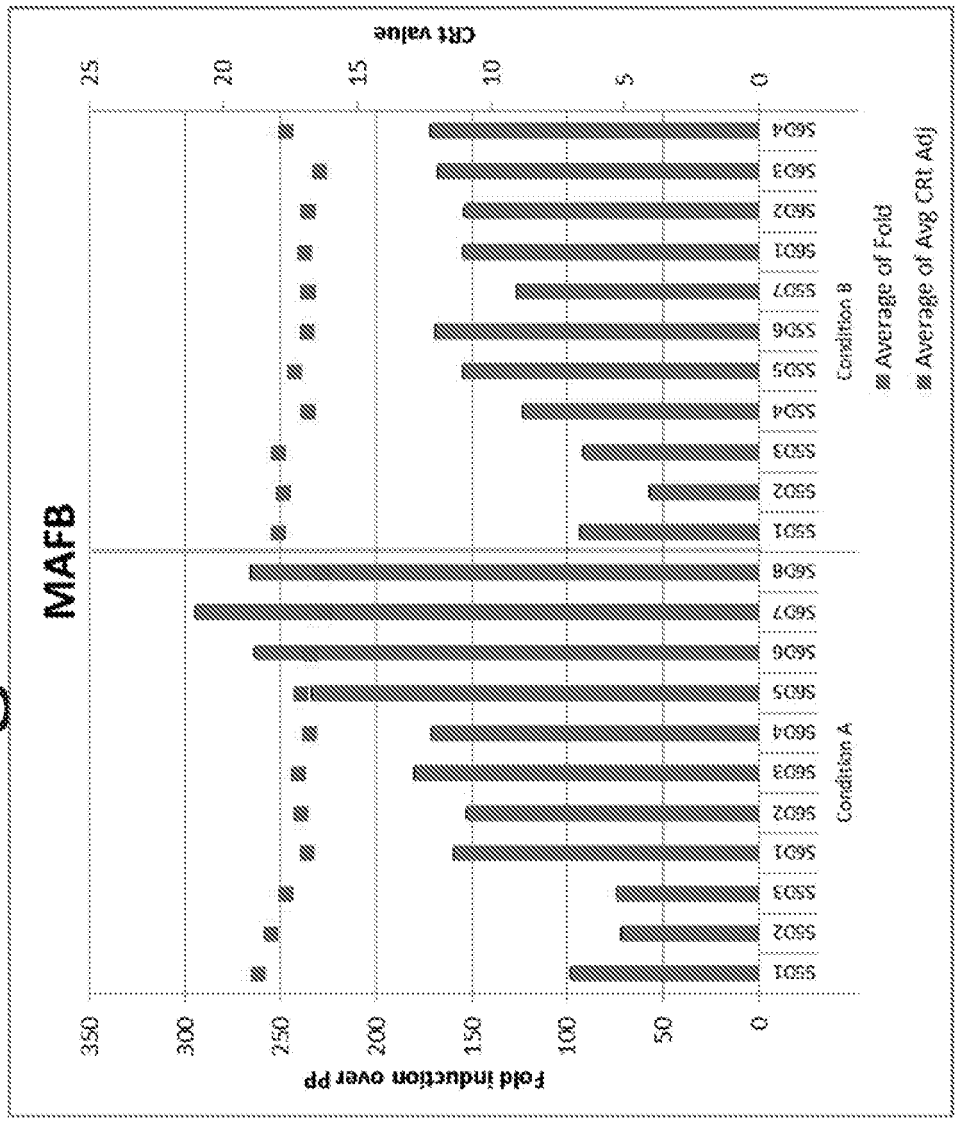

MAFB
Fold induction over PP
CRt value
Condition A
Condition B
Average of Fold
Average of Avg CRt Adj
S6O1
S6O2
S6O3
S6O4
S6O5
S6O6
S6O7
S6O8
S5O1
S5O2
S5O3
S5O4
S5O5
S5O6
S5O7
S6O1
S6O2
S6O3
S6O4

Figure 28I

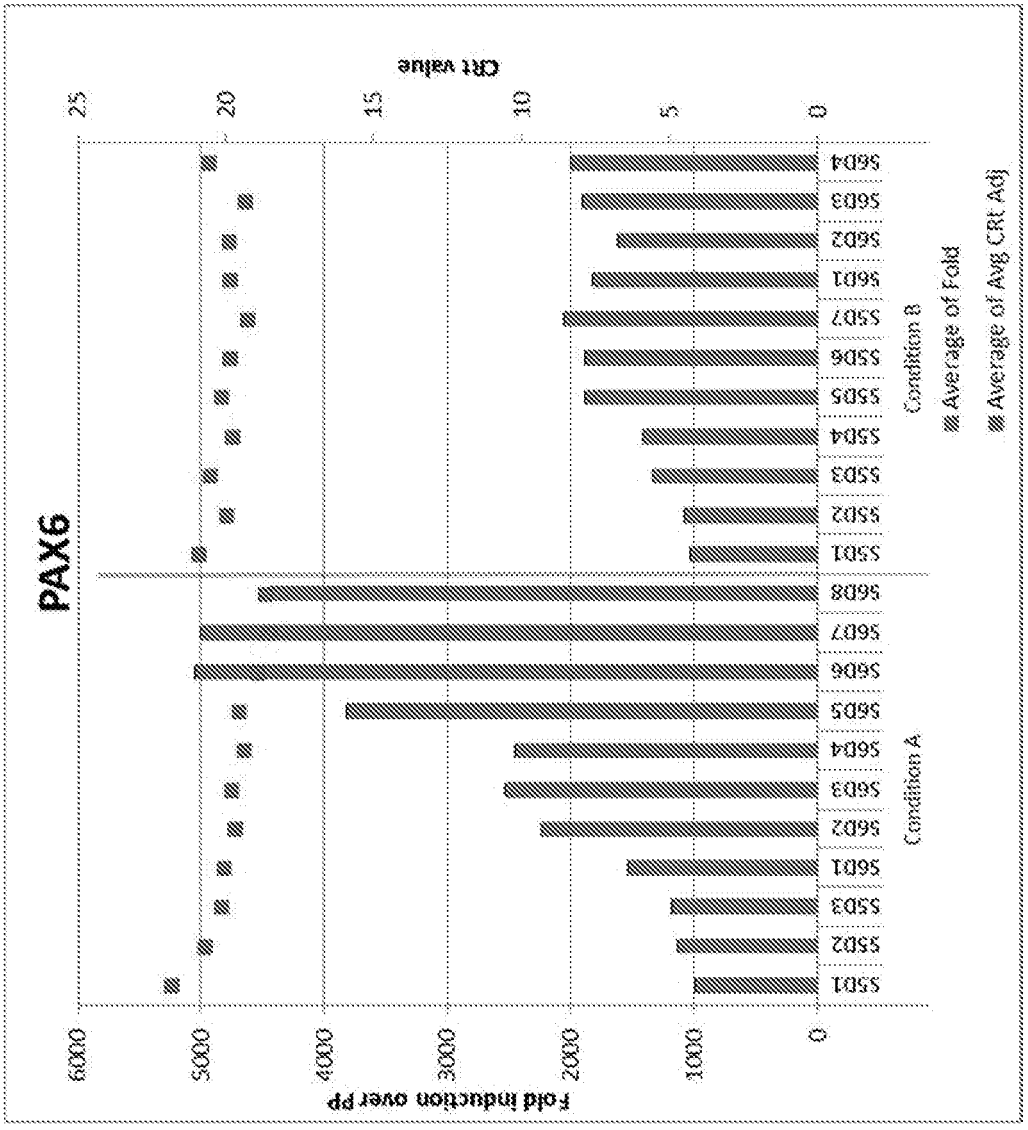

PAX6
Fold induction over PP
CRt value
0
1000
2000
3000
4000
5000
6000
0
5
10
15
20
25
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
S5D8
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
S6D8
Condition A
Condition B
Average of Fold
Average of Avg CRt Adj

Figure 28J

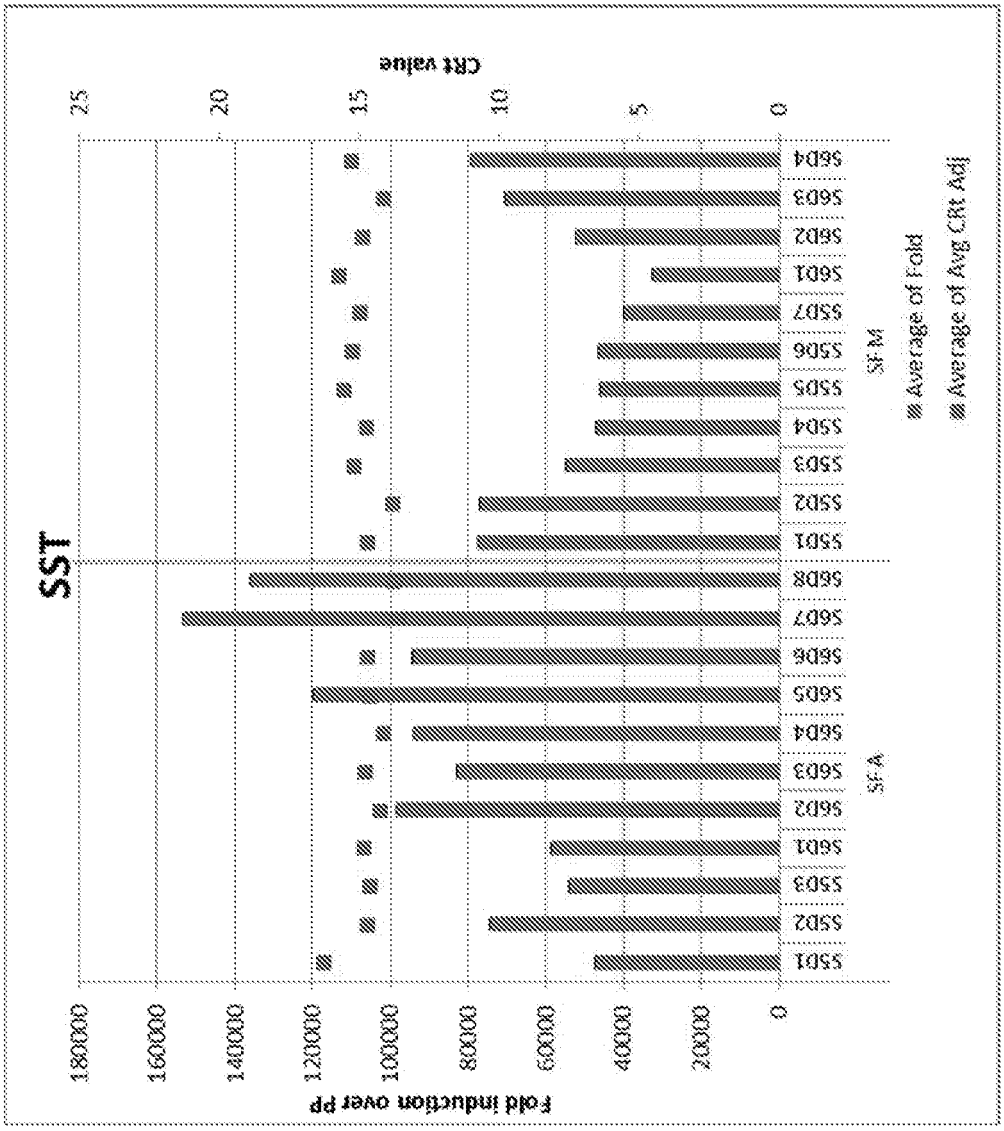

SST
Fold induction over PP
CRt value
180000
160000
140000
120000
100000
80000
60000
40000
20000
0
25
20
15
10
5
0
SF A
SF M
Average of Fold
Average of Avg CRt Adj
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
S6D8
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
S5D1
S5D2
S5D3
S5D4

Figure 28K

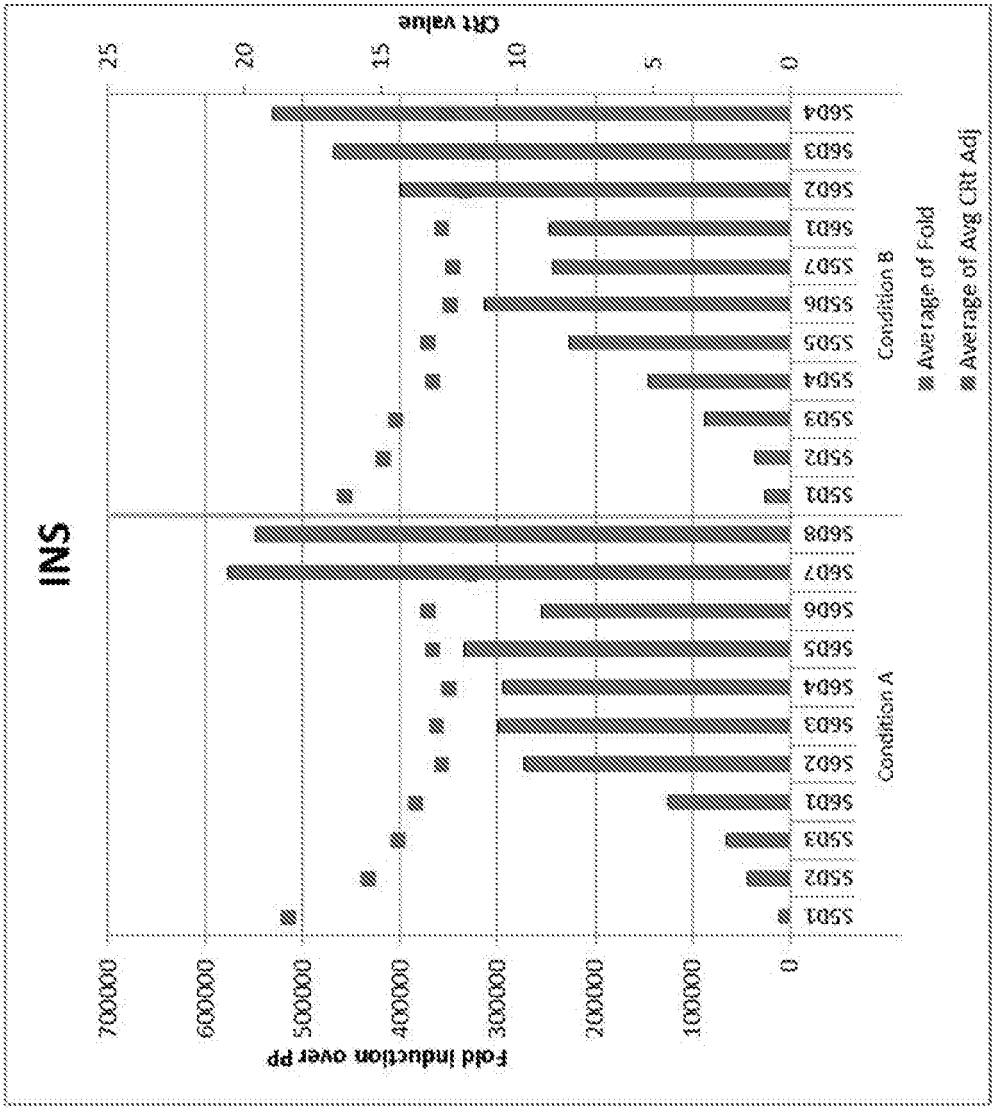

INS
Fold induction over PP
CRt value
Condition A
Condition B
Average of Fold
Average of Avg CRt Adj
S601
S602
S603
S604
S605
S606
S607
S608
S501
S502
S503
S504
S505
S506
S507
S601
S602
S603
S604

Figure 28L

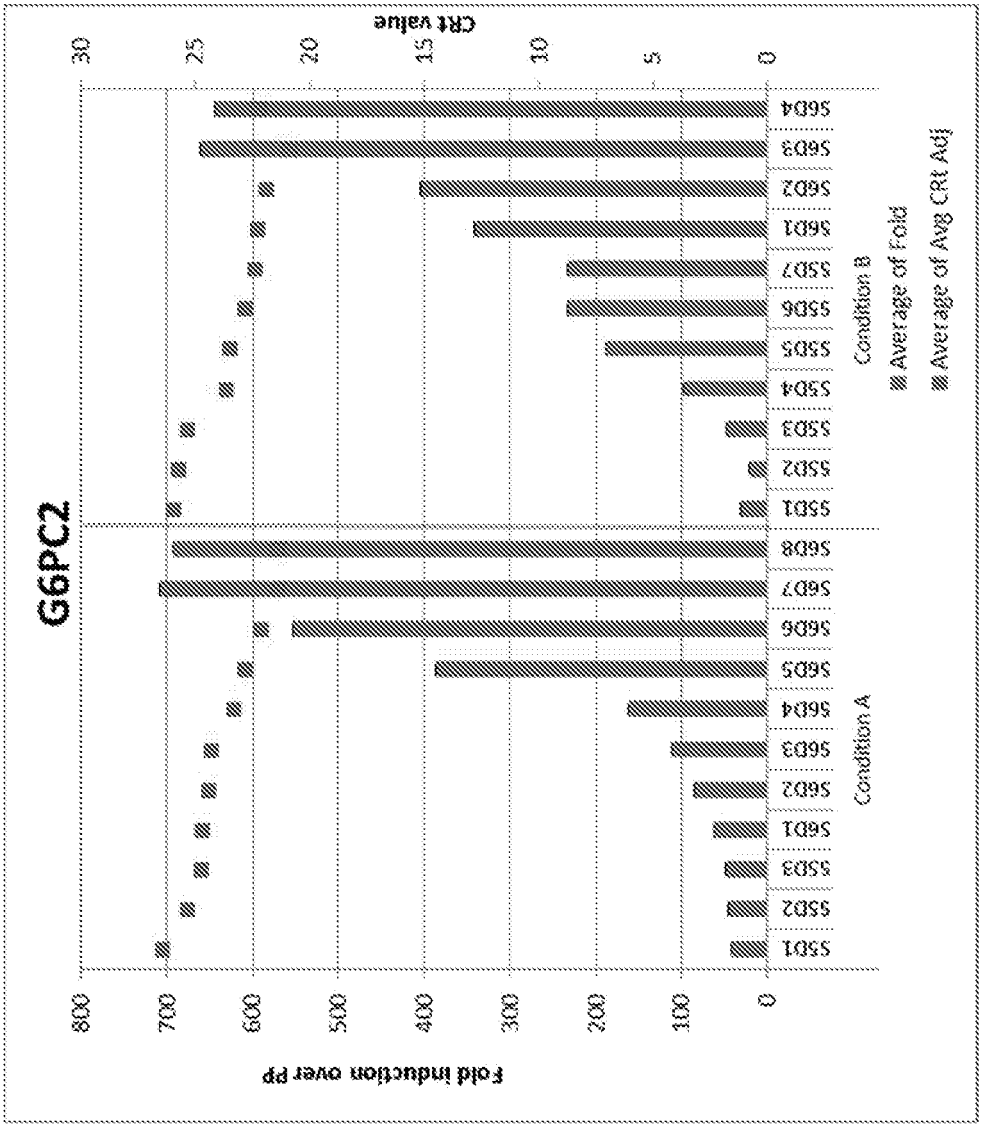

G6PC2
Fold induction over PP
CRt value
800
700
600
500
400
300
200
100
0
30
25
20
15
10
5
0
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
S6D8
Condition A
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
S5D8
Condition B
Average of Fold
Average of Avg CRt Adj

Figure 28M

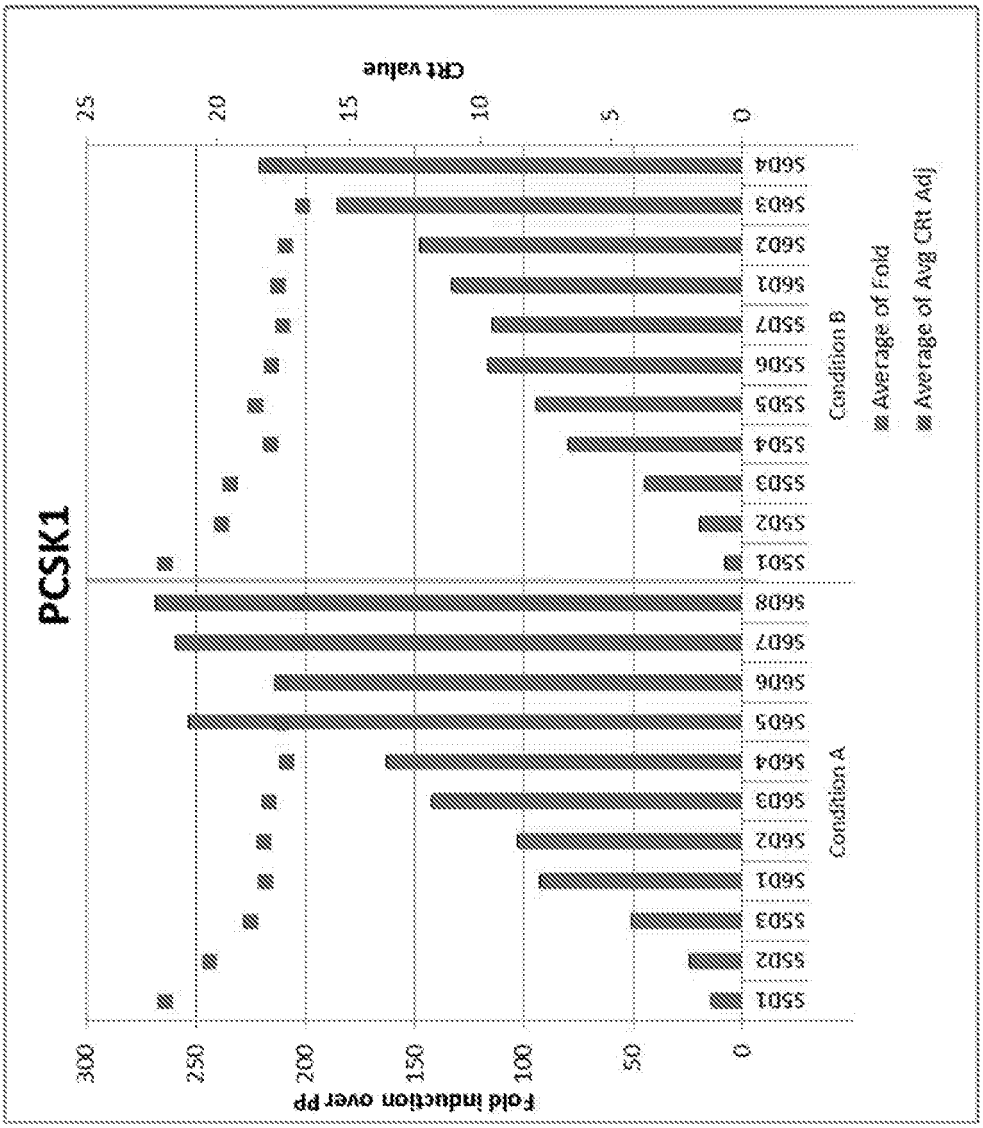

PCSK1
Fold induction over PP
CRt value
Condition A
Condition B
Average of Fold
Average of Avg CRt Adj
S601
S602
S603
S604
S605
S606
S607
S608
S501
S502
S503
S504
S505
S506
S507
S601
S602
S603
S604

Figure 28N

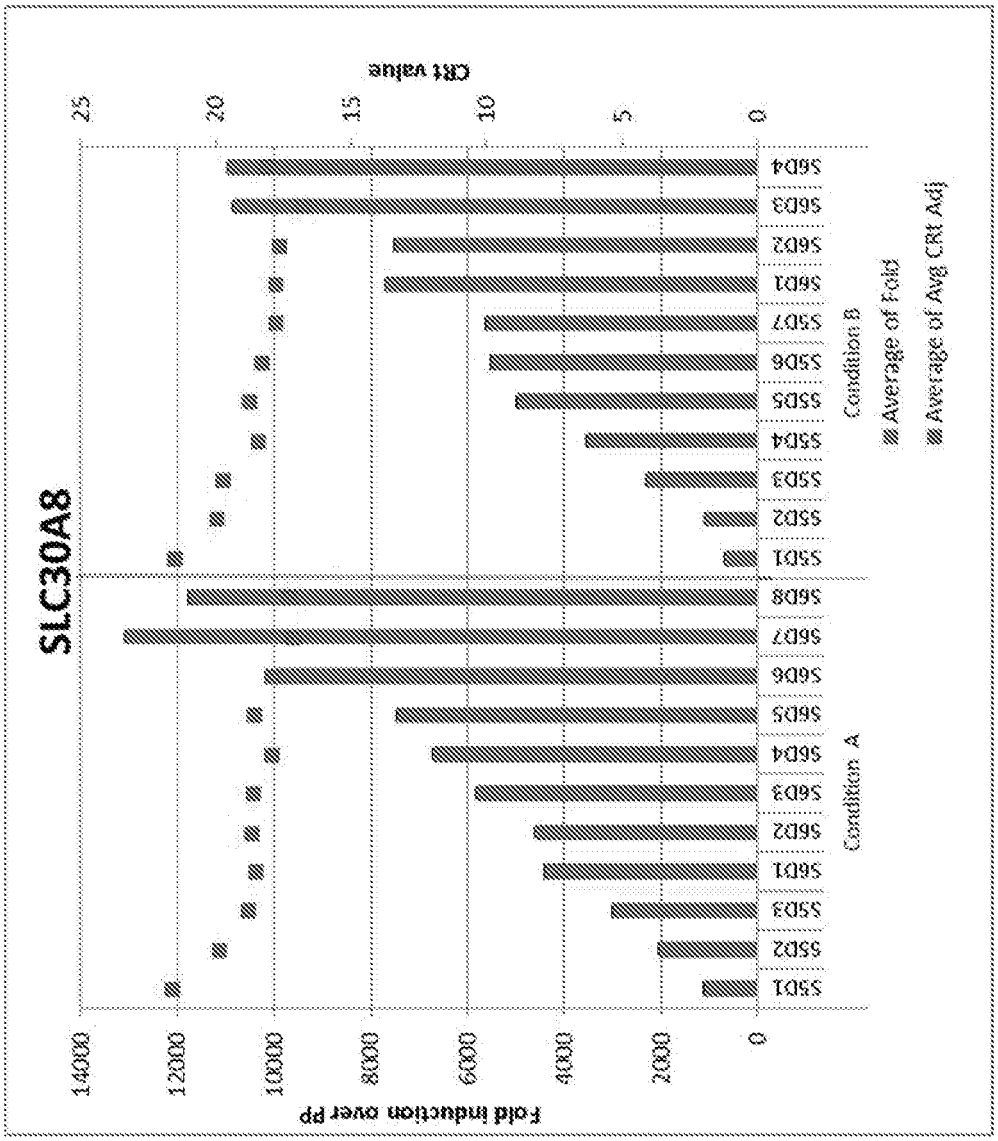

SLC30A8
Fold induction over PP
CRt value
Condition A
Condition B
Average of Fold
Average of Avg CRt Adj
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
S6D8
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
S5D8

Figure 28O

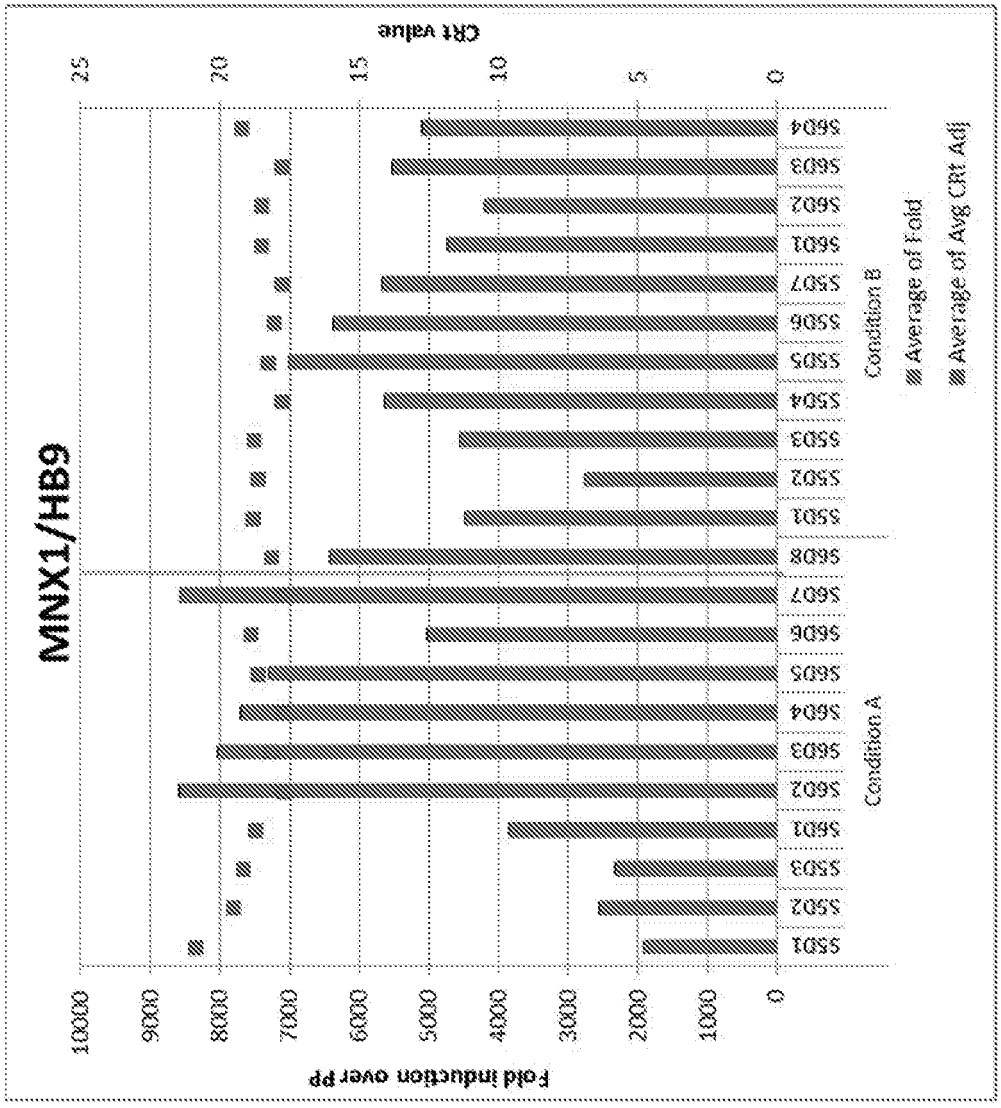

MNX1/HB9
Fold induction over PP
CRt value
10000
9000
8000
7000
6000
5000
4000
3000
2000
1000
0
25
20
15
10
5
0
S501
S502
S503
S601
S602
S603
S604
S605
S606
S607
S608
S501
S502
S503
S504
S505
S506
S507
S601
S602
S603
S604
Condition A
Condition B
Average of Fold
Average of Avg CRt Adj

Figure 28P

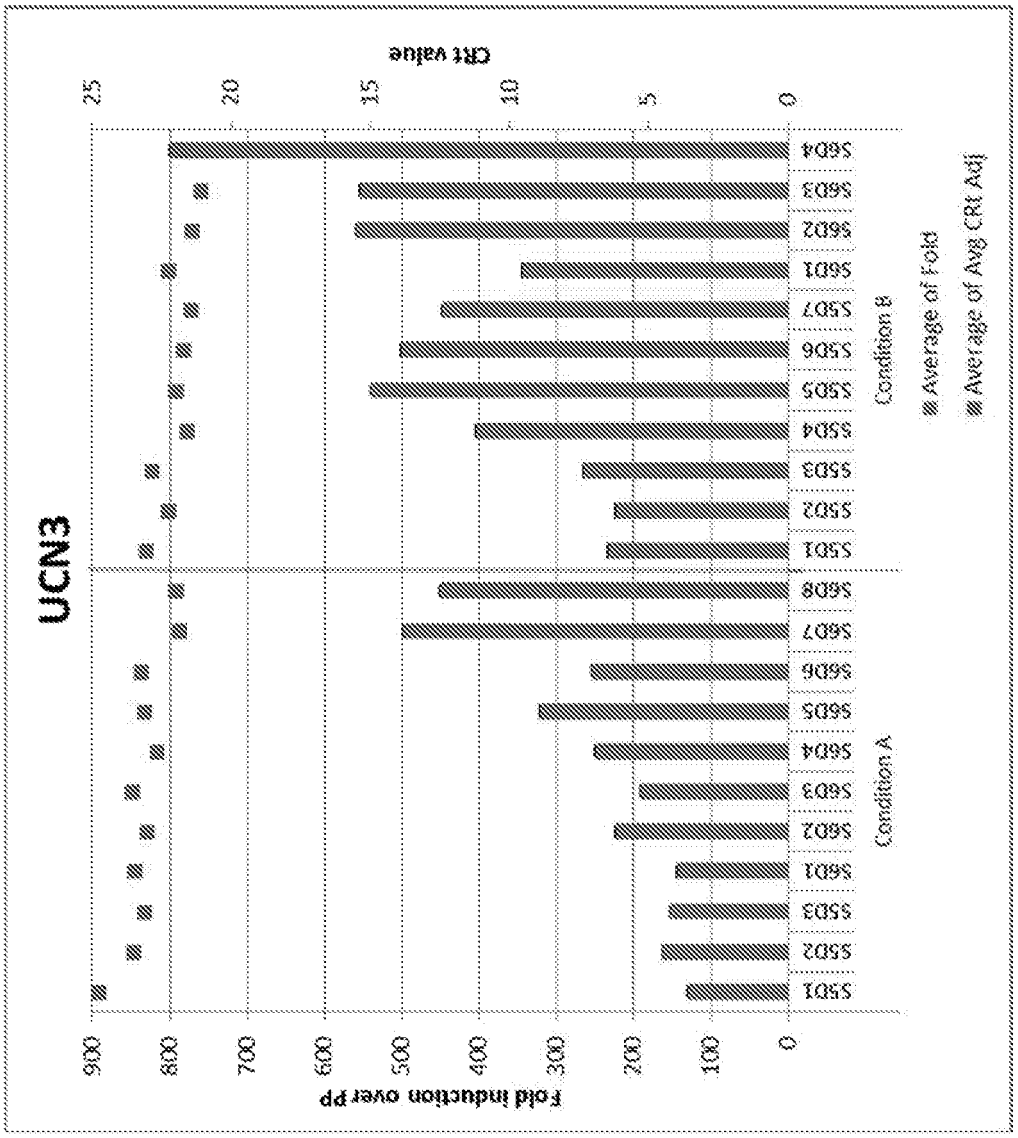

UCN3
Fold induction over PP
CRt value
0
100
200
300
400
500
600
700
800
900
0
5
10
15
20
25
S6D1
S6D2
S6D3
S6D4
S6D5
S6D6
S6D7
S6D8
S5D1
S5D2
S5D3
S5D4
S5D5
S5D6
S5D7
S6D1
S6D2
S6D3
S6D4
Condition A
Condition B
Average of Fold
Average of Avg CRt Adj

Figure 29

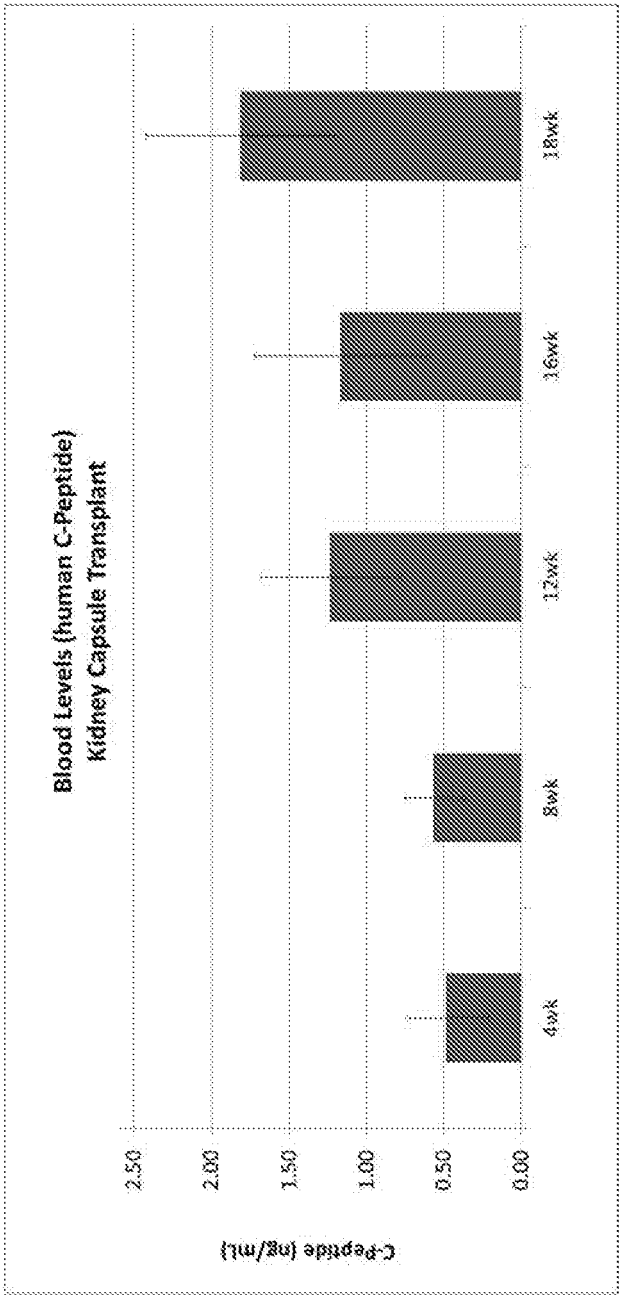

Blood Levels (human C-Peptide)
Kidney Capsule Transplant
C-Peptide (ng/ml)
2.50
2.00
1.50
1.00
0.50
0.00
4wk
8wk
12wk
16wk
18wk

Figure 30A

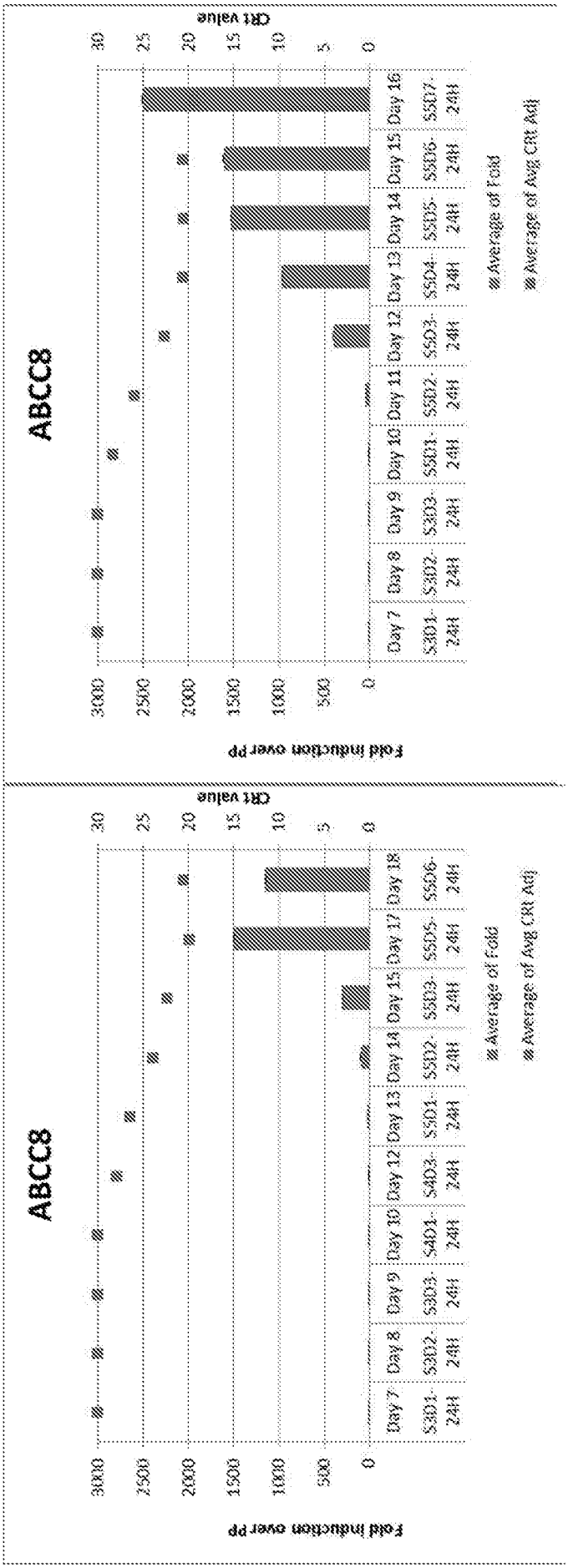

ABCC8
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Skip 4"
ABCC8
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Standard"

Figure 30B

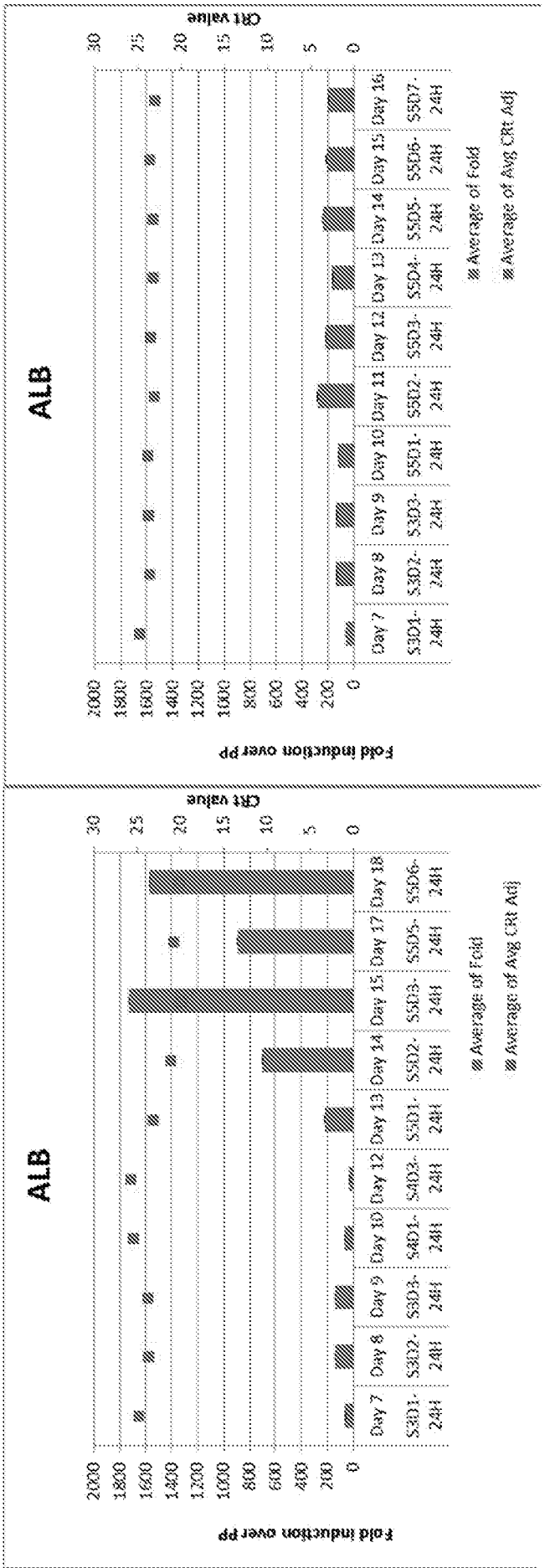

ALB
Fold induction over PP
CRt value
Day 7
Day 8
Day 9
Day 10
Day 12
Day 13
Day 14
Day 15
Day 17
Day 18
S3D1-24H
S3D2-24H
S3D3-24H
S4D1-24H
S4D2-24H
S5D1-24H
S5D2-24H
S5D3-24H
S5D5-24H
S5D6-24H
Average of Fold
Average of Avg CRt Adj
"Standard"
ALB
Fold induction over PP
CRt value
Day 7
Day 8
Day 9
Day 10
Day 11
Day 12
Day 13
Day 14
Day 15
Day 16
S3D1-24H
S3D2-24H
S3D3-24H
S5D1-24H
S5D2-24H
S5D3-24H
S5D4-24H
S5D5-24H
S5D6-24H
S5D7-24H
Average of Fold
Average of Avg CRt Adj
"Skip 4"

Figure 30C

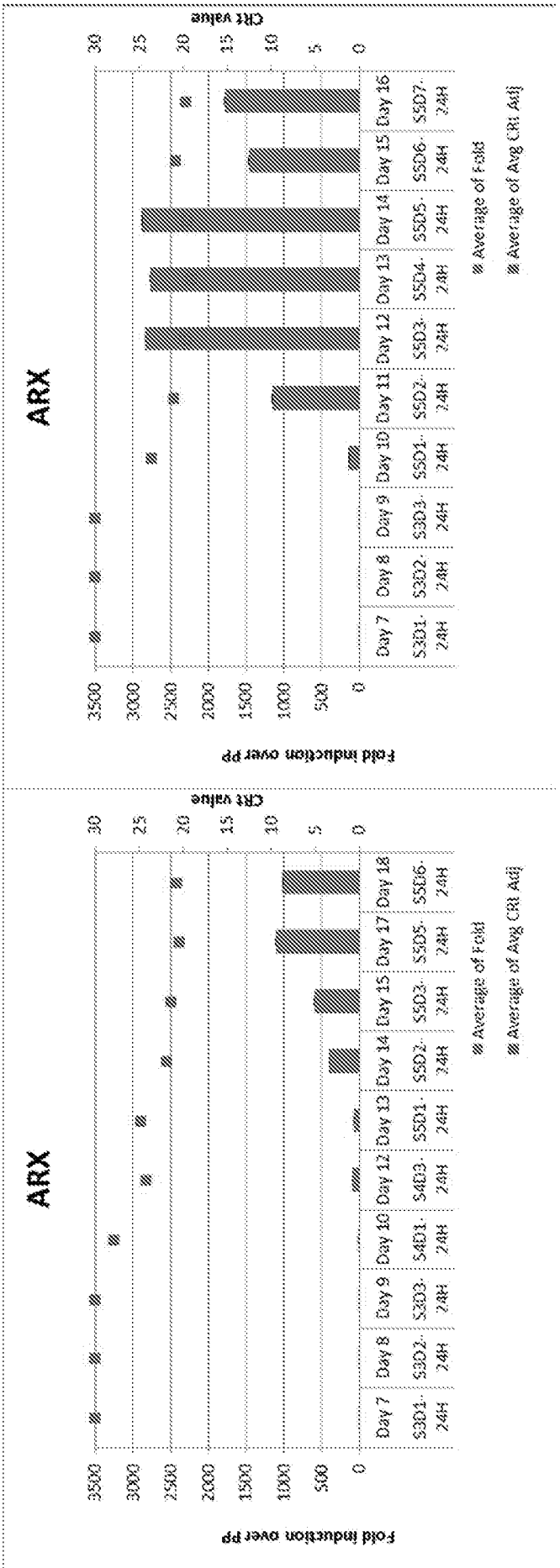

ARX
Fold induction over PP
CRT value
Average of Fold
Average of Avg CRt Adj
"Standard"
"Skip 4"

Figure 30D

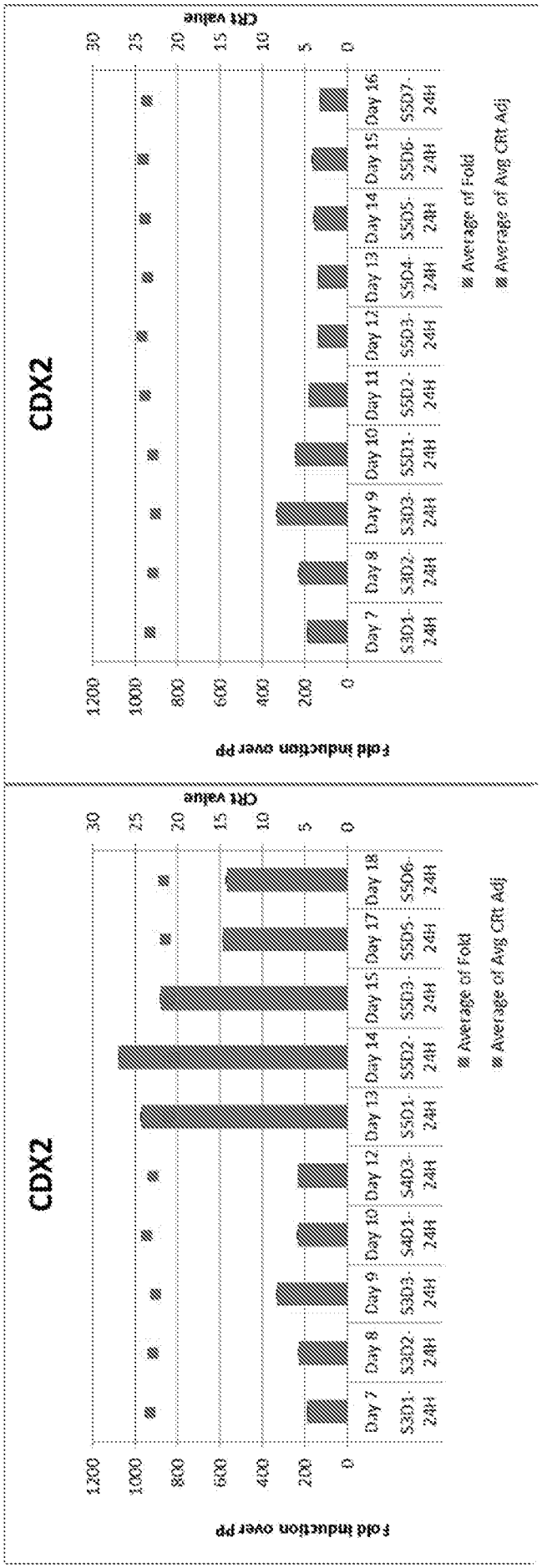

CDX2
Fold induction over PP
CRT value
Average of Fold
Average of Avg CRT Adj
"Skip 4"
CDX2
Fold induction over PP
CRT value
Average of Fold
Average of Avg CRT Adj
"Standard"

Figure 30E

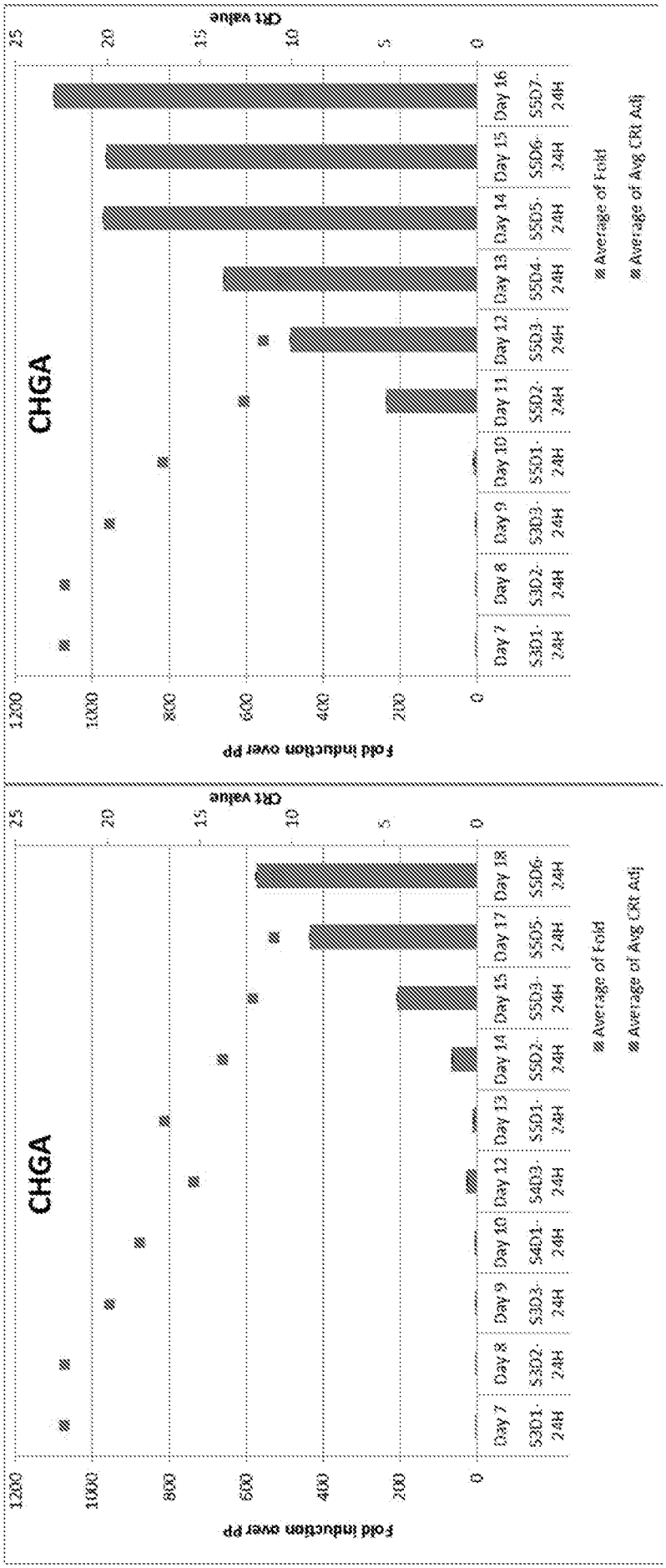

CHGA
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Skip 4"
"Standard"

Figure 30F

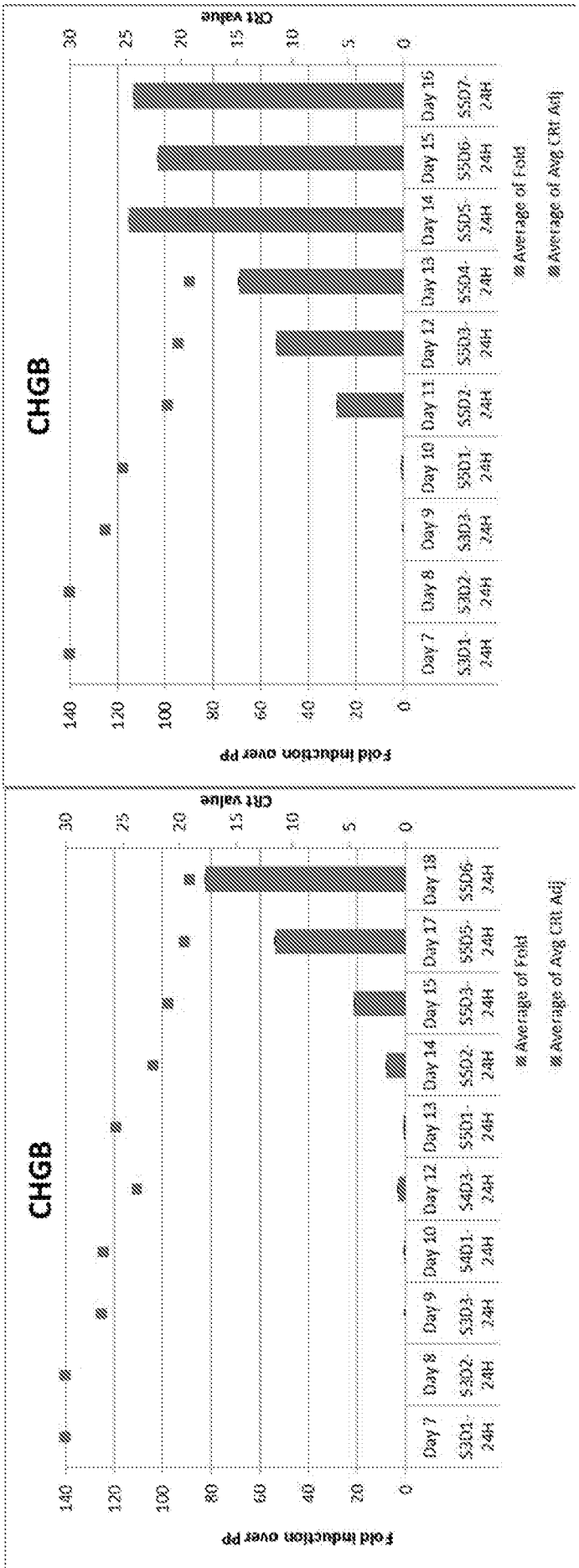

CHGB
Fold Induction over PP
CRT value
Day 7
Day 8
Day 9
Day 10
Day 12
Day 13
Day 14
Day 15
Day 17
Day 18
Average of Fold
Average of Avg CRT Adj
"Standard"
CHGB
Fold Induction over PP
CRT value
Day 7
Day 8
Day 9
Day 10
Day 11
Day 12
Day 13
Day 14
Day 15
Day 16
Average of Fold
Average of Avg CRT Adj
"Skip 4"

Figure 30G

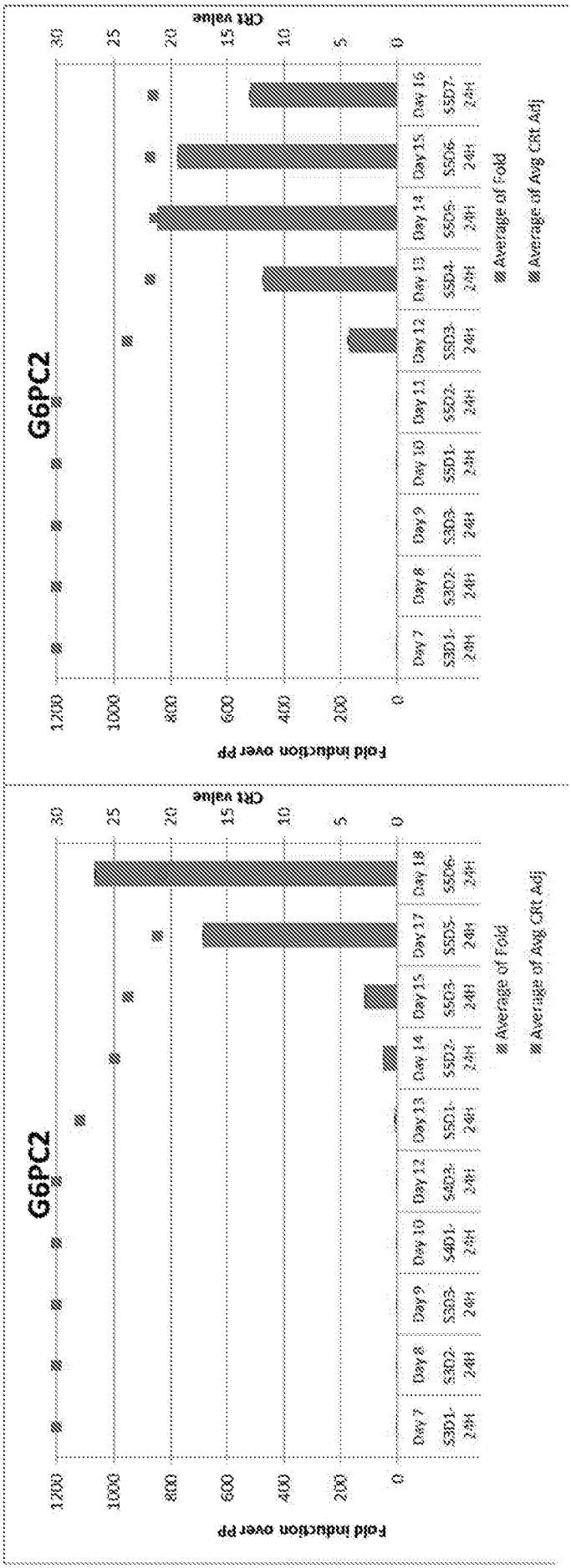

G6PC2
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Skip 4"
"Standard"

Figure 30H

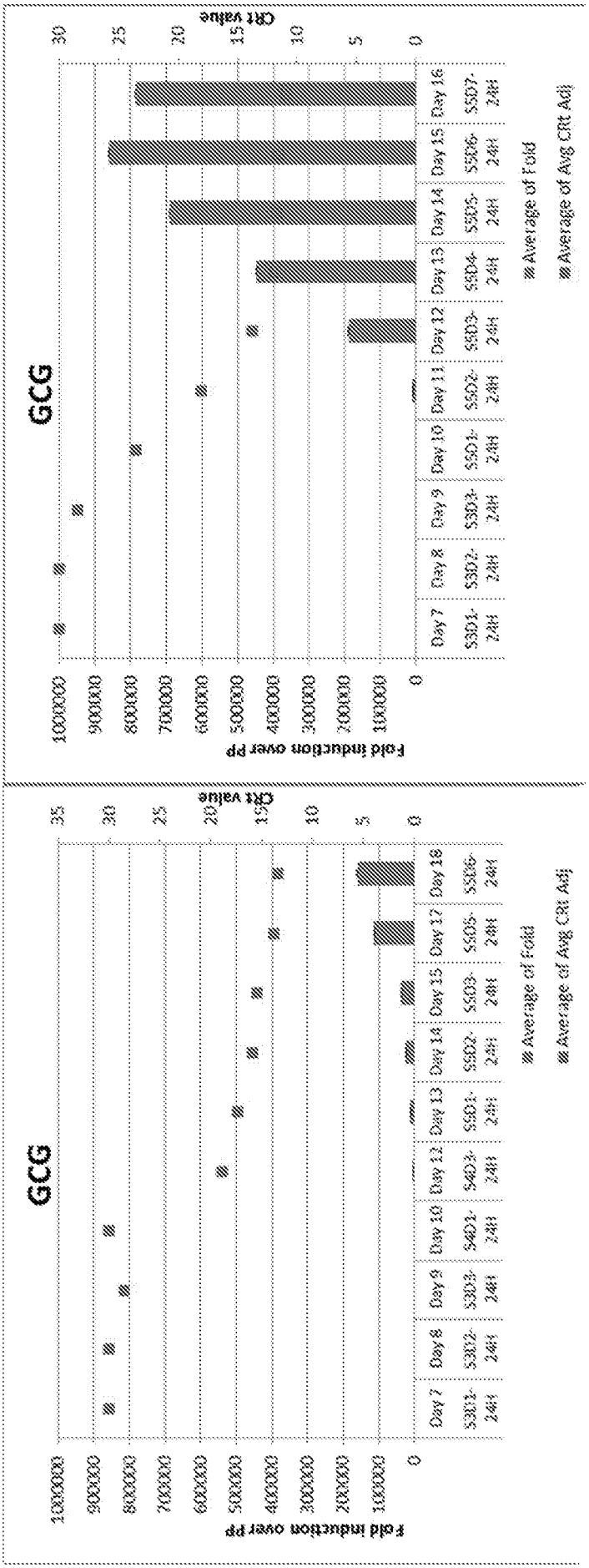

GCG
Fold induction over PP
CRt value
Day 7
Day 8
Day 9
Day 10
Day 11
Day 12
Day 13
Day 14
Day 15
Day 16
Average of Fold
Average of Avg CRt Adj
"Skip 4"
"Standard"

Figure 30I

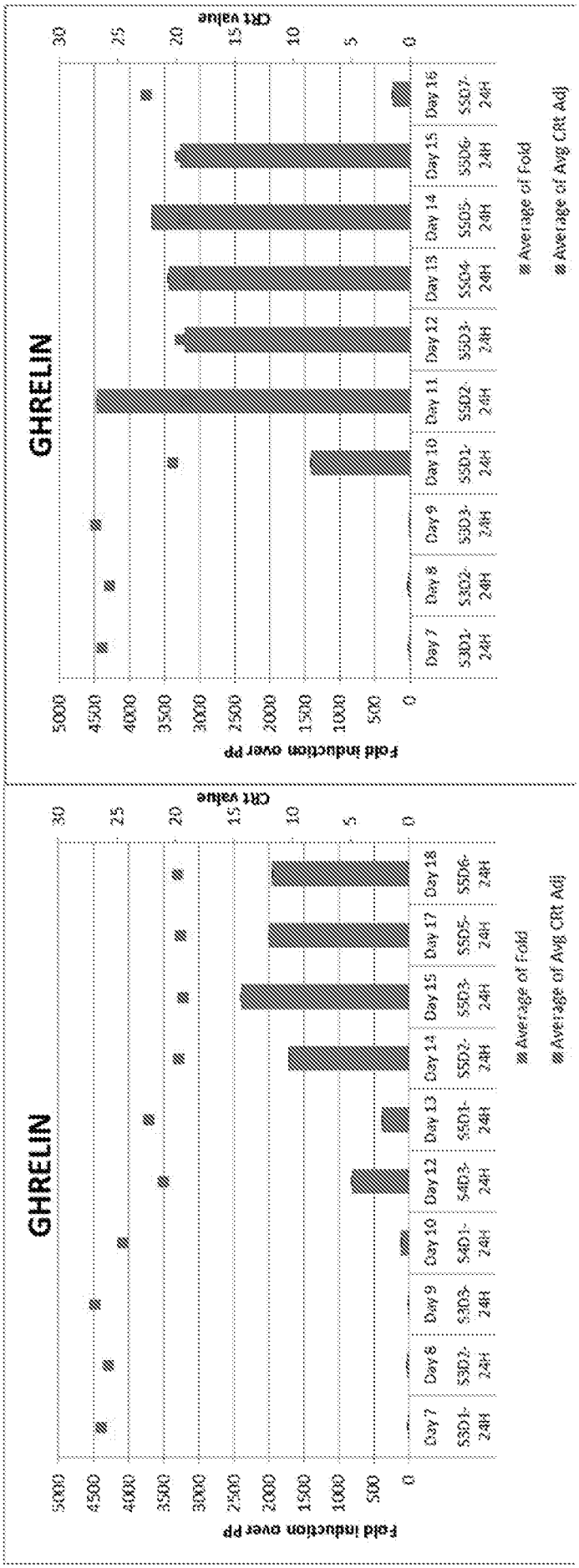

GHRELIN
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Skip 4"
GHRELIN
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Standard"

Figure 30J

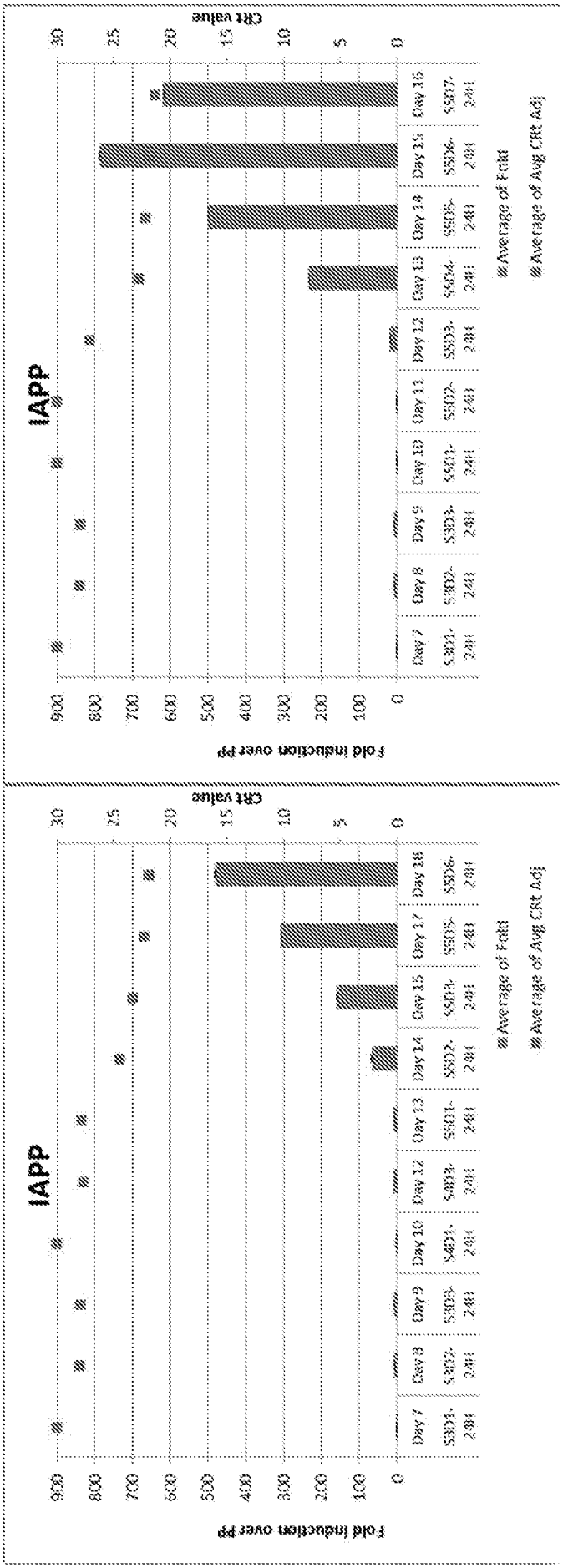

IAPP
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Standard"
"Skip 4"

Figure 30K

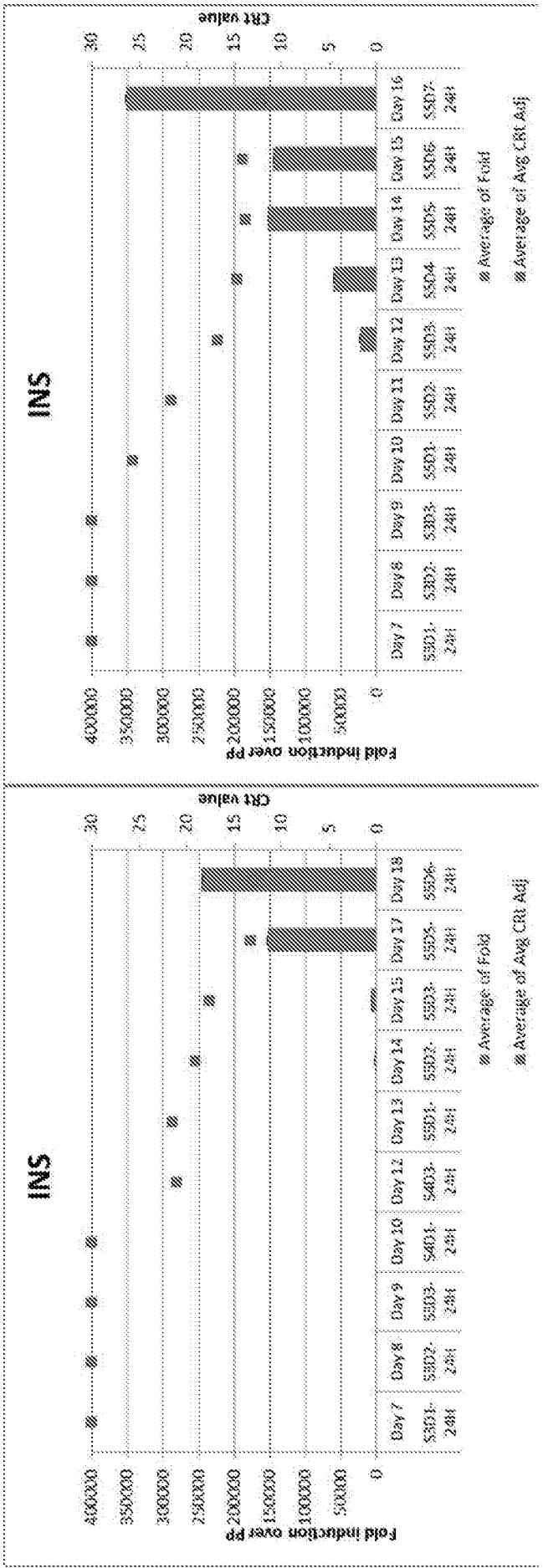

INS
Fold induction over PP
CRt value
Day 7
Day 8
Day 9
Day 10
Day 12
Day 13
Day 14
Day 15
Day 17
Day 18
S3D1-24H
S3D2-24H
S3D3-24H
S4D1-24H
S4D3-24H
S5D1-24H
S5D2-24H
S5D3-24H
S5D5-24H
S5D6-24H
Average of Fold
Average of Avg CRt Adj
"Standard"
INS
Fold induction over PP
CRt value
Day 7
Day 8
Day 9
Day 10
Day 11
Day 12
Day 13
Day 14
Day 15
Day 16
S3D1-24H
S3D2-24H
S3D3-24H
S5D1-24H
S5D2-24H
S5D3-24H
S5D4-24H
S5D5-24H
S5D6-24H
S5D7-24H
Average of Fold
Average of Avg CRt Adj
"Skip 4"

Figure 30L

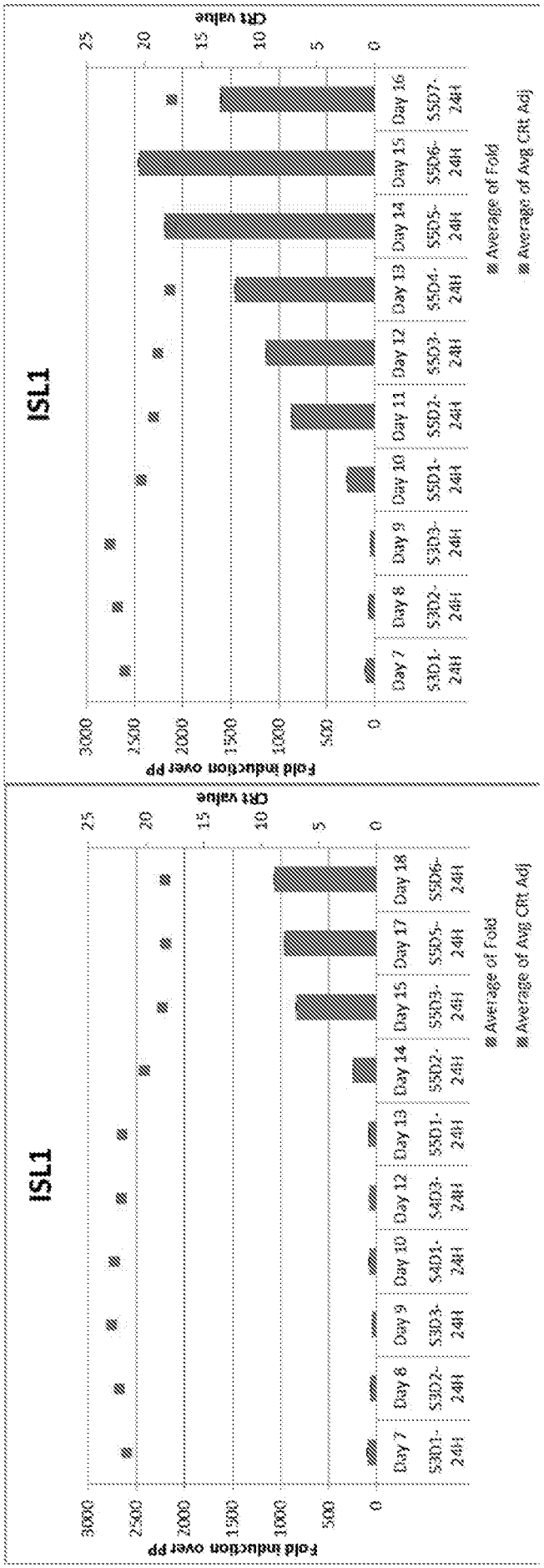

ISL1
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Skip 4"
ISL1
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Standard"

Figure 30M

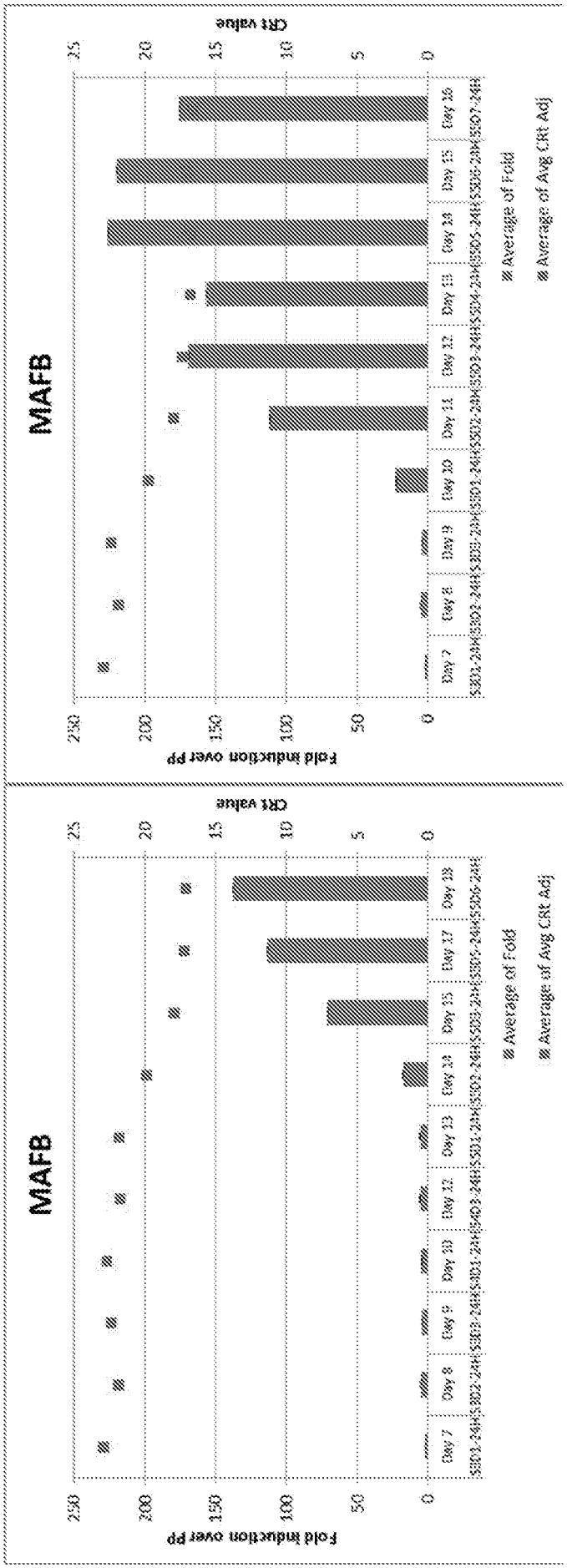

MAFB
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Skip 4"
MAFB
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Standard"

Figure 30N

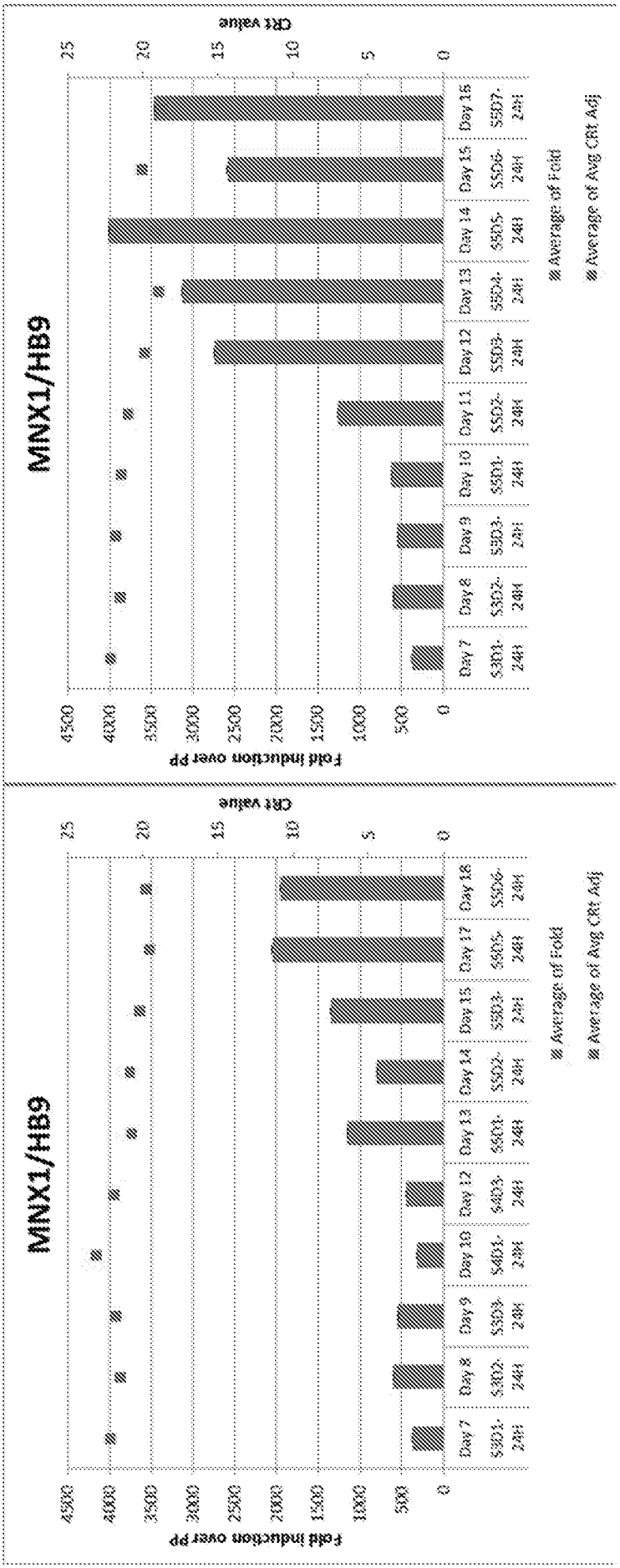

MNX1/HB9
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Standard"
MNX1/HB9
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Skip 4"

Figure 30O

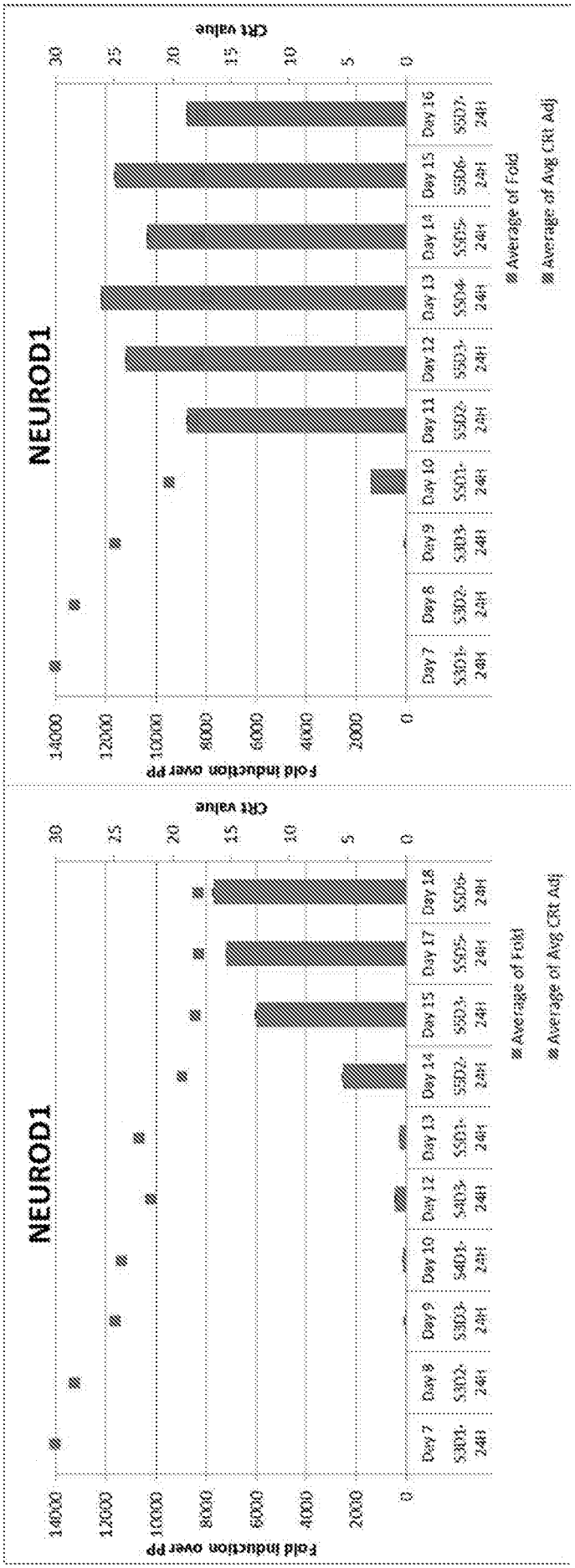

NEUROD1
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Skip 4"
"Standard"

Figure 30P

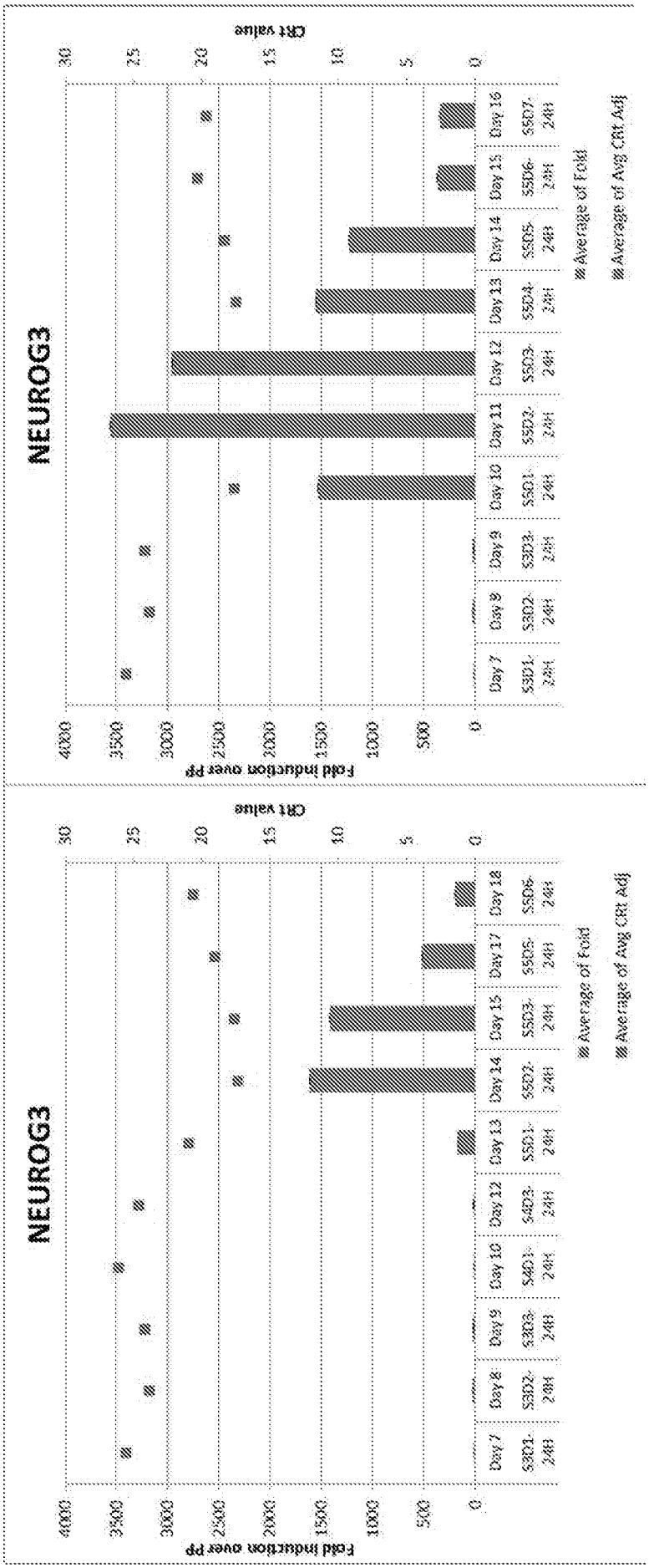

NEUROG3
Fold induction over PP
CRT value
Average of Fold
Average of Avg CRT Adj
"Skip 4"
NEUROG3
Fold induction over PP
CRT value
Average of Fold
Average of Avg CRT Adj
"Standard"

Figure 30Q

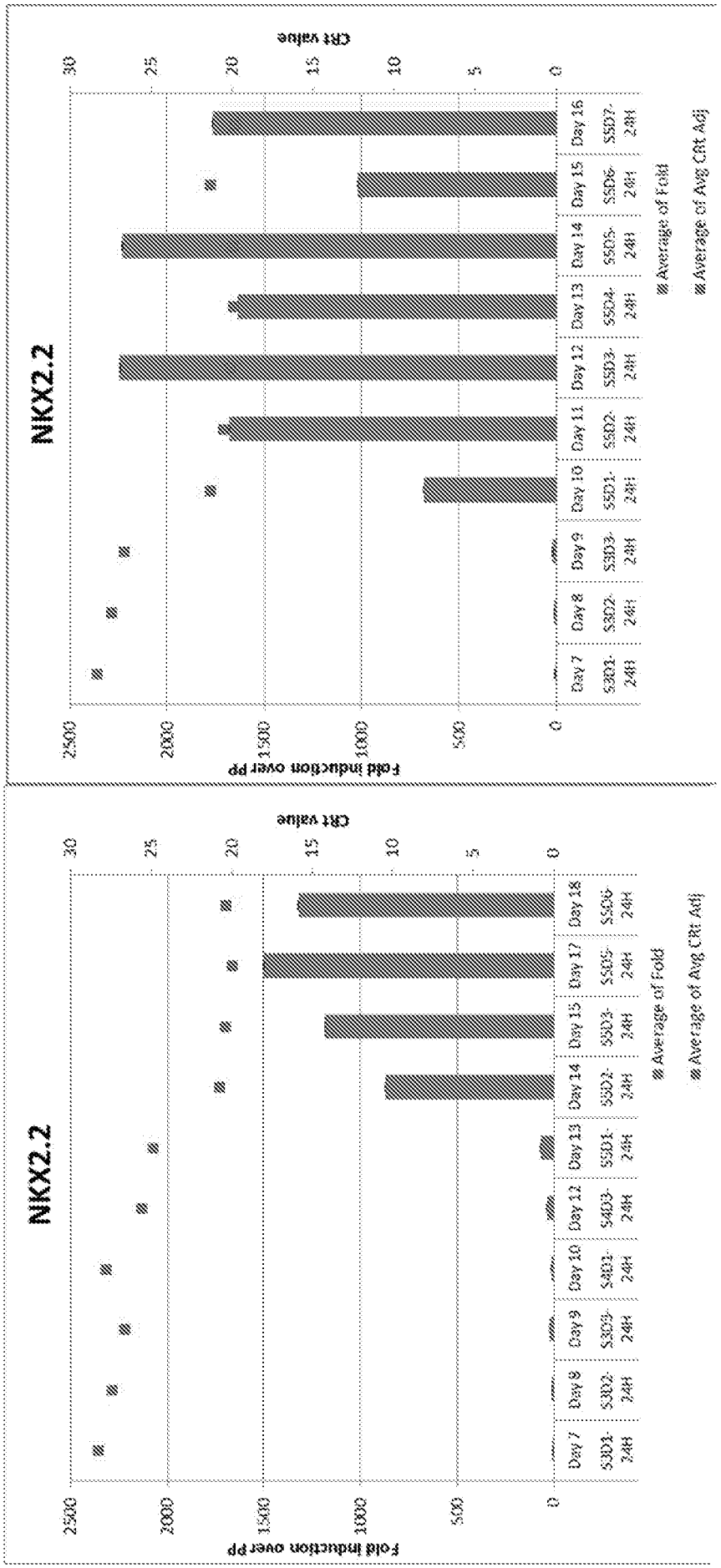

NKX2.2
Fold induction over PP
CRT value
Average of Fold
Average of Avg CRt Adj
"Standard"
"Skip 4"

Figure 30R

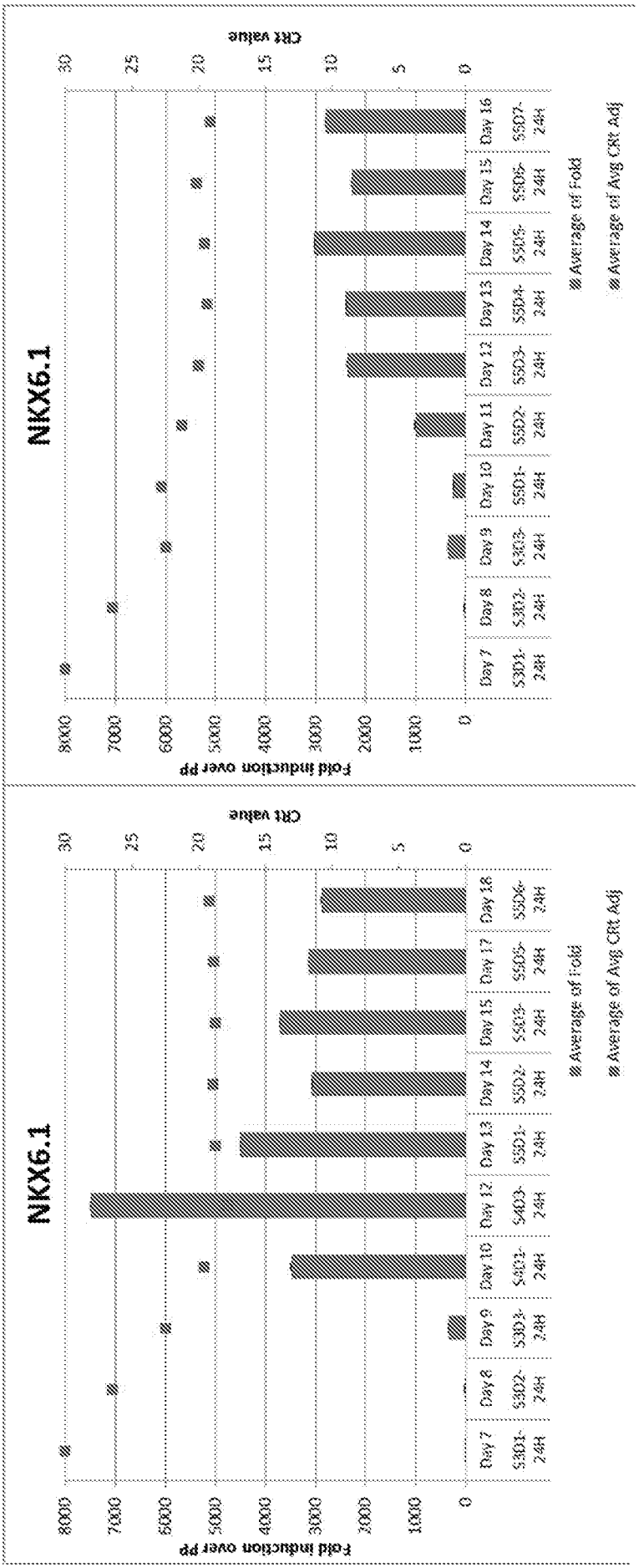

NKX6.1
Fold induction over PP
CRT value
Average of Fold
Average of Avg CRt Adj
"Skip 4"
NKX6.1
Fold induction over PP
CRT value
Average of Fold
Average of Avg CRt Adj
"Standard"

Figure 30S

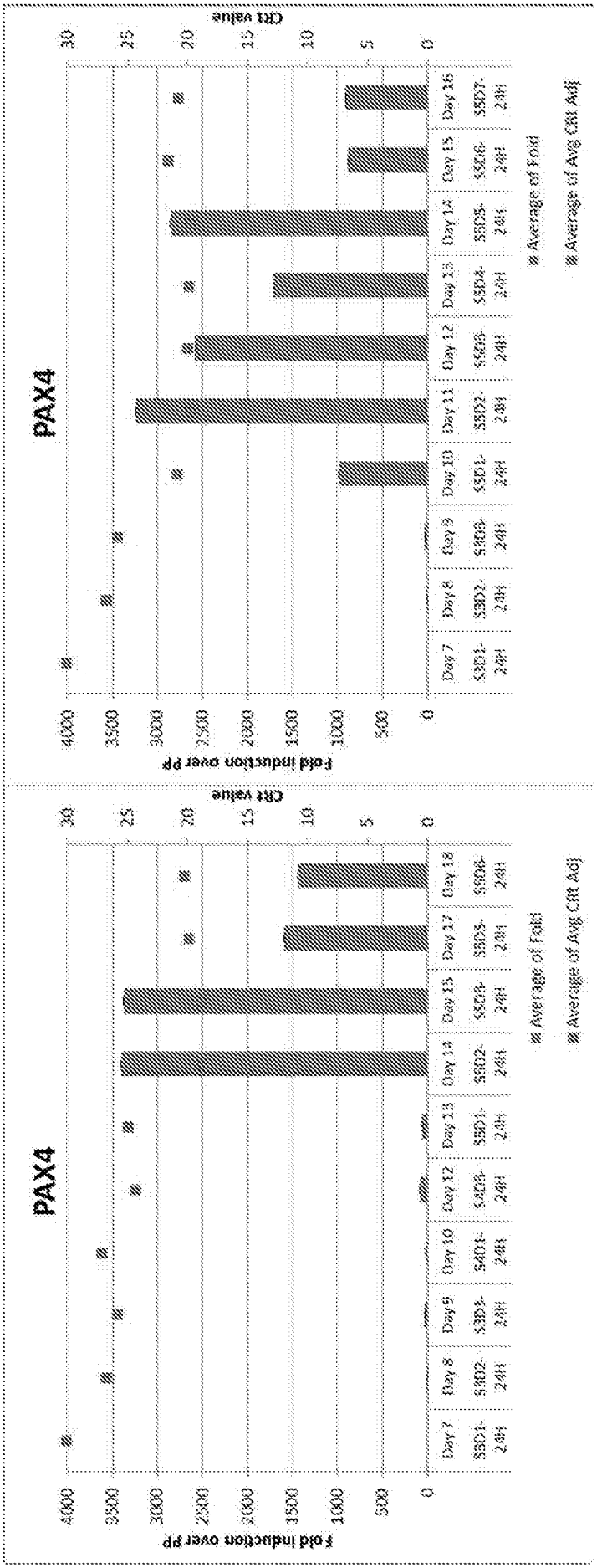

PAX4
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Standard"
PAX4
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Skip 4"

Figure 30T

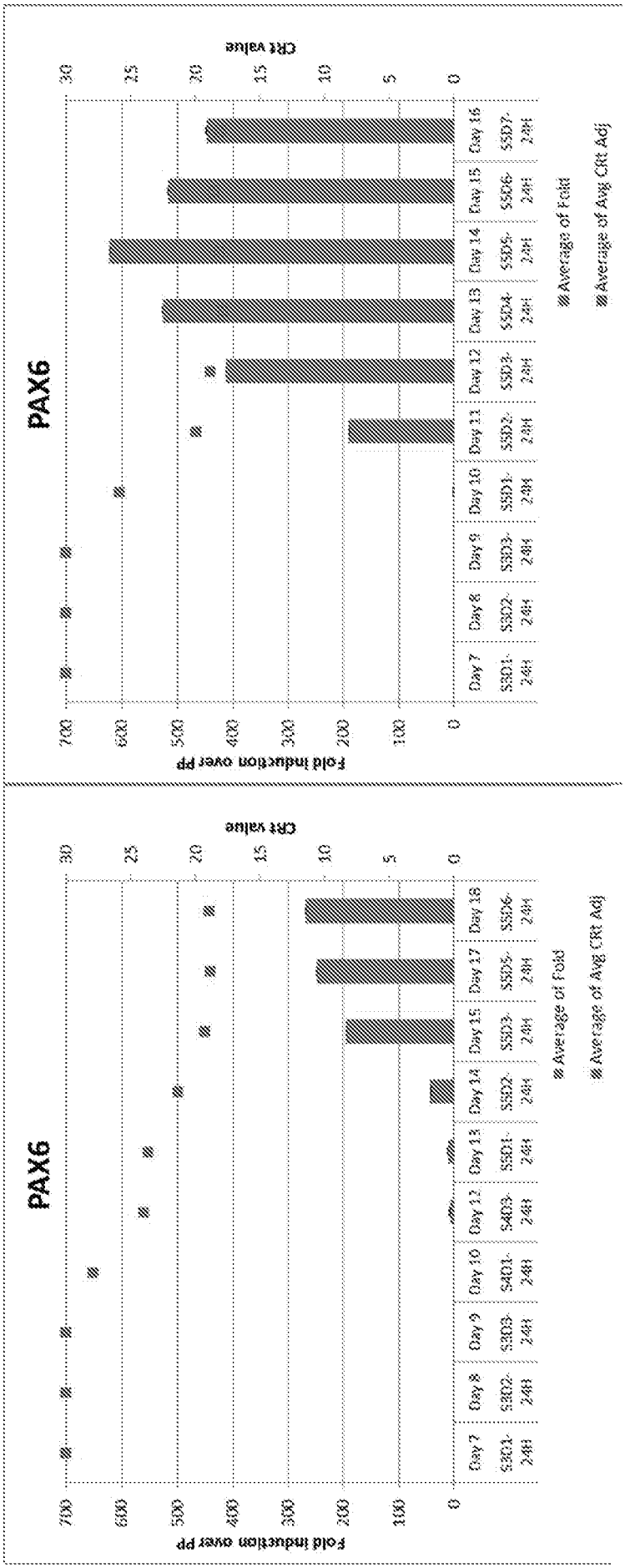

PAX6
Fold induction over PP
CRT value
Average of Fold
Average of Avg CRt Adj
"Skip 4"
"Standard"

Figure 30U

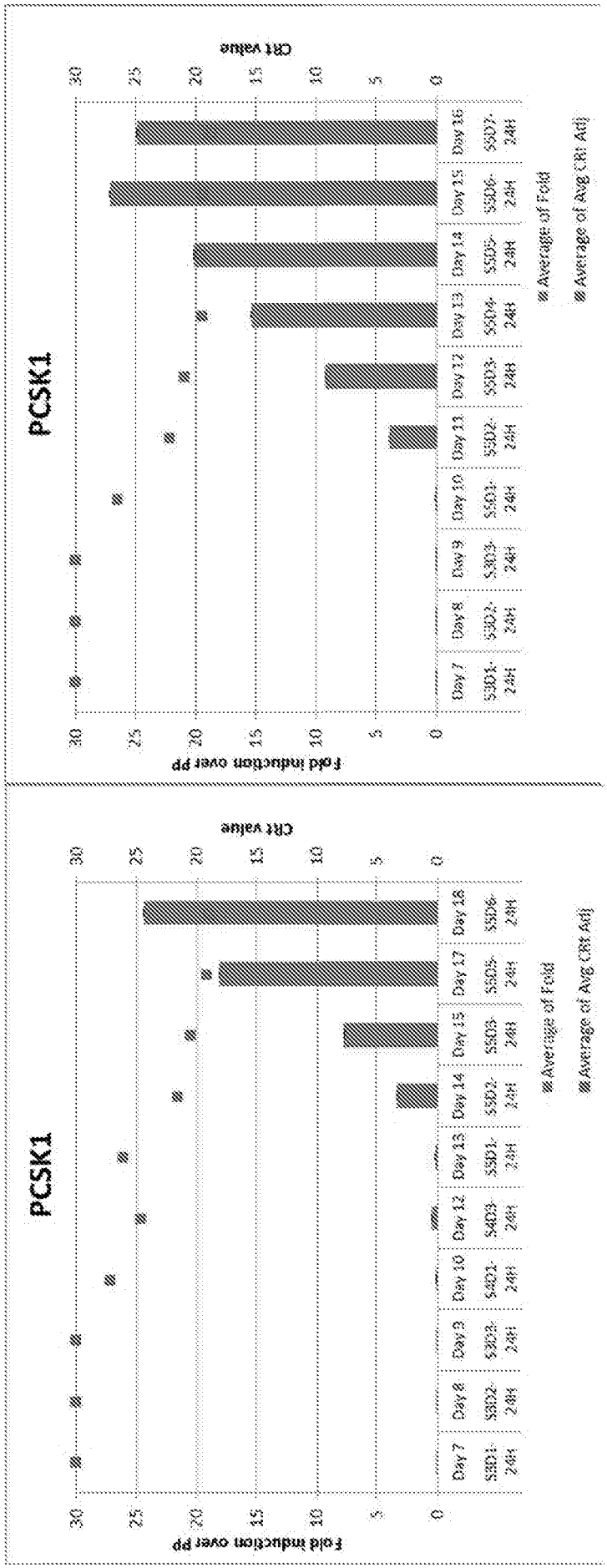
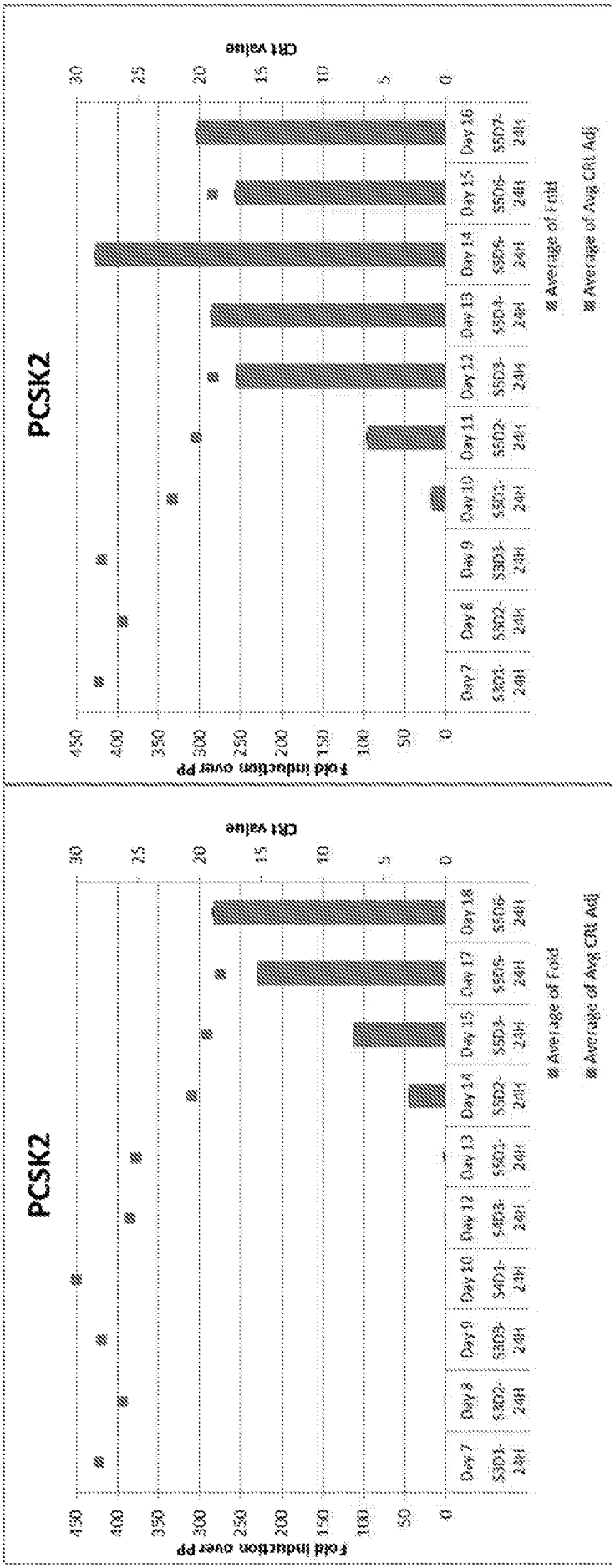

PCSK1
Fold induction over PP
CRT value
Day 7
SSD1-24H
Day 8
SSD2-24H
Day 9
SSD3-24H
Day 10
SSD1-24H
Day 12
SSD3-24H
Day 13
SSD1-24H
Day 14
SSD2-24H
Day 15
SSD3-24H
Day 17
SSD5-24H
Day 18
SSD6-24H
Average of Fold
Average of Avg CRT Adj
"Standard"
PCSK1
Fold induction over PP
CRT value
Day 7
SSD1-24H
Day 8
SSD2-24H
Day 9
SSD3-24H
Day 10
SSD1-24H
Day 11
SSD2-24H
Day 12
SSD3-24H
Day 13
SSD4-24H
Day 14
SSD5-24H
Day 15
SSD6-24H
Day 16
SSD7-24H
Average of Fold
Average of Avg CRT Adj
"Skip 4"

Figure 30V



"Standard"

"Skip 4"

Figure 30W

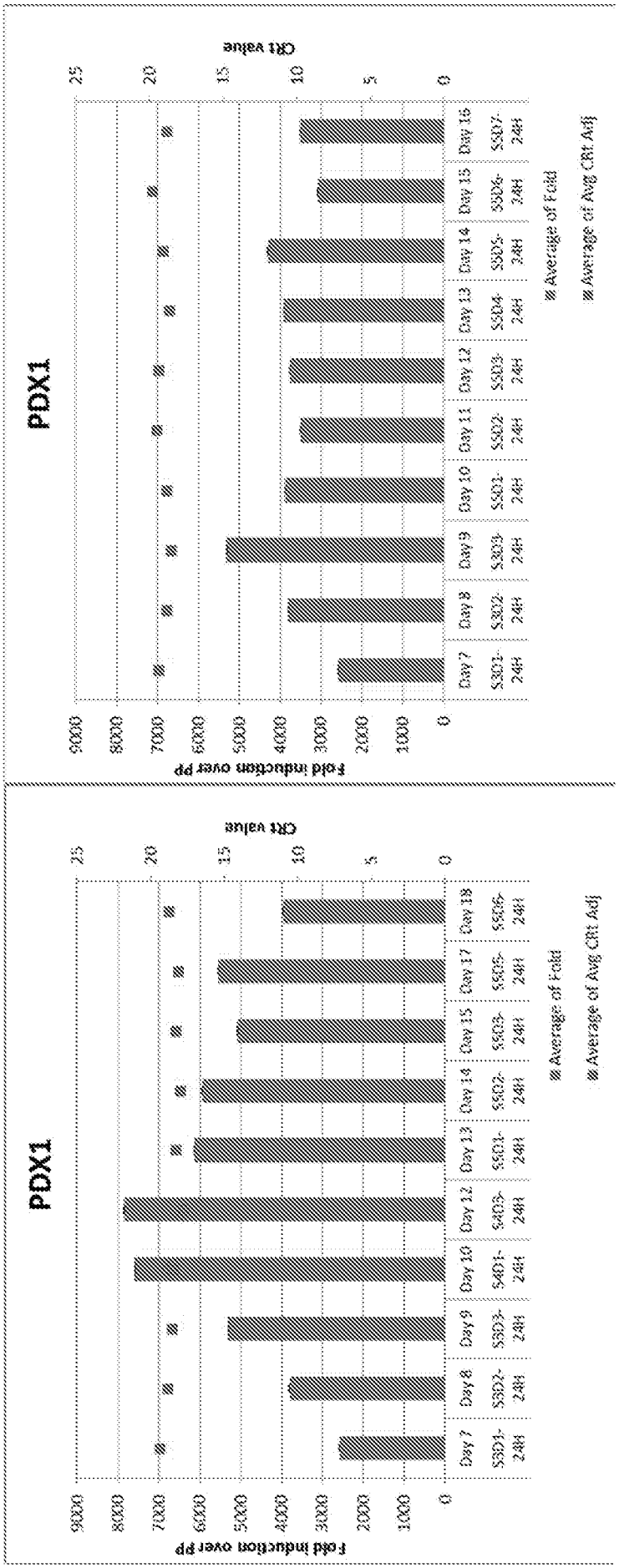

PDX1
Fold induction over PP
CRt value
Day 7
Day 8
Day 9
Day 10
Day 12
Day 13
Day 14
Day 15
Day 17
Day 18
Day 16
Average of Fold
Average of Avg CRt Adj
"Standard"
"Skip 4"

Figure 30X

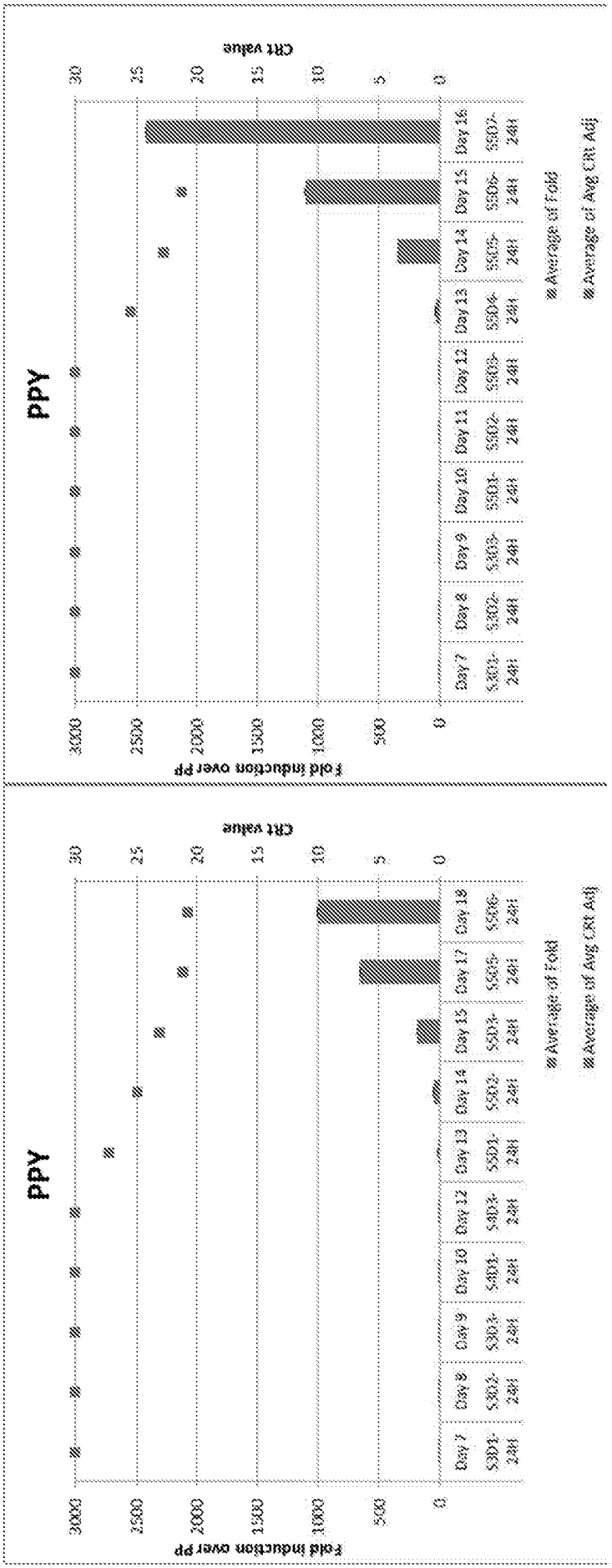

PPY
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Standard"
"Skip 4"

Figure 30Y

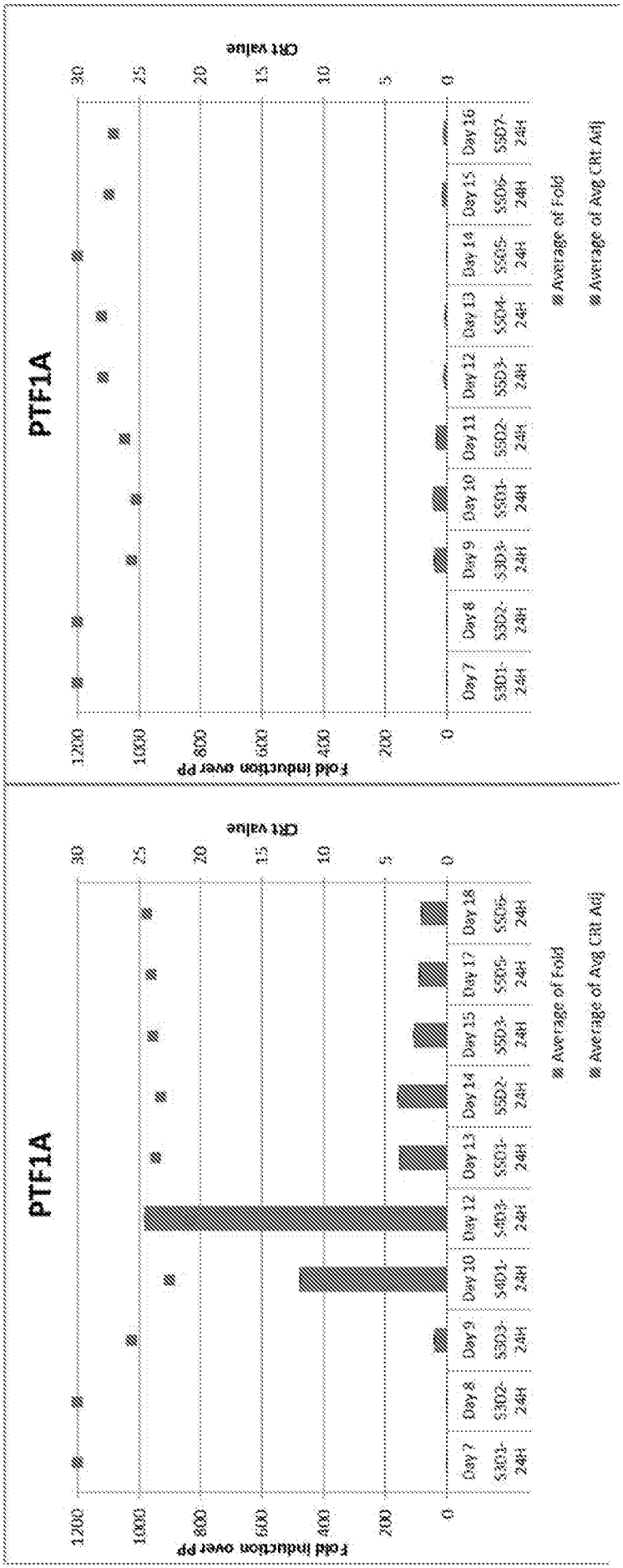

PTF1A
Fold induction over PP
CRI value
Average of Fold
Average of Avg CRI Adj
"Standard"
"Skip 4"

Figure 30Z

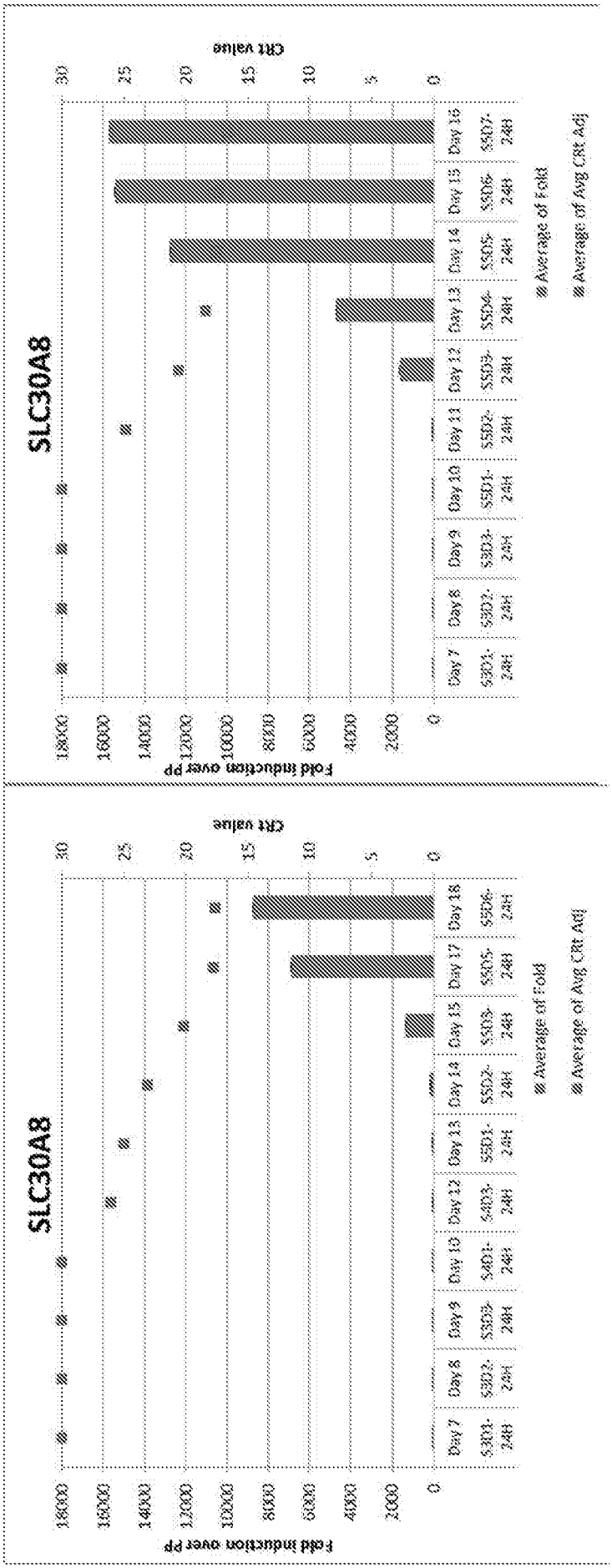

SLC30A8
Fold induction over PP
CRt value
Day 7
Day 8
Day 9
Day 10
Day 11
Day 12
Day 13
Day 14
Day 15
Day 16
Day 17
Day 18
Average of Fold
Average of Avg CRt Adj
"Standard"
"Skip 4"

Figure 30A'

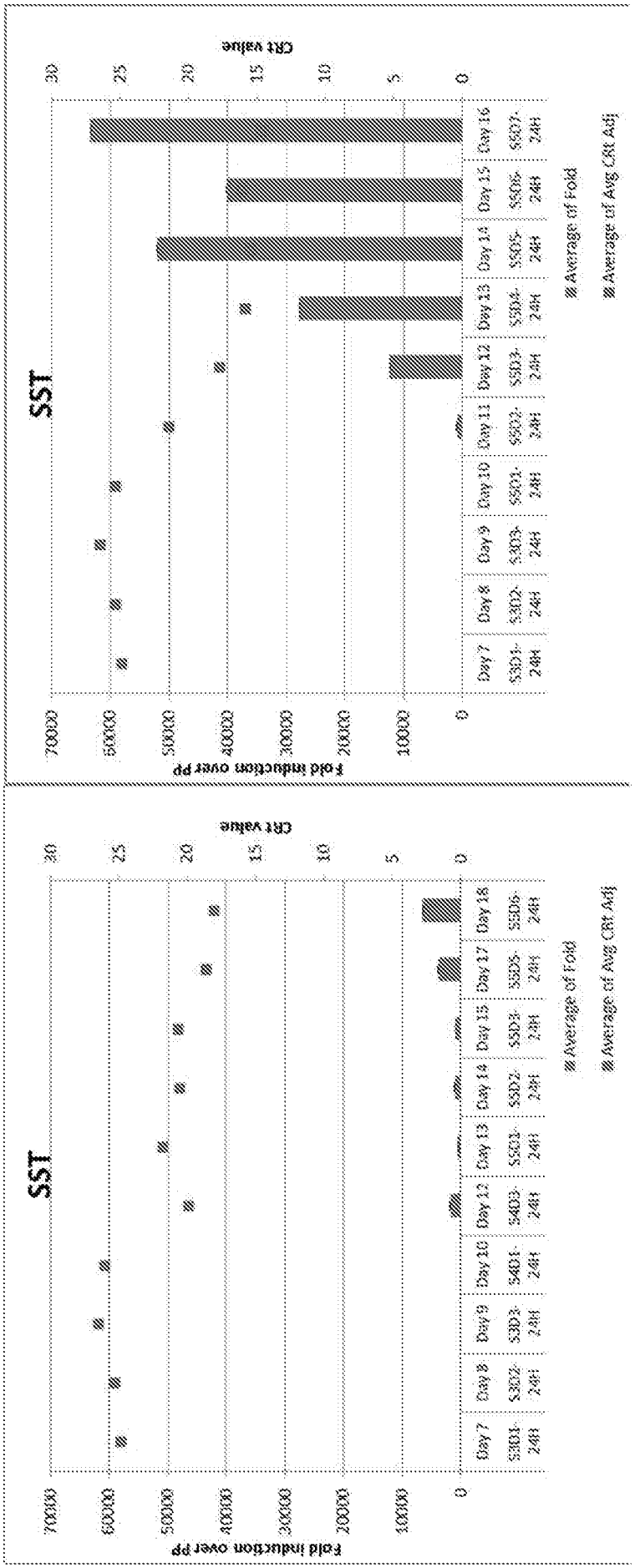

SST
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Skip 4"
SST
Fold induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Standard"

Figure 30B'

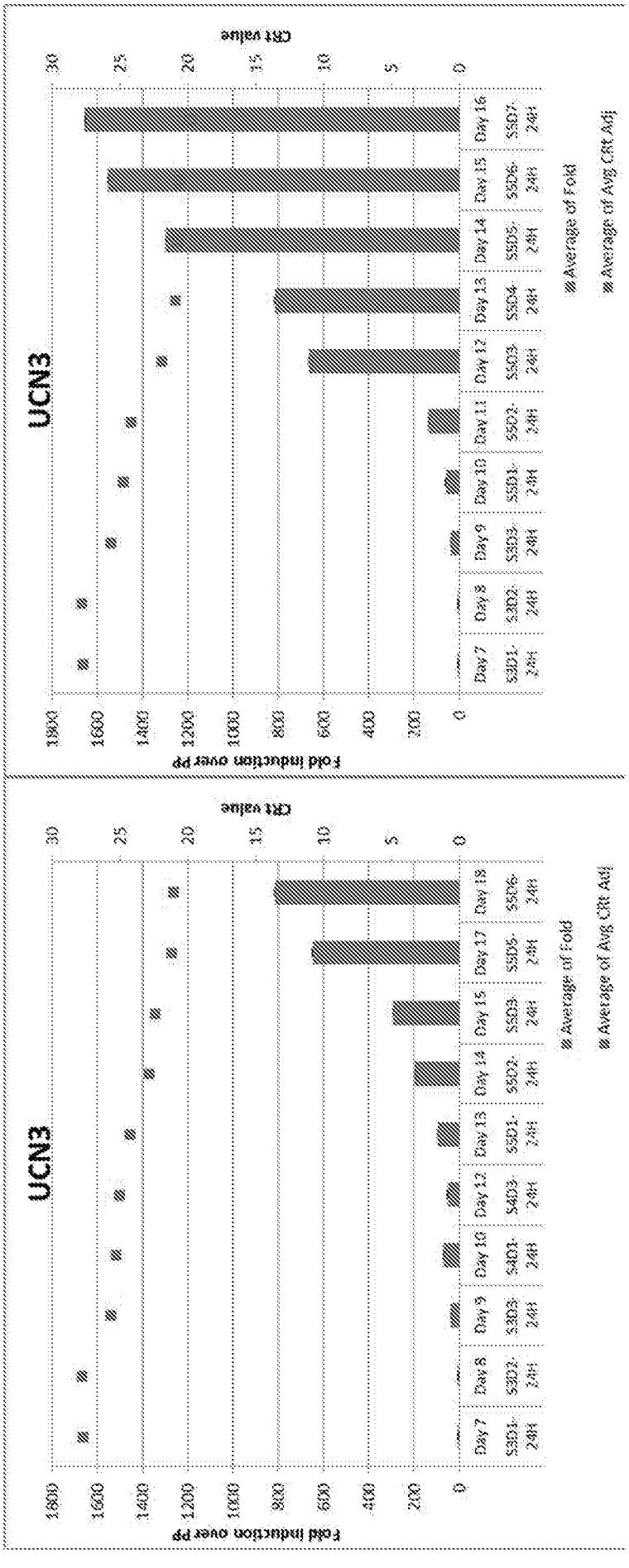

UCN3
Fold Induction over PP
CRt value
Average of Fold
Average of Avg CRt Adj
"Standard"
"Skip 4"

Figure 30C'

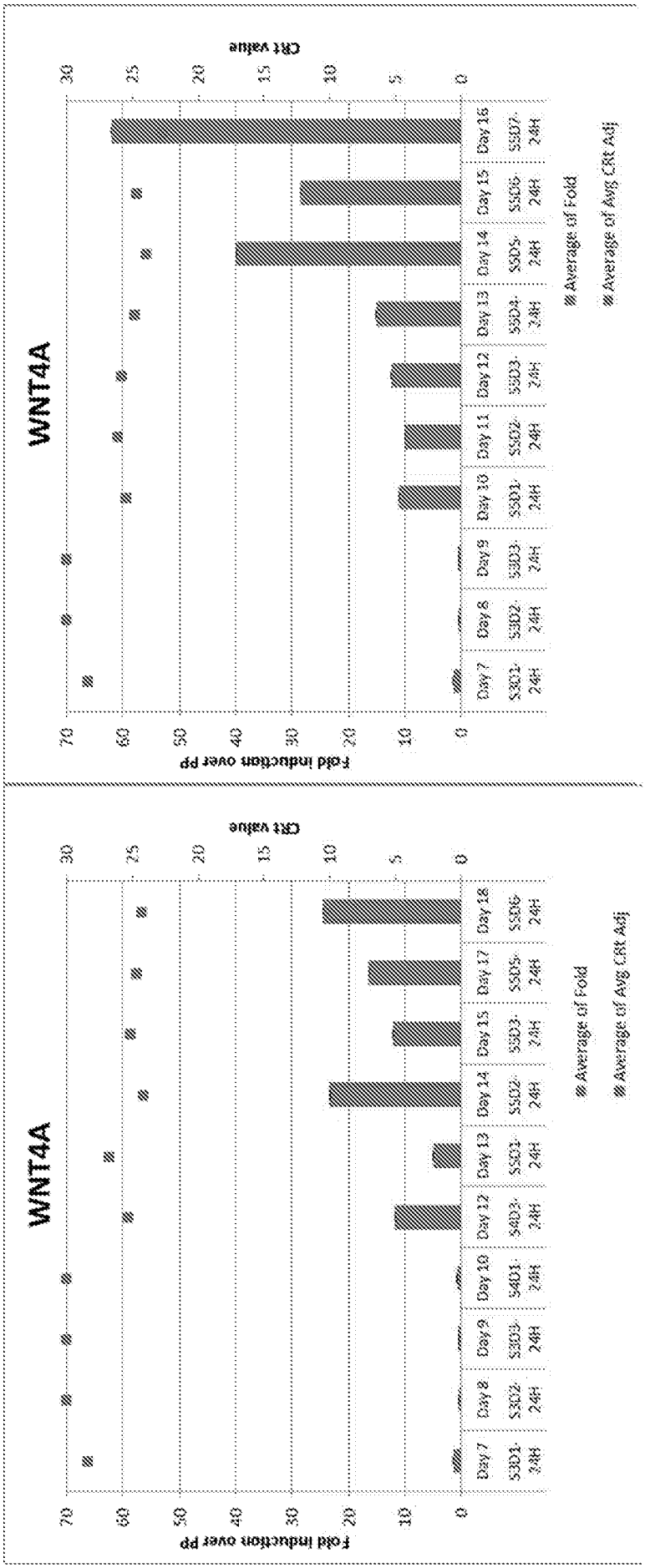

WNT4A
Fold induction over PP
CRT value
Average of Fold
Average of Avg CRT Adj
"Skip 4"
WNT4A
Fold induction over PP
CRT value
Average of Fold
Average of Avg CRT Adj
"Standard"

Figure 31

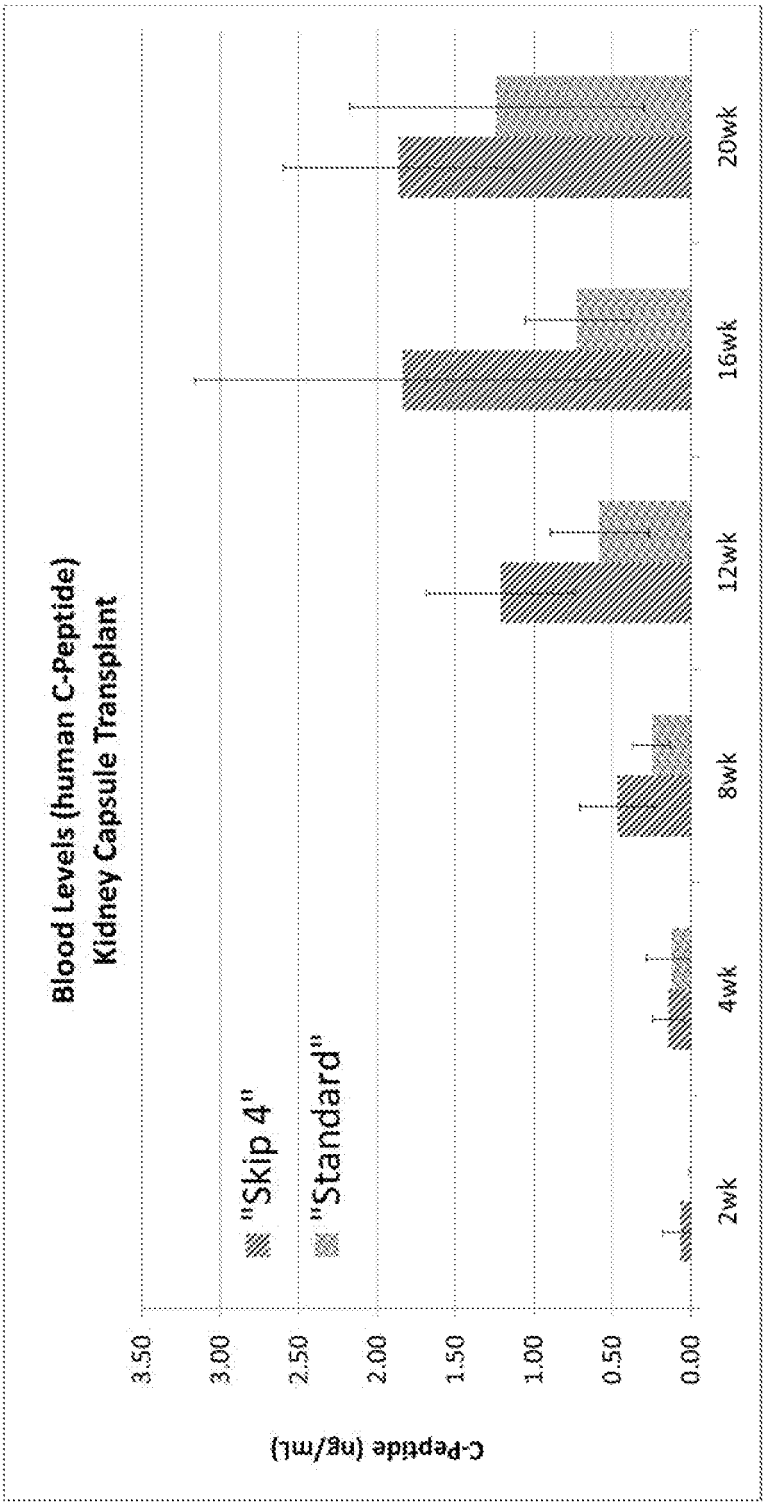

Blood Levels (human C-Peptide)
Kidney Capsule Transplant
"Skip 4"
"Standard"
C-Peptide (ng/mL)
3.50
3.00
2.50
2.00
1.50
1.00
0.50
0.00
2wk
4wk
8wk
12wk
16wk
20wk

Figure 32

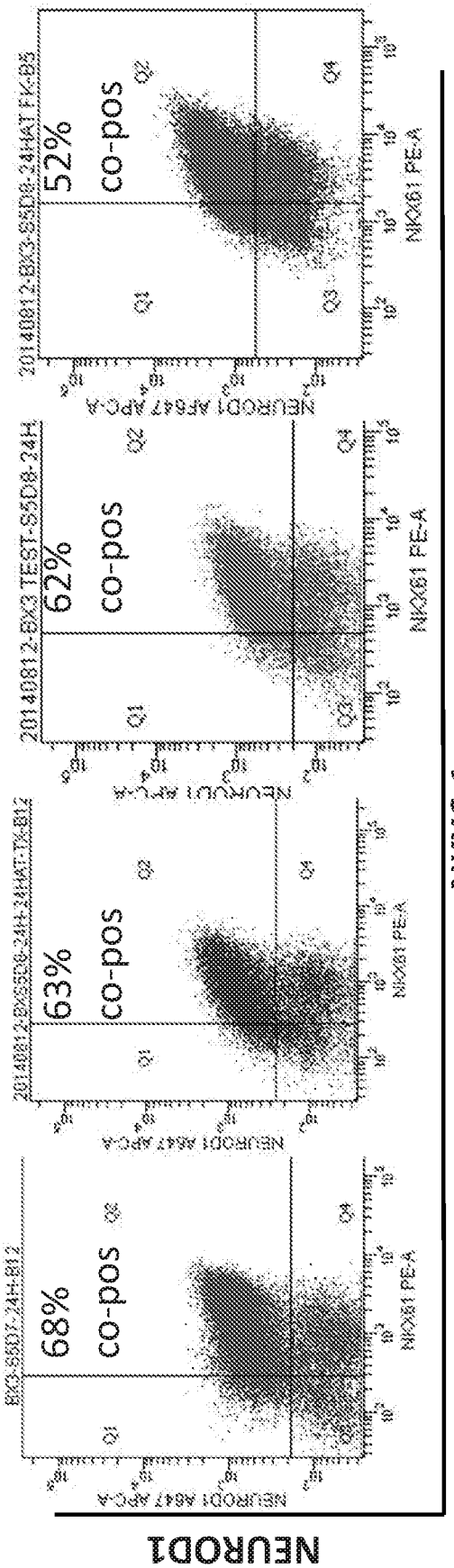

NEUROD1
NKX6.1
68%
co-pos
63%
co-pos
62%
co-pos
52%
co-pos
Stage 5 Day 7
Before
Cryopreservation
Stage 5 Day 7
Cryopreserved,
24 hours after thaw
Transplant Sample
Thaw 1
Stage 5 Day 7
Cryopreserved,
24 hours after thaw
Thaw 2
Stage 5 Day 7
Cryopreserved,
24 hours after thaw
Thaw 3

Figure 33

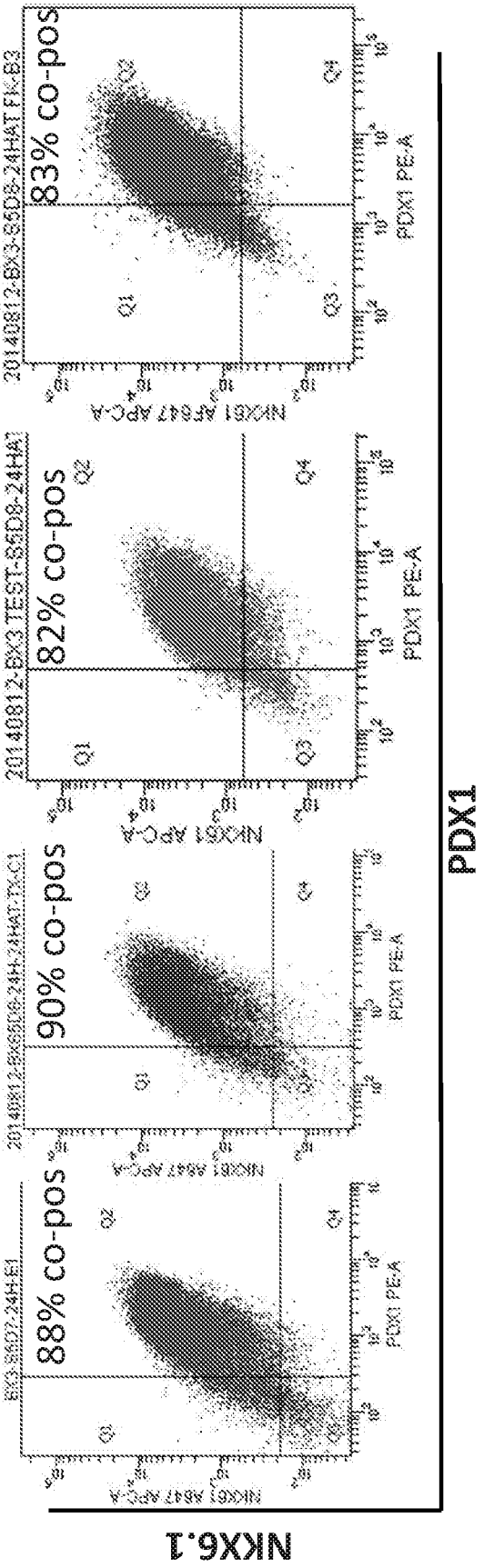

NKX6.1
PDX1
88% co-pos
90% co-pos
82% co-pos
83% co-pos
Stage 5 Day 7
Before Cryo
Stage 5 Day 7
Cryopreserved
24 hours after thaw
Transplant Sample
Thaw 1
Stage 5 Day 7
Cryopreserved
24 hours after thaw
Thaw 2
Stage 5 Day 7
Cryopreserved
24 hours after thaw
Thaw 3

Figure 34

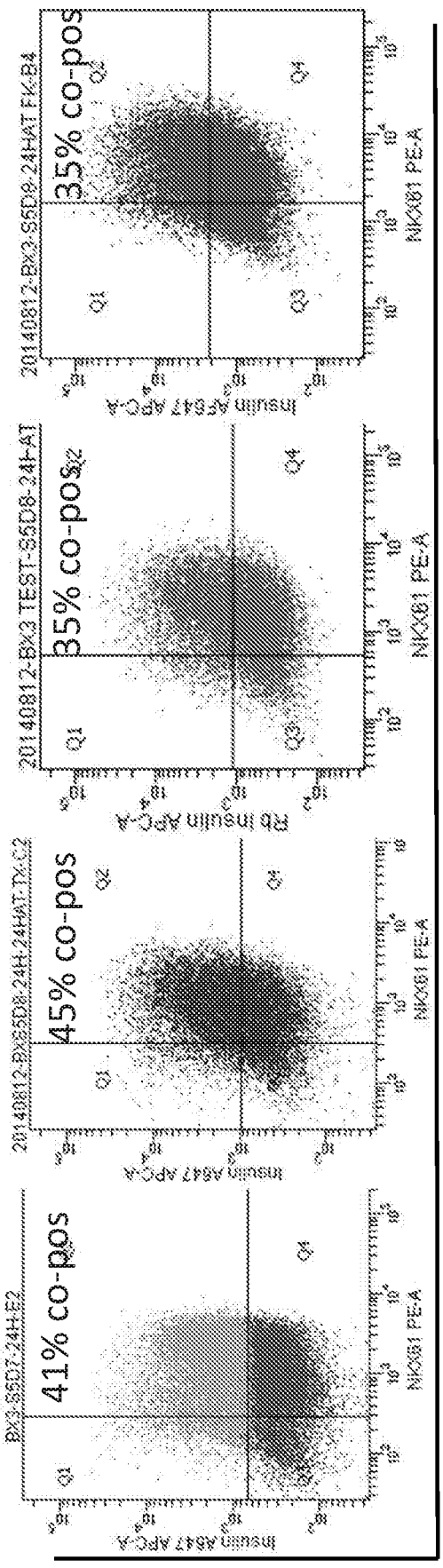

Insulin
NKX6.1
41% co-pos
45% co-pos
35% co-pos
35% co-pos
Stage 5 Day 7 Before Cryo
Stage 5 Day 7 Cryopreserved 24 hours after thaw Transplant Sample Thaw 1
Stage 5 Day 7 Cryopreserved 24 hours after thaw Thaw 2
Stage 5 Day 7 Cryopreserved 24 hours after thaw Thaw 3

Figure 35

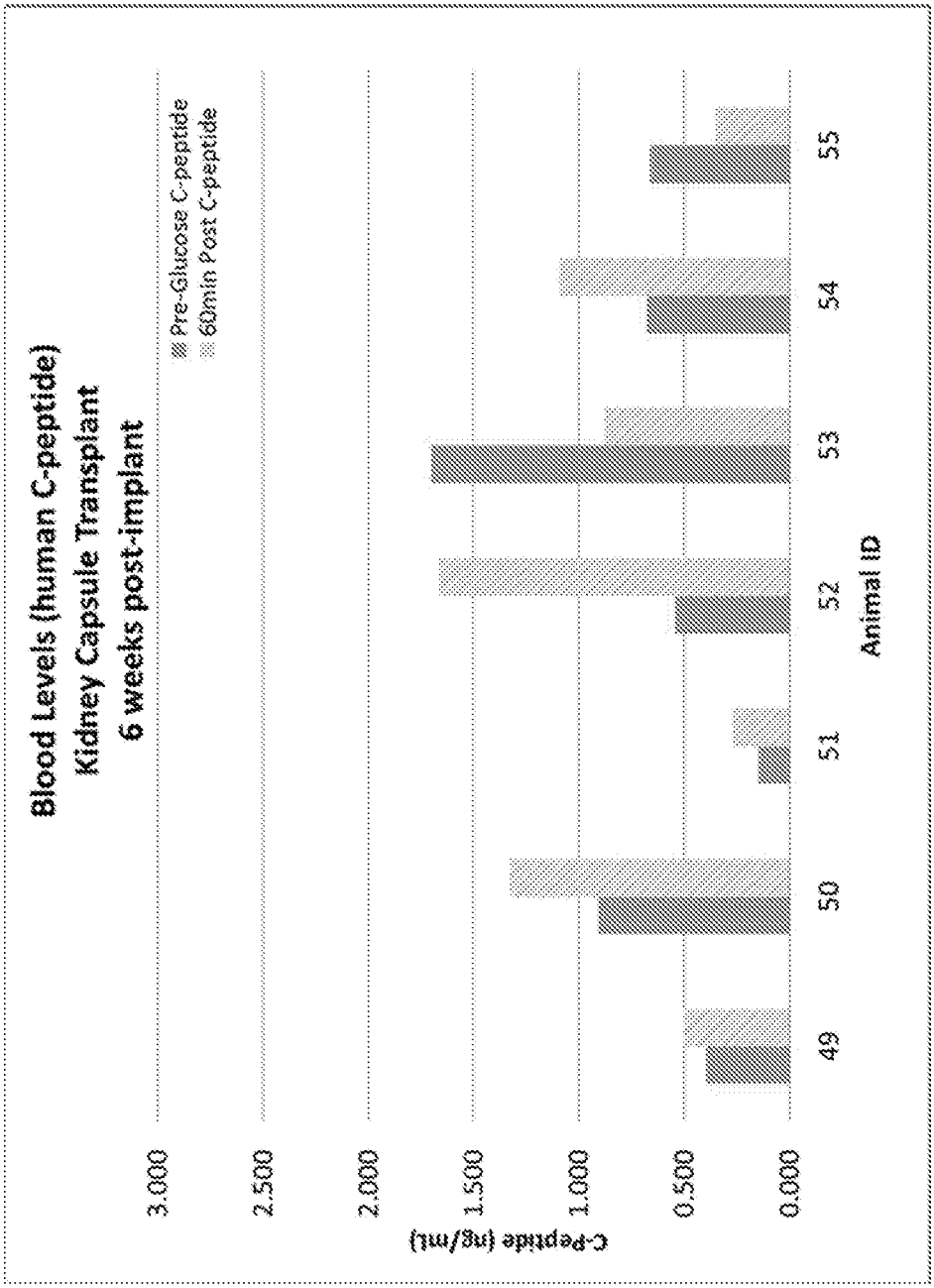

Blood Levels (human C-peptide)
Kidney Capsule Transplant
6 weeks post-implant
Pre-Glucose C-peptide
60min Post C-peptide
C-Peptide (ng/ml)
3.000
2.500
2.000
1.500
1.000
0.500
0.000
49
50
51
52
53
54
55
Animal ID

Figure 36

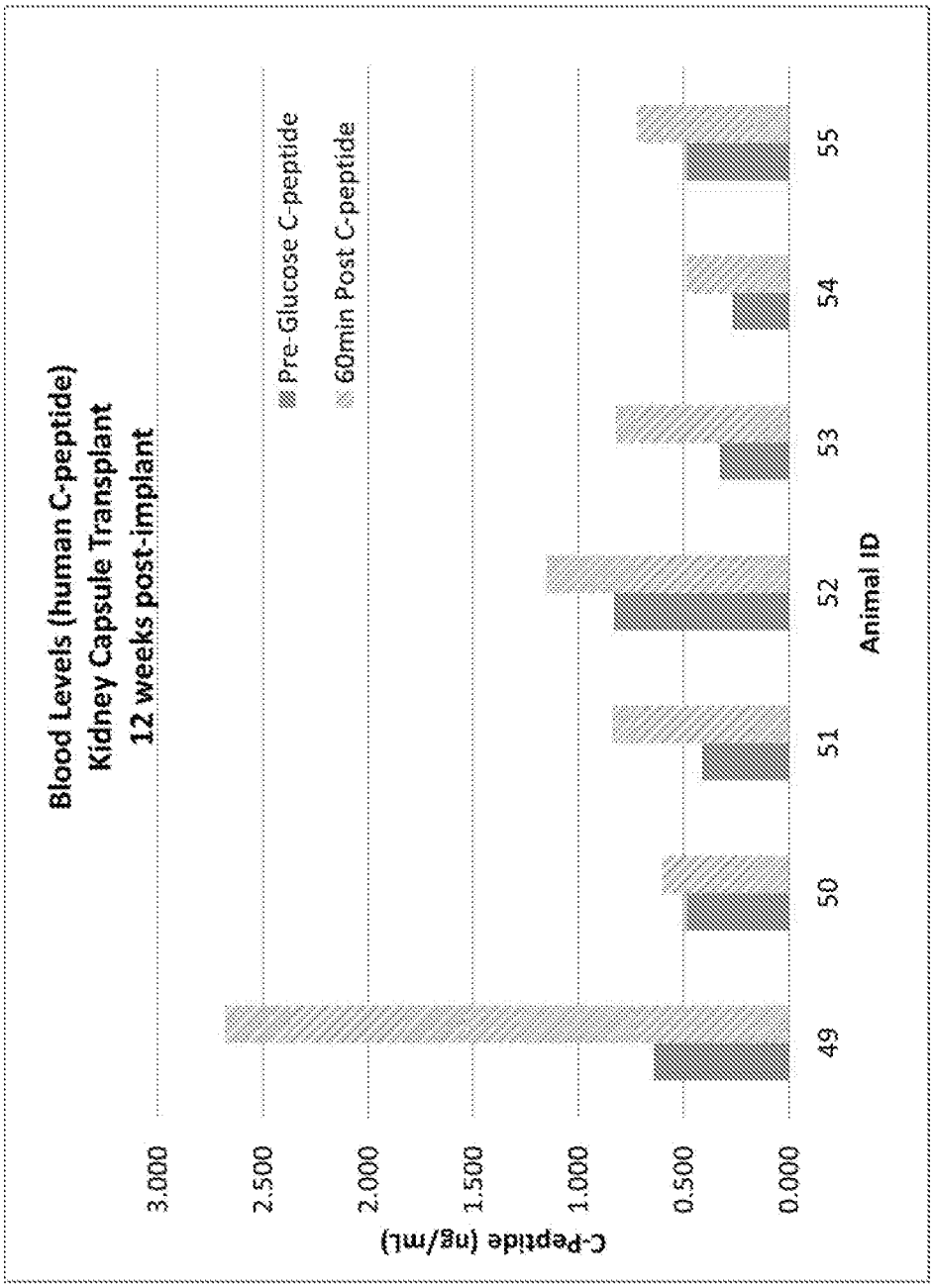

Blood Levels (human C-peptide)
Kidney Capsule Transplant
12 weeks post-implant
Pre-Glucose C-peptide
60min Post C-peptide
C-Peptide (ng/mL)
3.000
2.500
2.000
1.500
1.000
0.500
0.000
49
50
51
52
53
54
55
Animal ID

Figure 37A (ph)

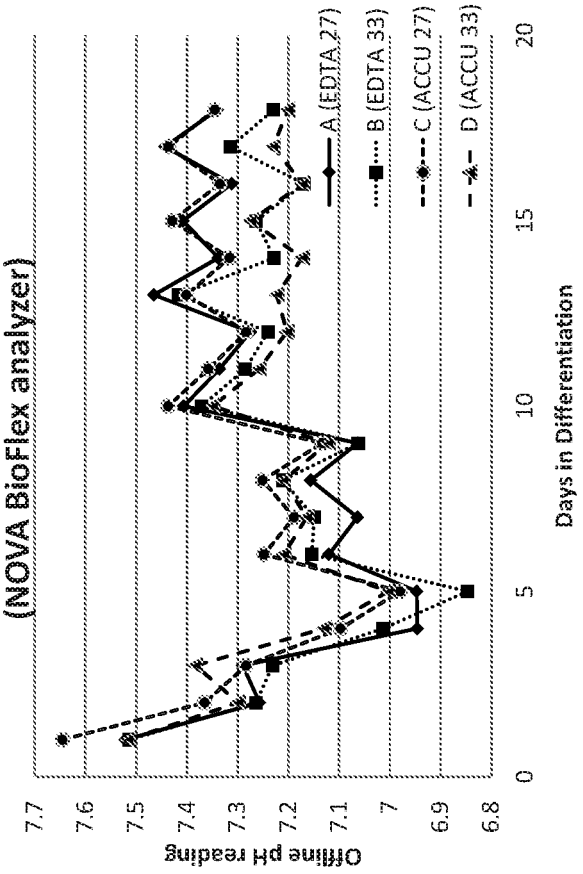


Figure 37B

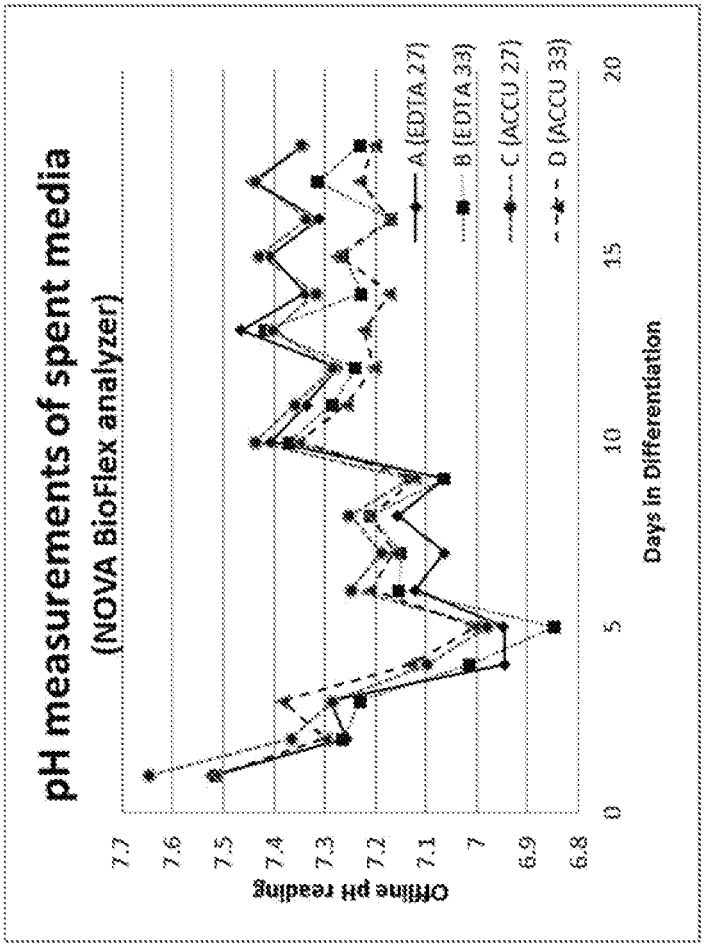

pH measurements of spent media
(NOVA BioFlex analyzer)
Offline pH reading
7.7
7.6
7.5
7.4
7.3
7.2
7.1
7
6.9
6.8
0
5
10
15
20
Days In Differentiation
A (EDTA 27)
B (EDTA 33)
C (ACCU 27)
D (ACCU 33)

Figure 38

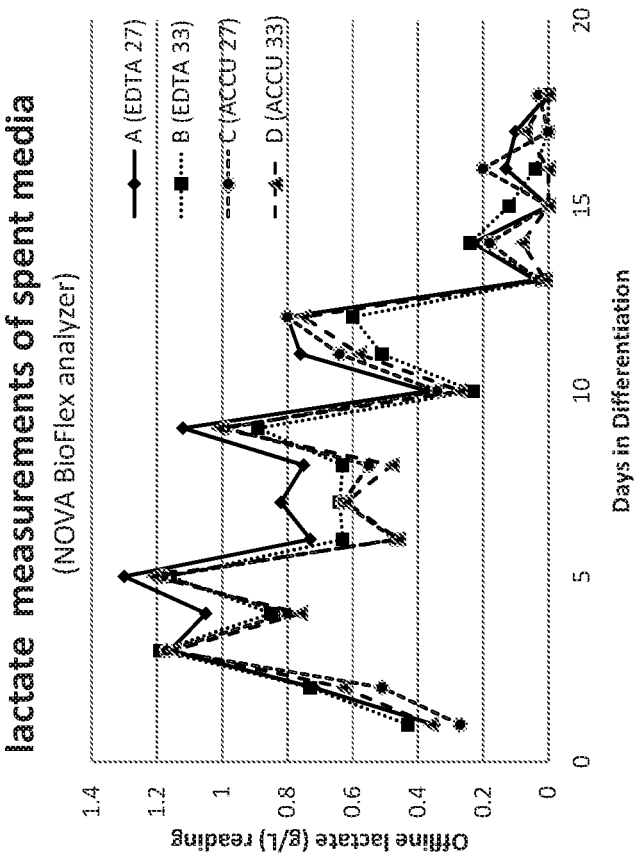
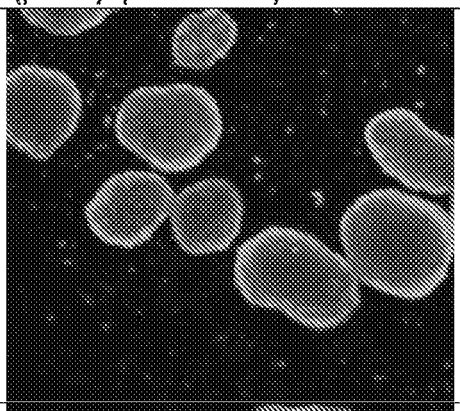
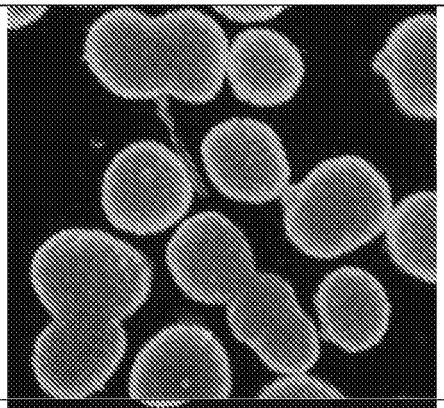
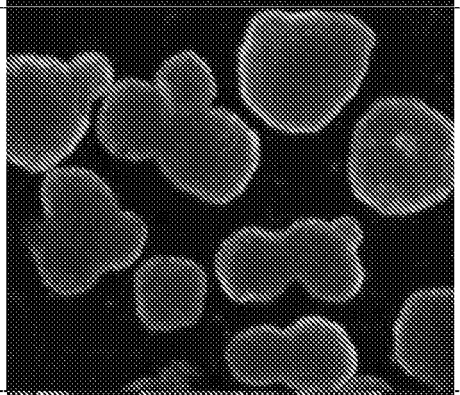
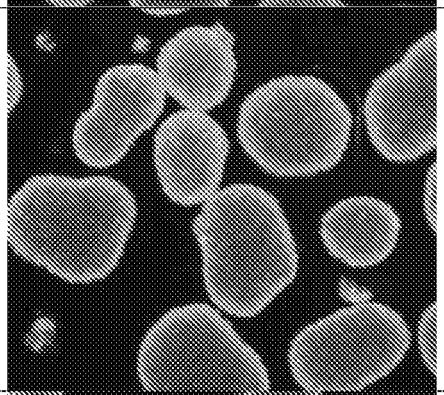
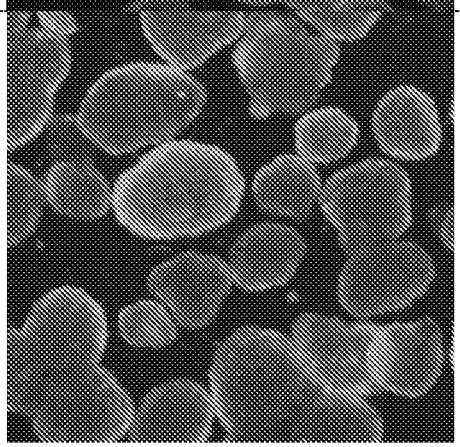
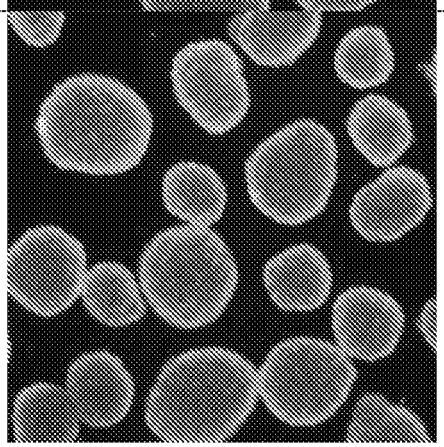

lactate measurements of spent media
(NOVA BioFlex analyzer)
A (EDTA 27)
B (EDTA 33)
C (ACCU 27)
D (ACCU 33)
Offline lactate (g/L) reading
1.4
1.2
1
0.8
0.6
0.4
0.2
0
0
5
10
15
20
Days in Differentiation

Figure 39 : LIVE/DEAD imaging

	Fresh Cells, completion of S5D6 (pre-cryopreservation)	Thawed and Cultured Cryopreserved S5D6 cells - 24HAT
Condition A *(EDTA, 27RPM)*		
Condition B *(EDTA, 33RPM)*		
Condition C *(Accutase, 27RPM)*		

Condition D *(Accutase, 33RPM)*	