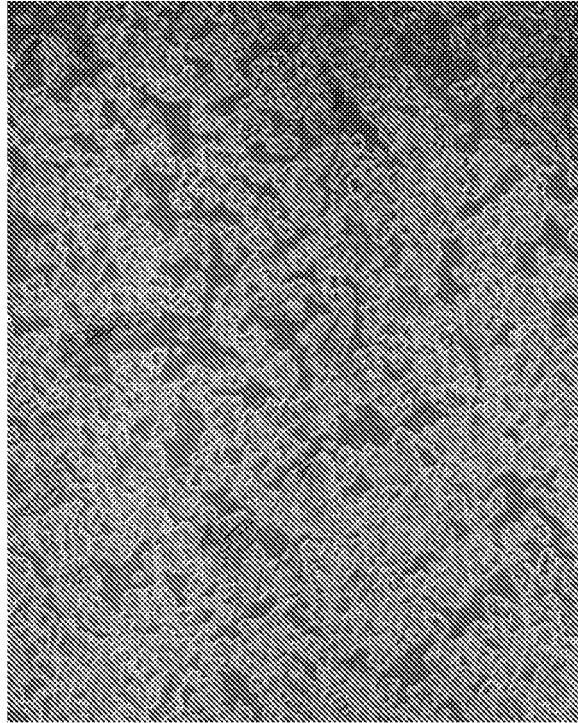
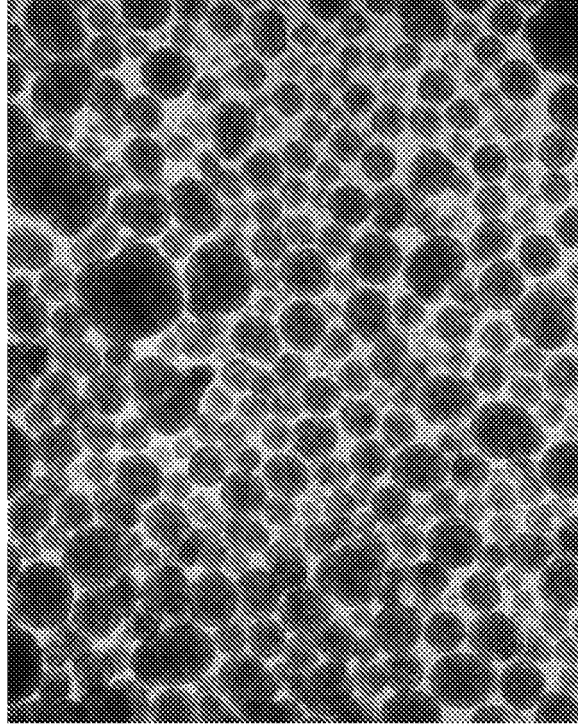


Figure 1a



Immediately after lifting



24 hours in
non-adherent static culture

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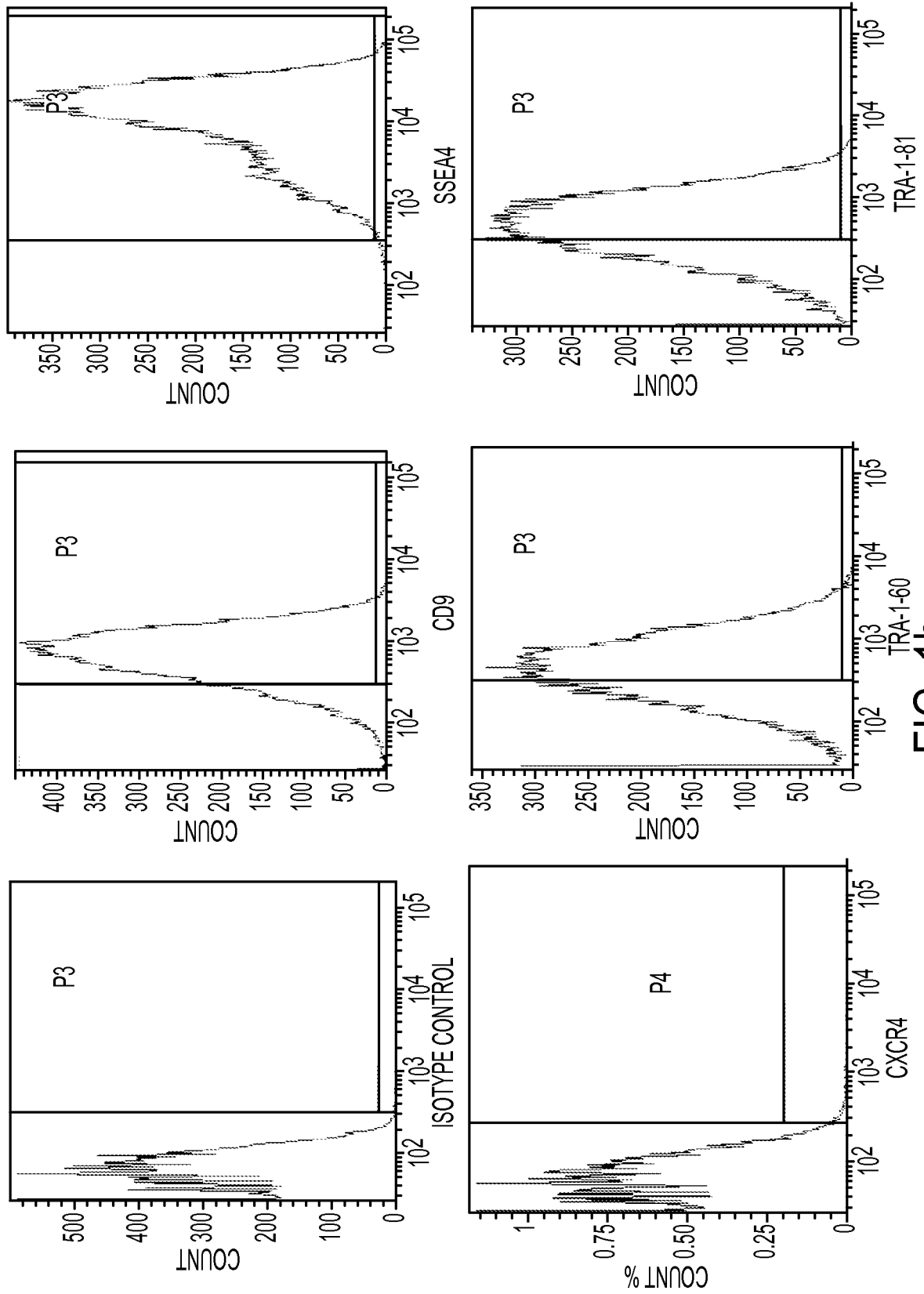
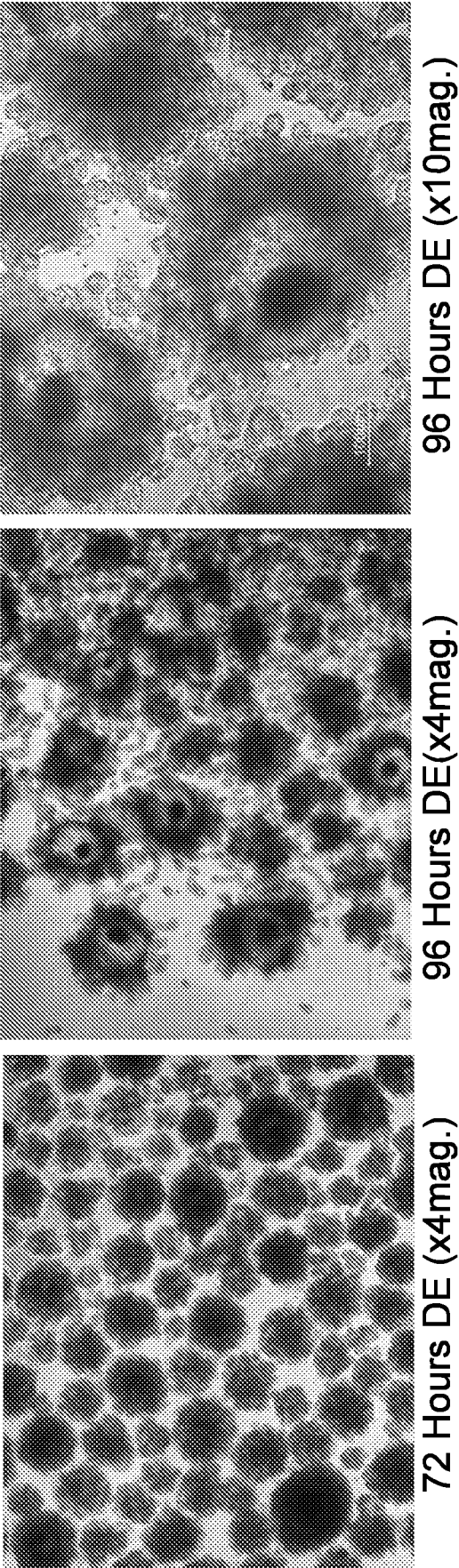
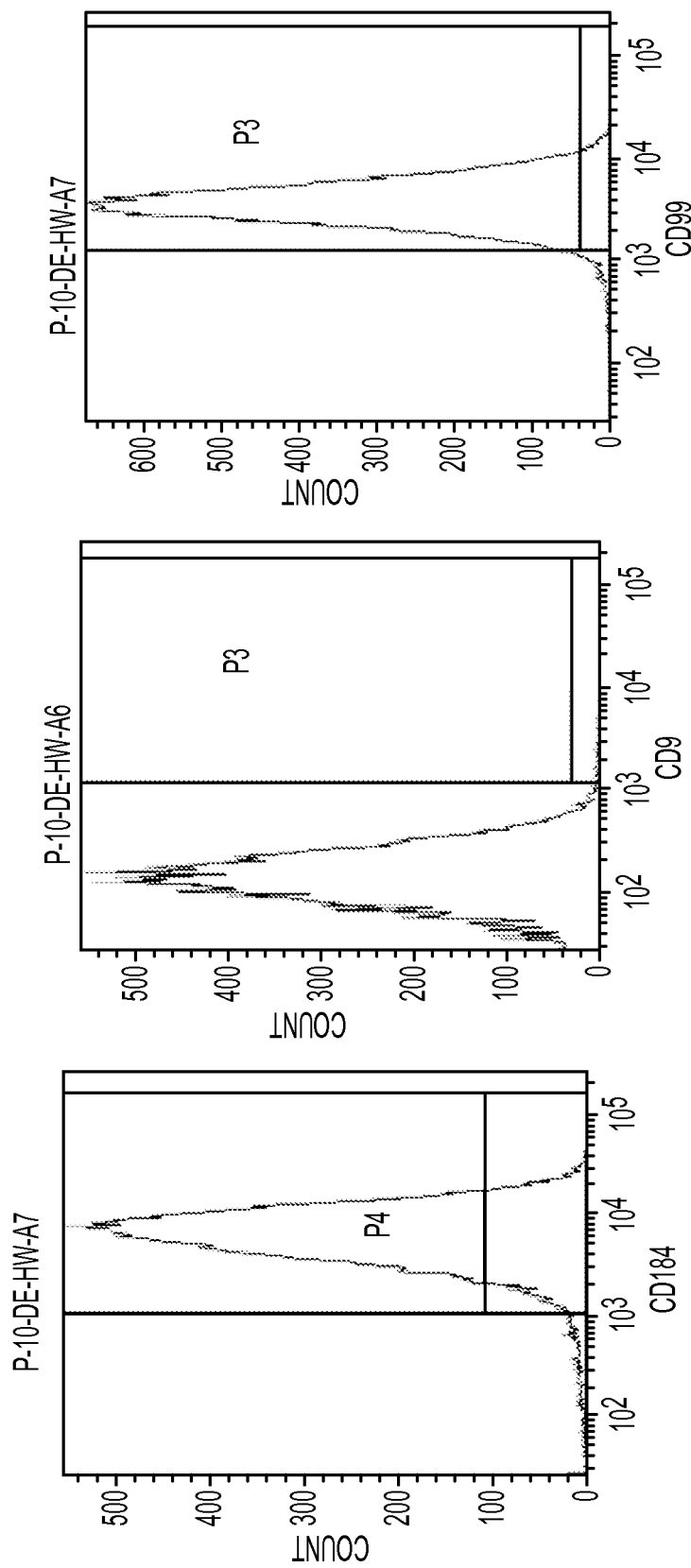


FIG. 1b

Figure 1c





MARKER	CD184	CD9	CD99
% CELLS POSITIVE	97.20%	0.50%	97.30%

FIG. 1d

Figure 1e

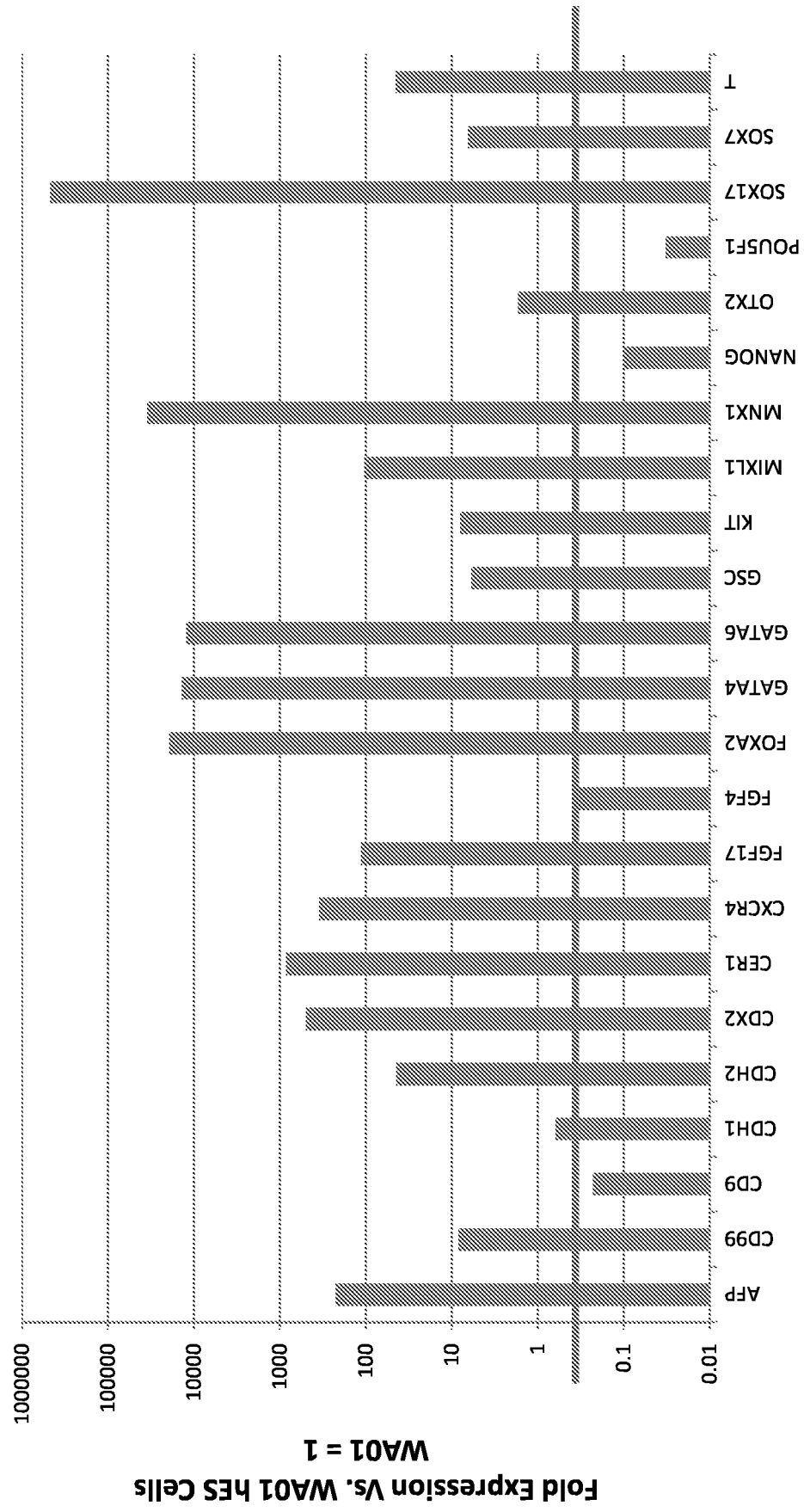
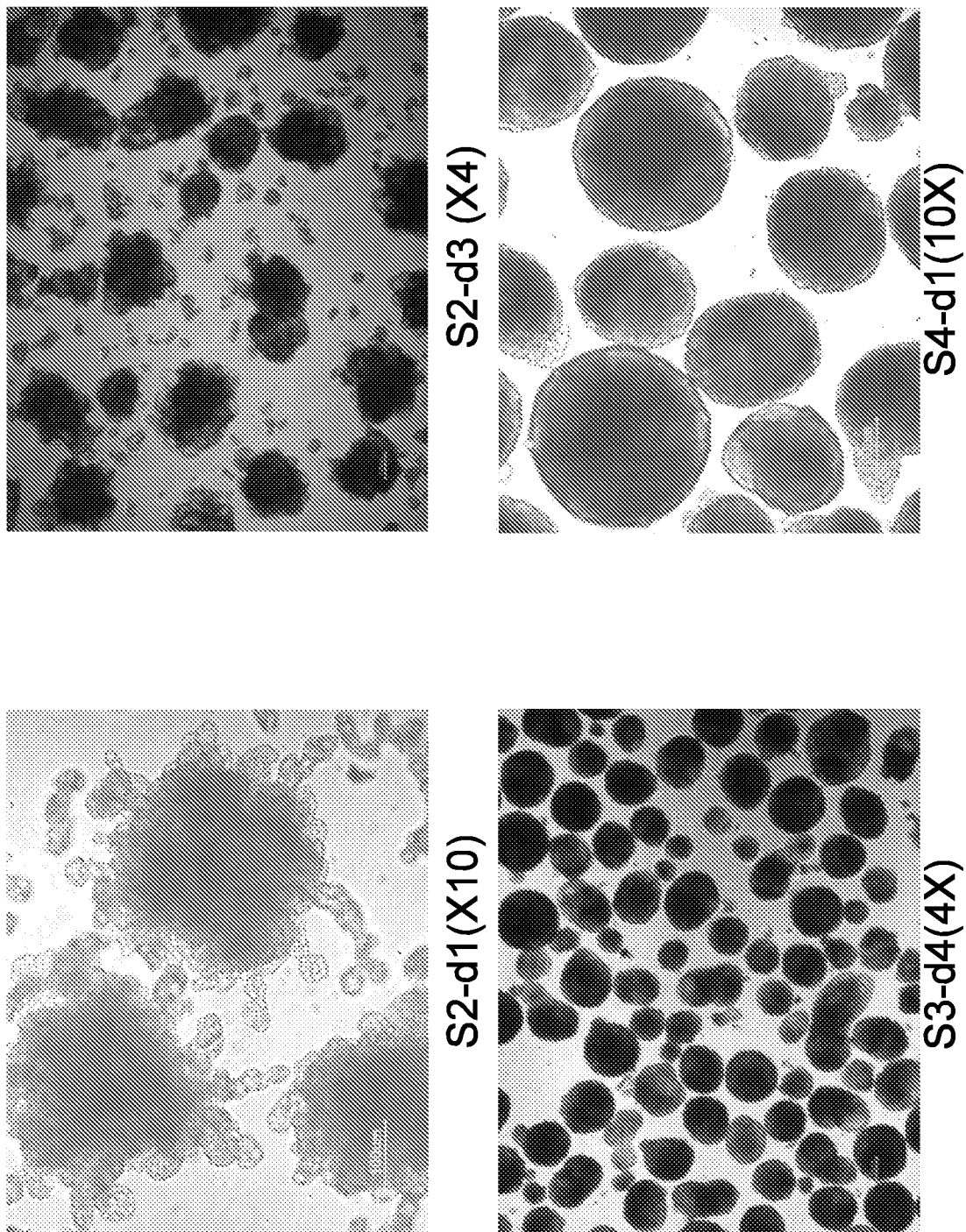


Figure 1f



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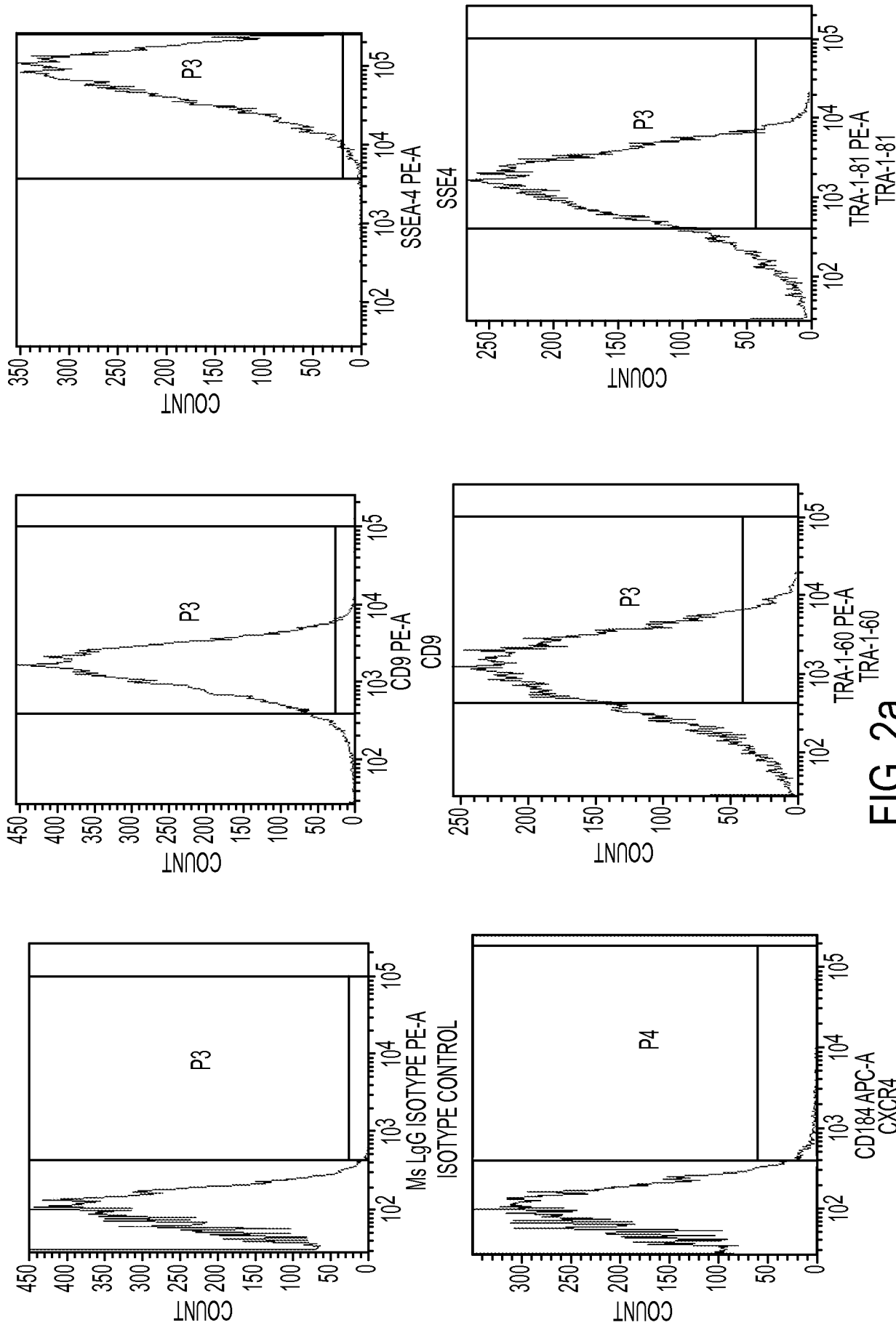


FIG. 2a

Figure 2b

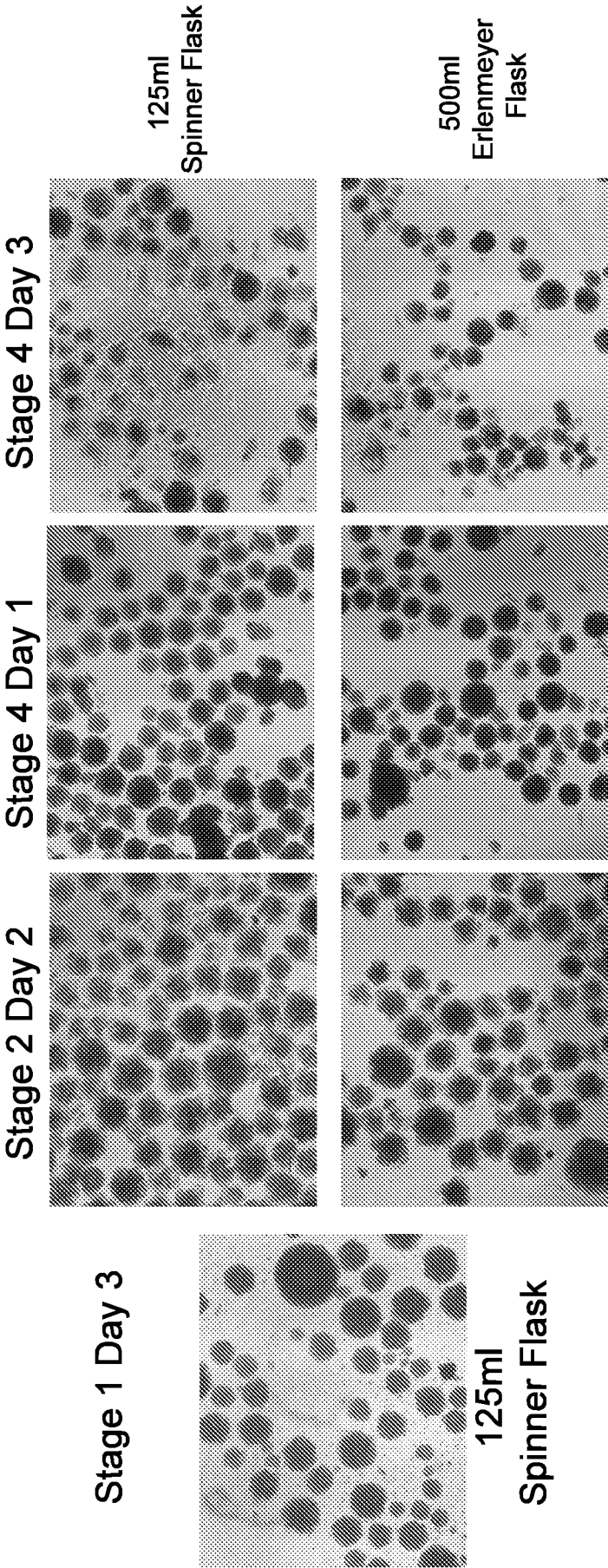


Figure 2c

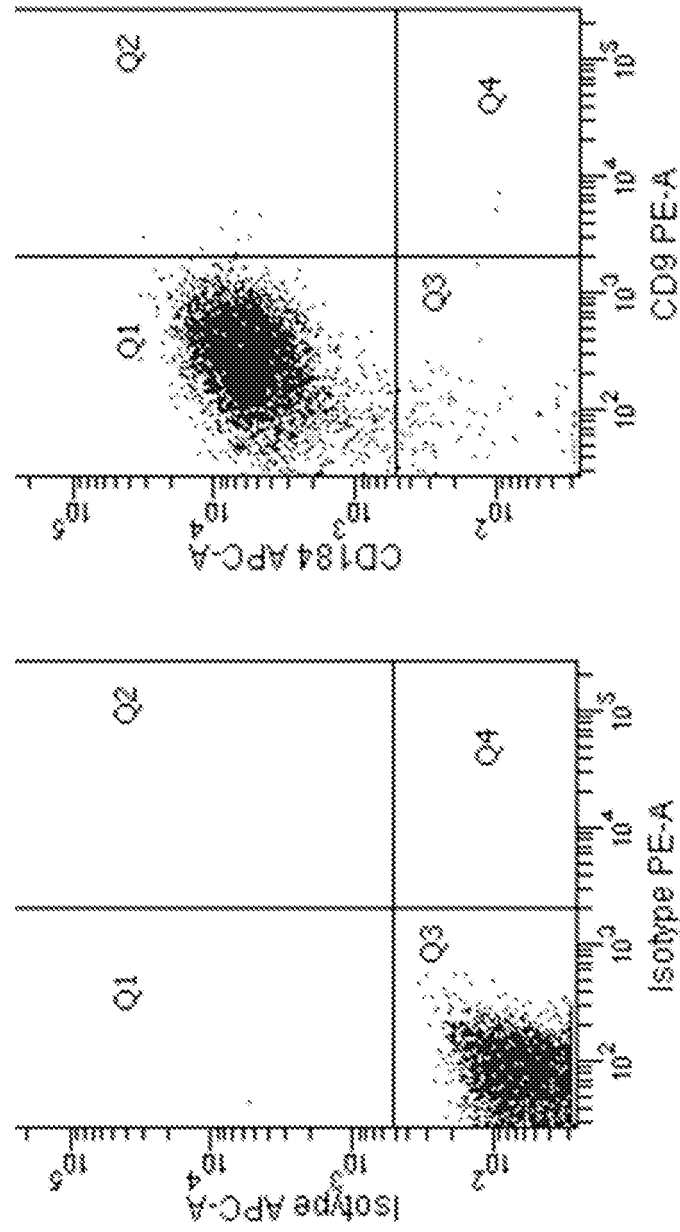
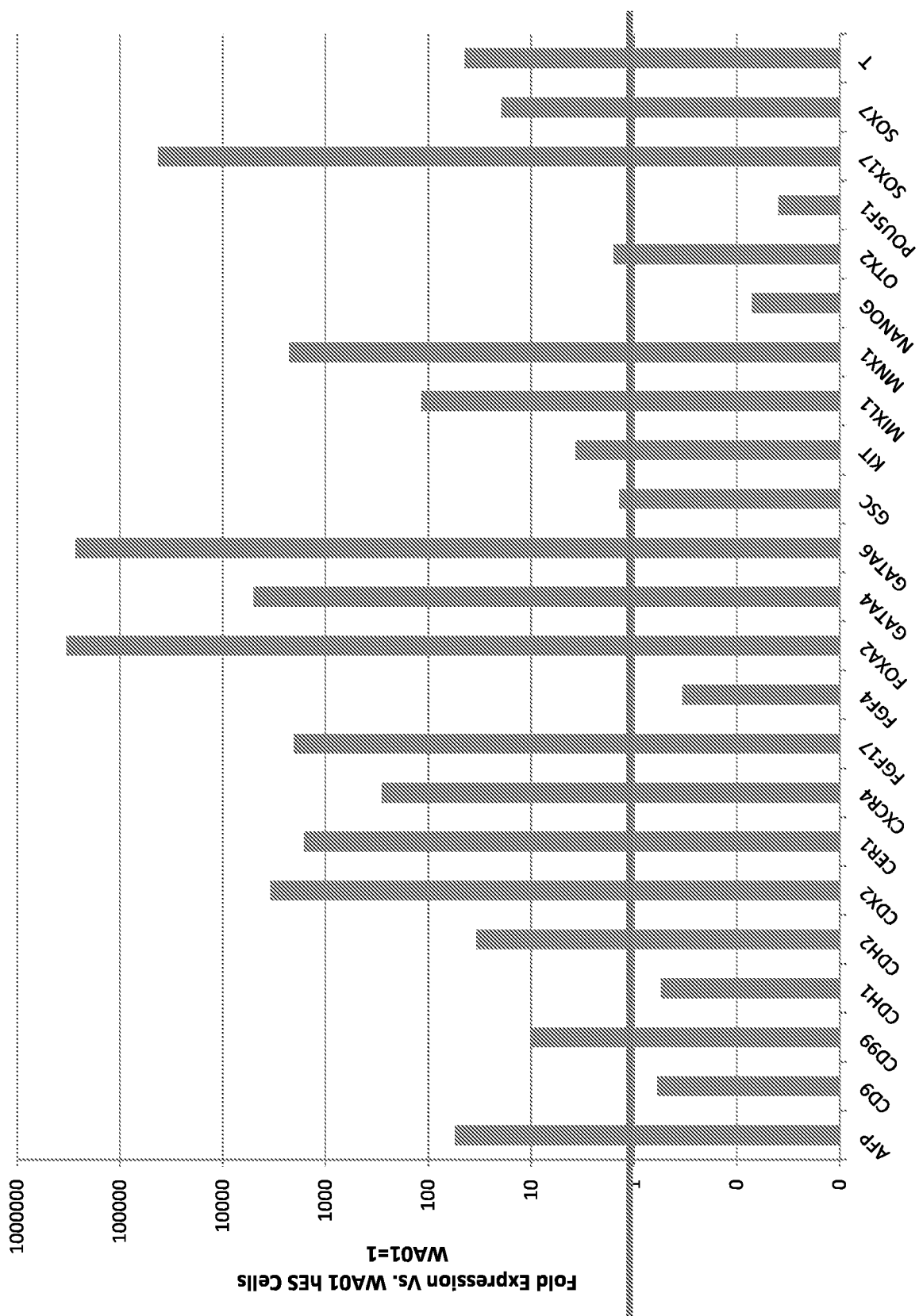


Figure 2d



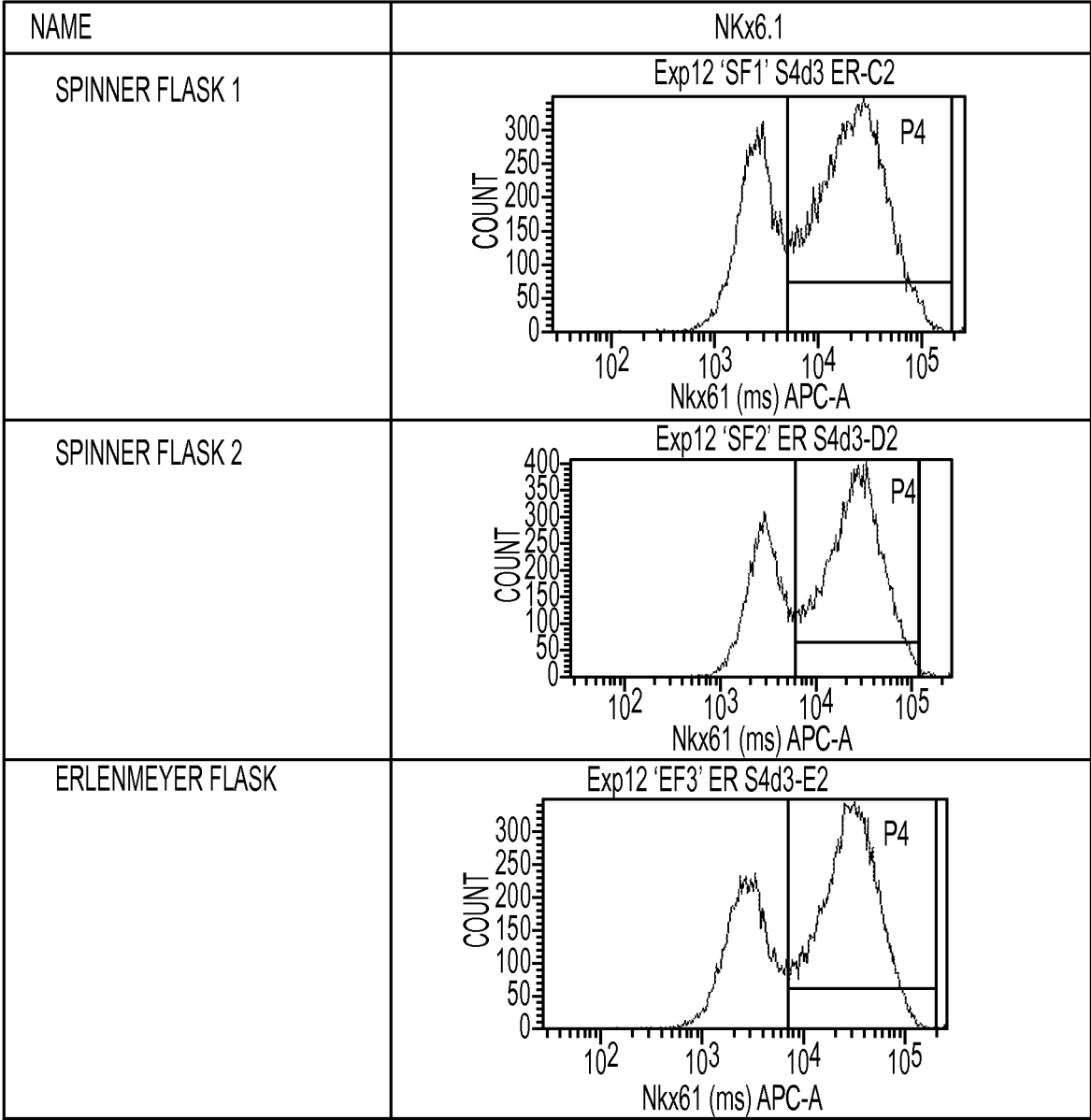


FIG. 2e

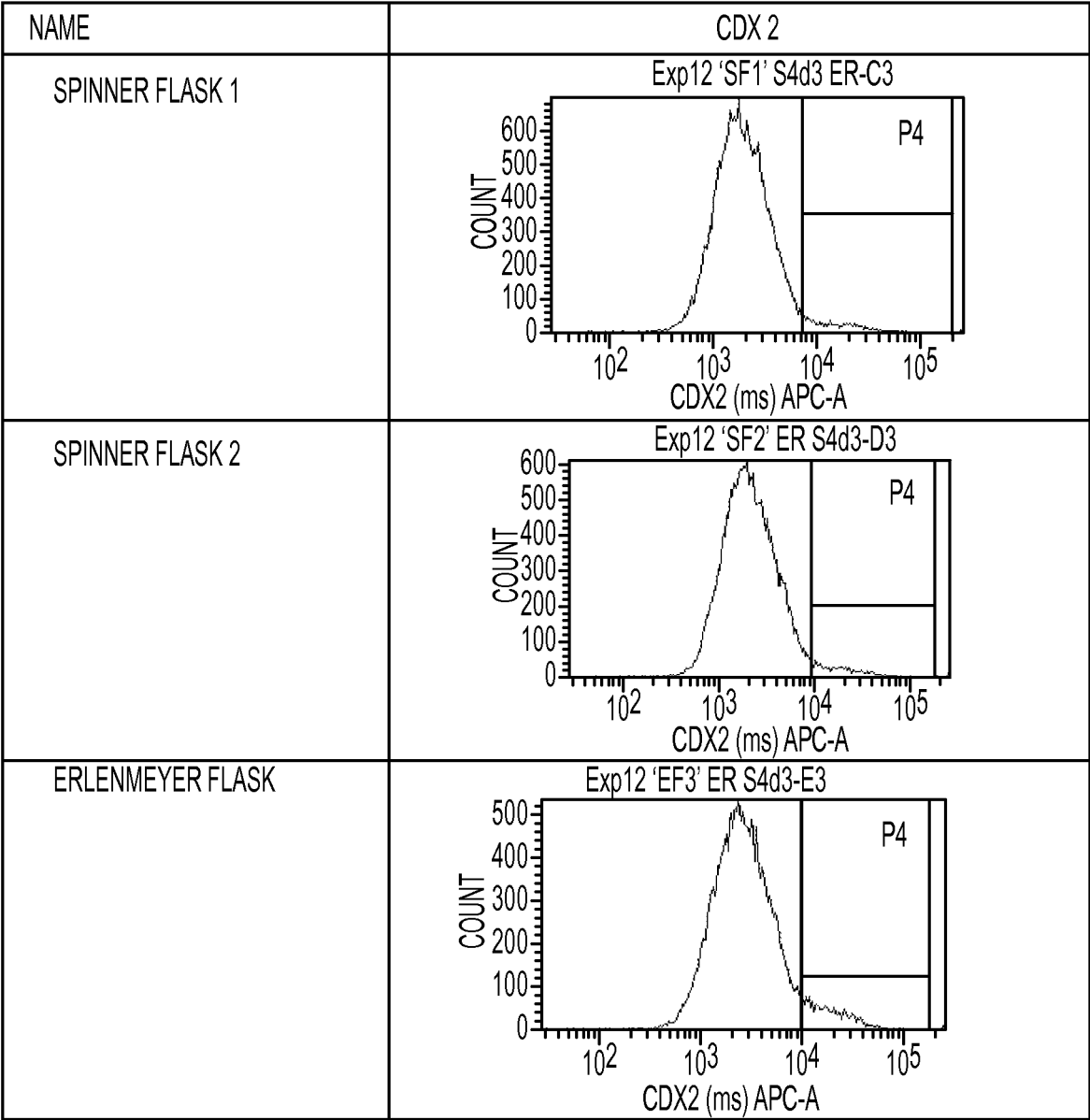


FIG. 2e
CONTINUED

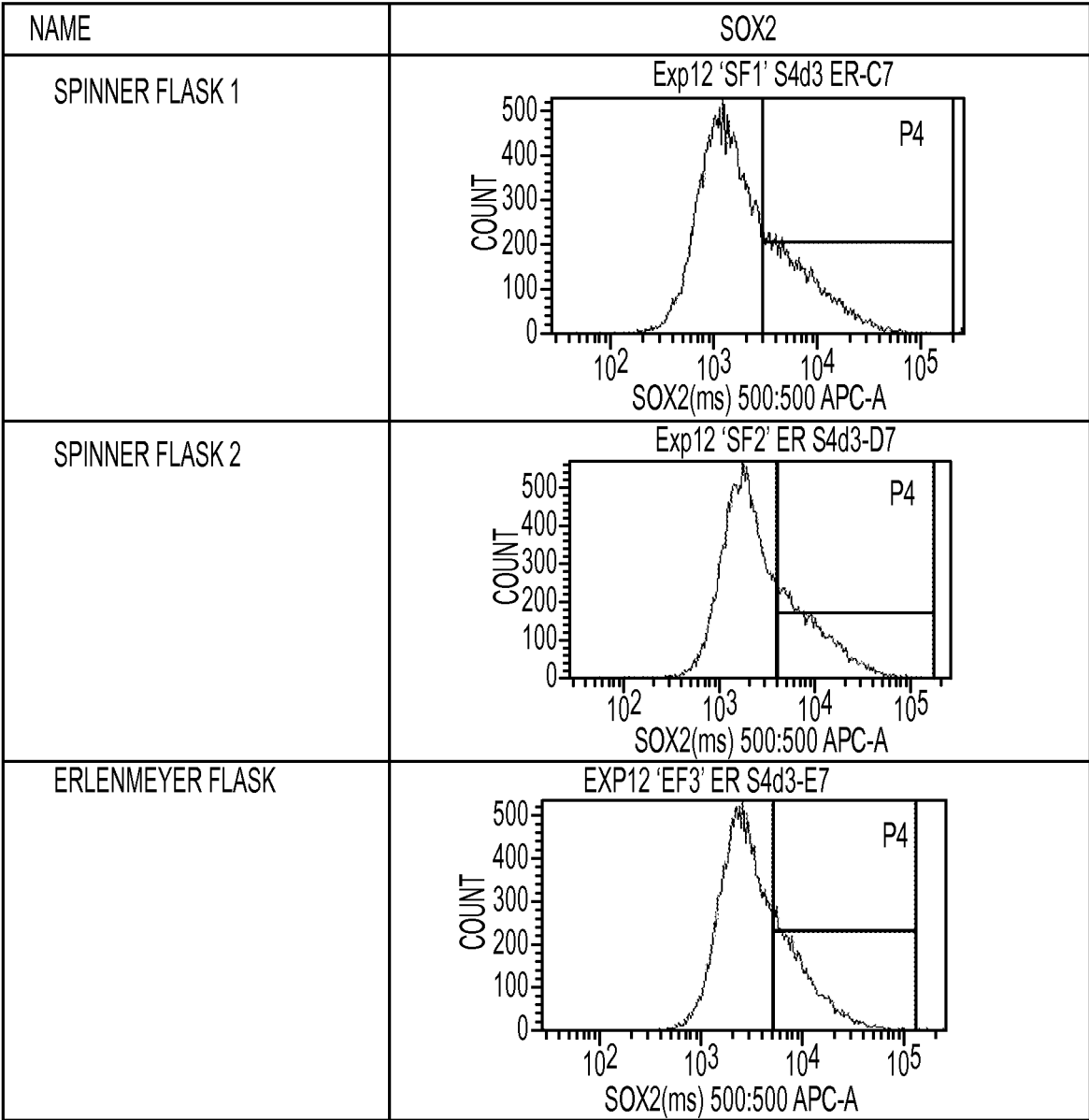


FIG. 2e
CONTINUED

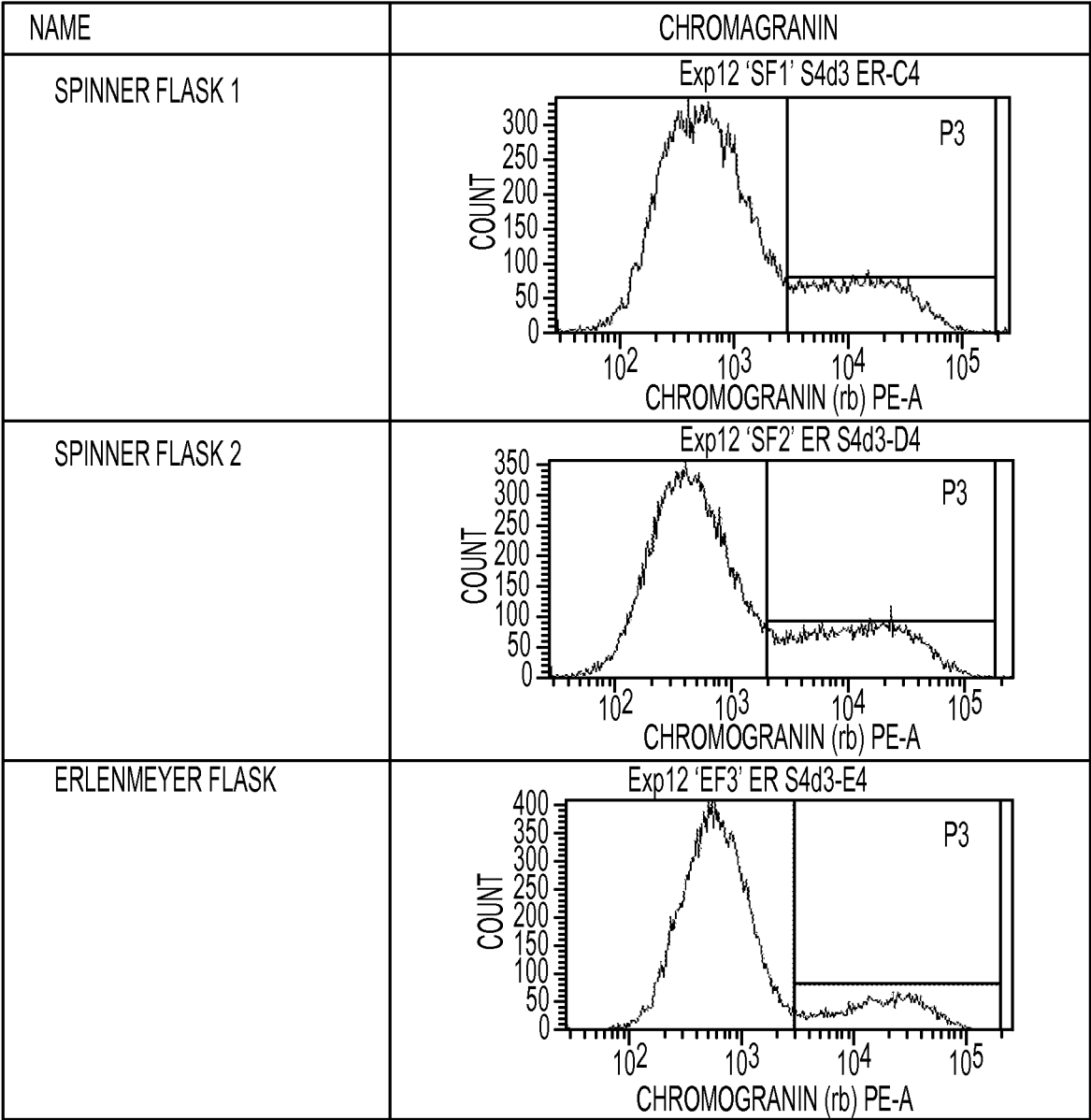


FIG. 2e
CONTINUED

Figure 2f

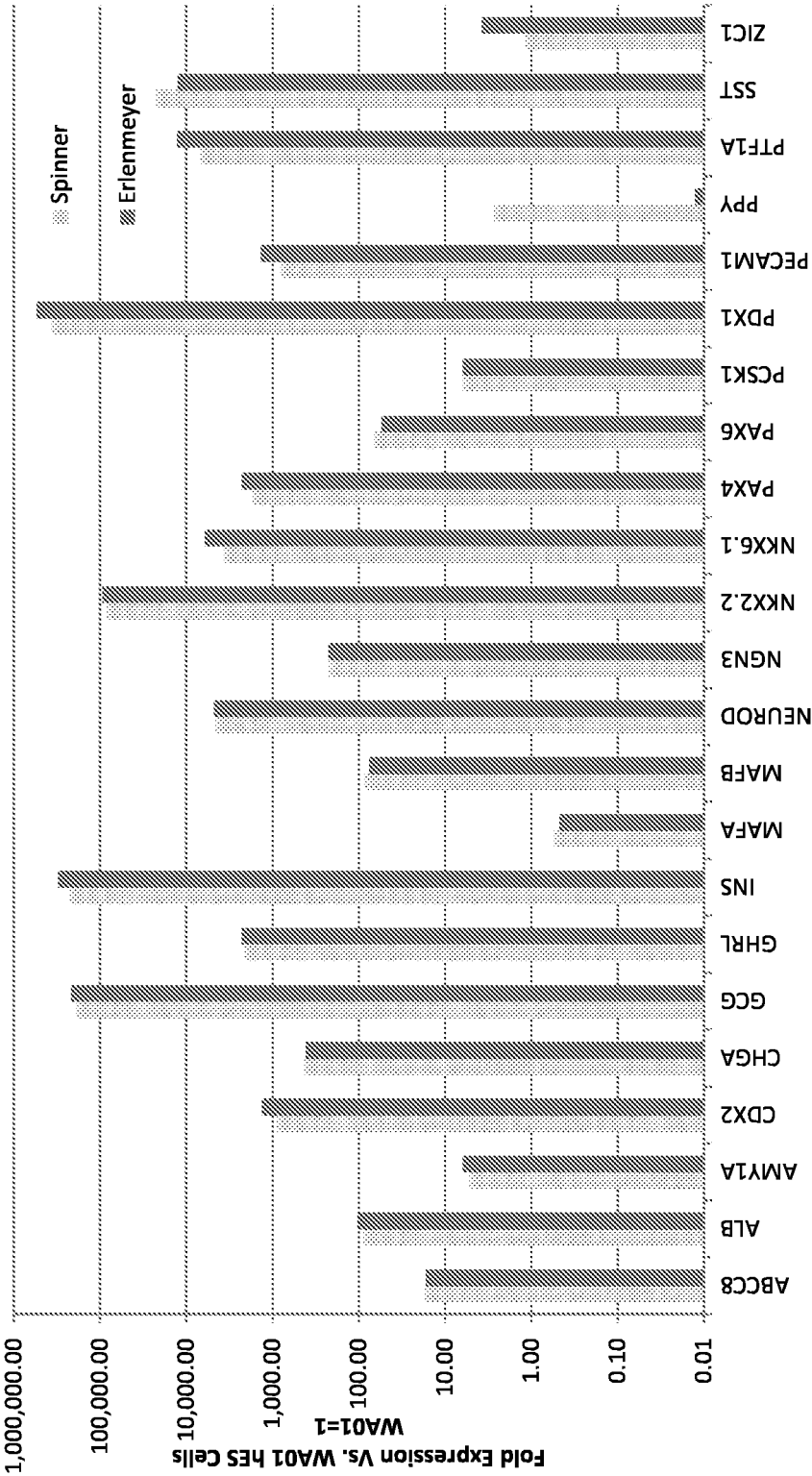


Figure 3a

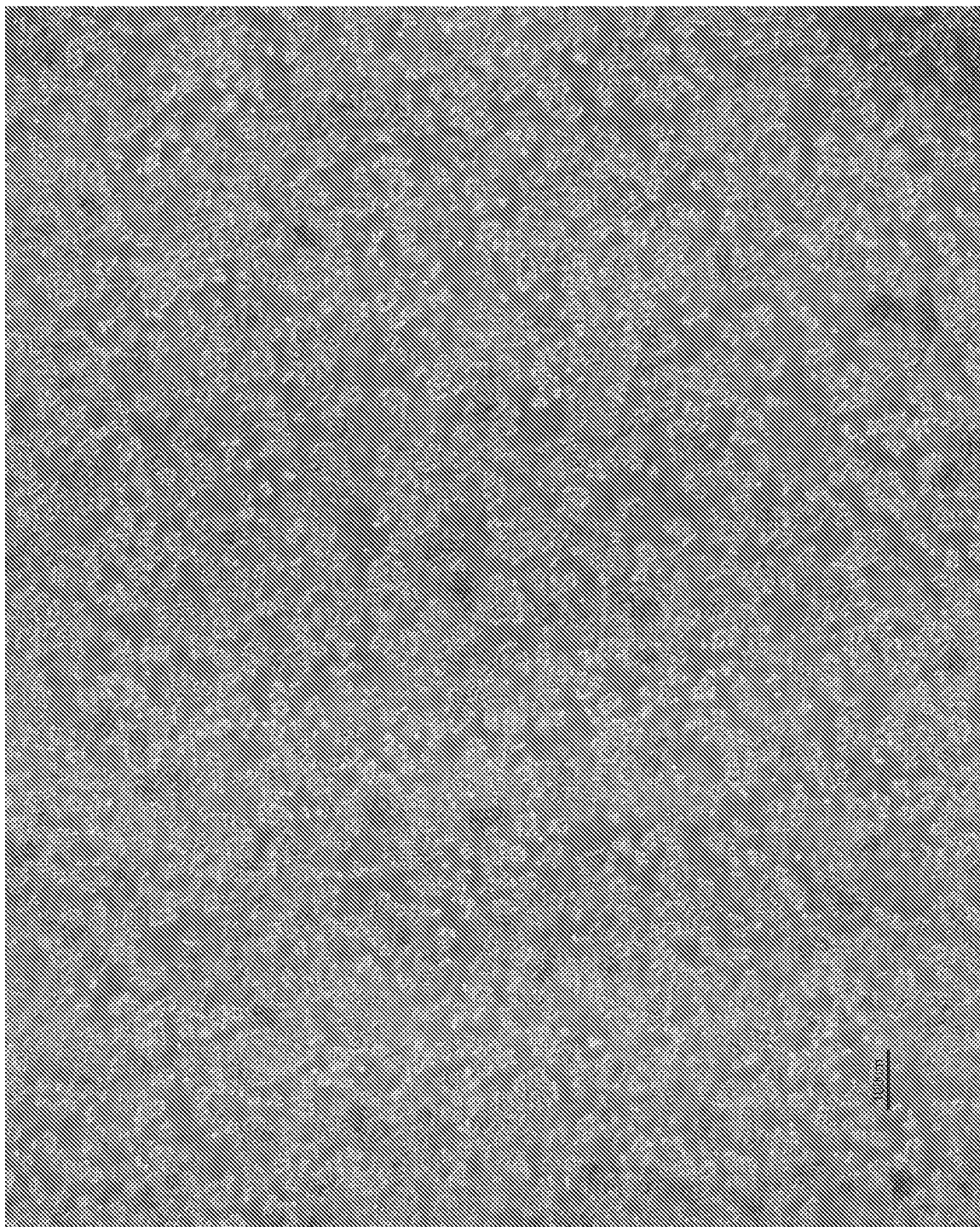
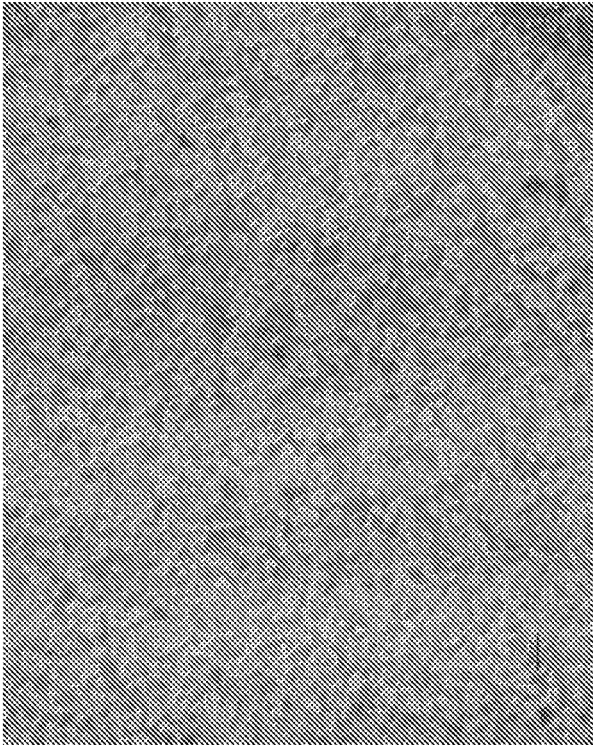
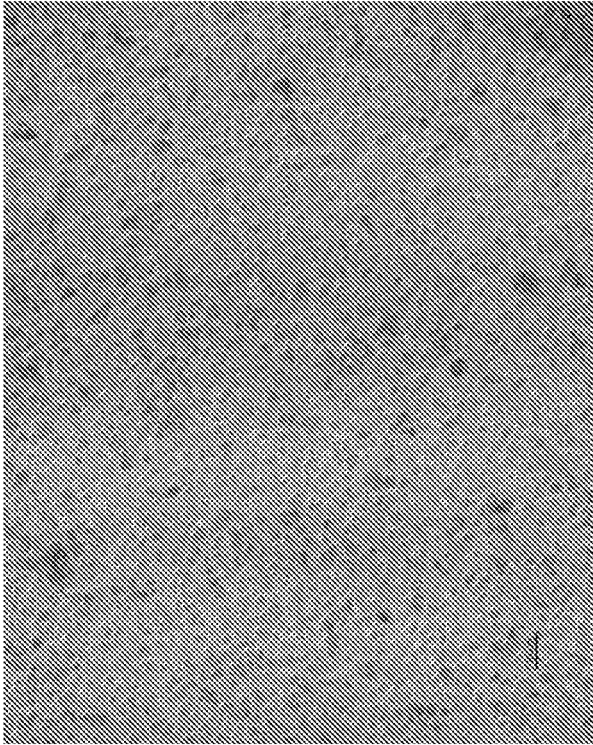


Figure 3b

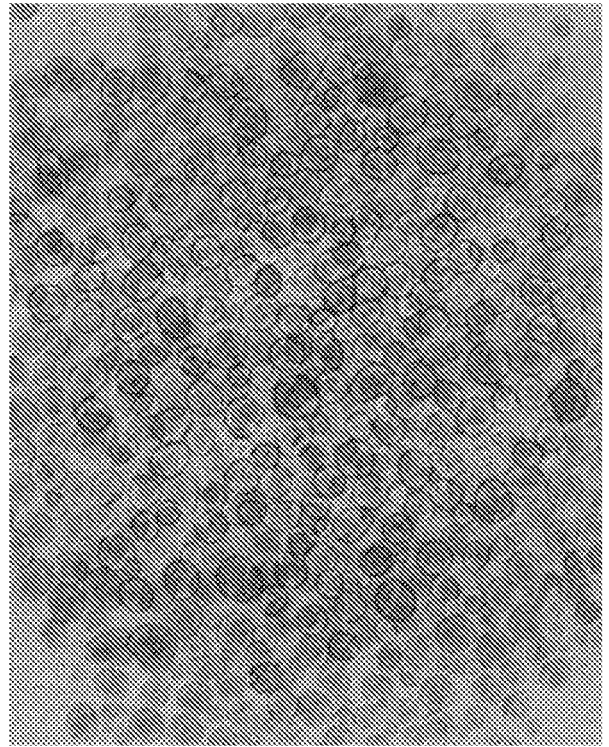
0hour



1.5 hour



24 hour



72 hour

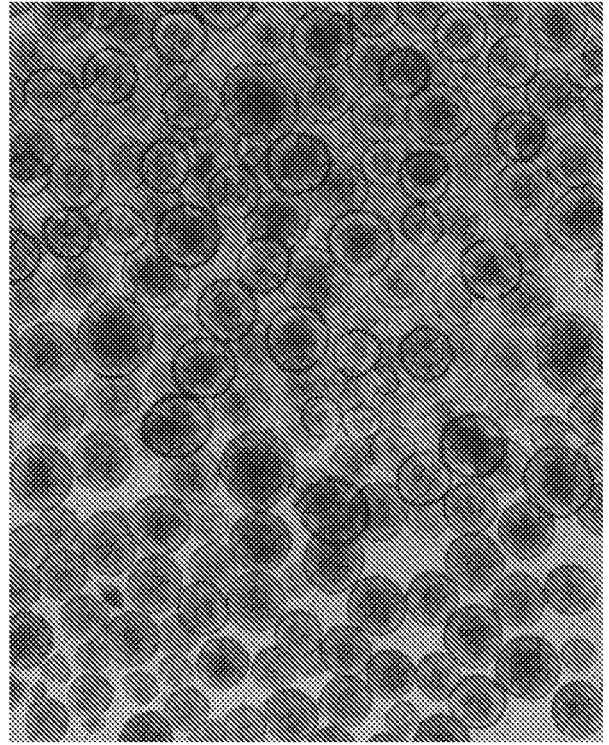


Figure 3c

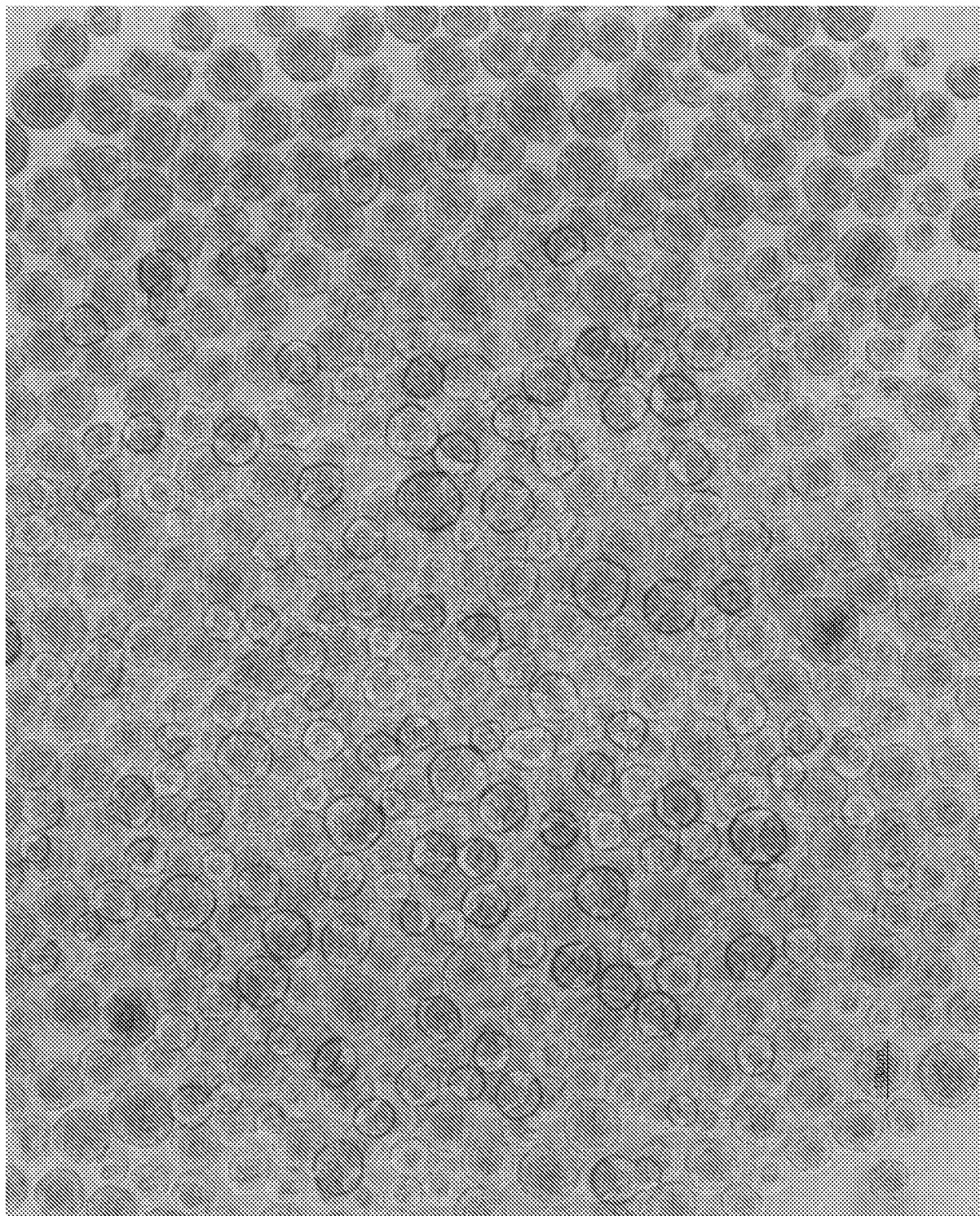
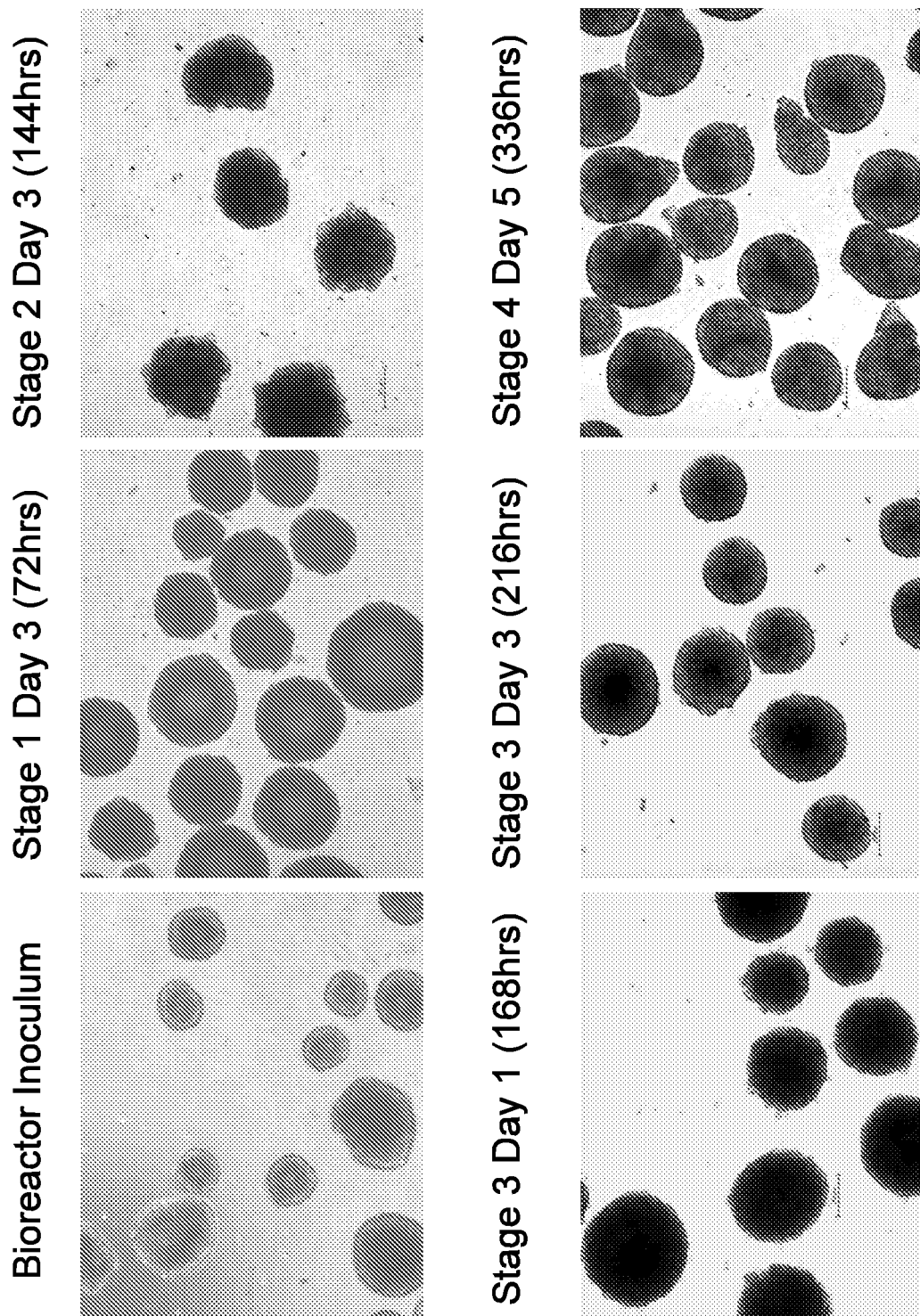


Figure 4a

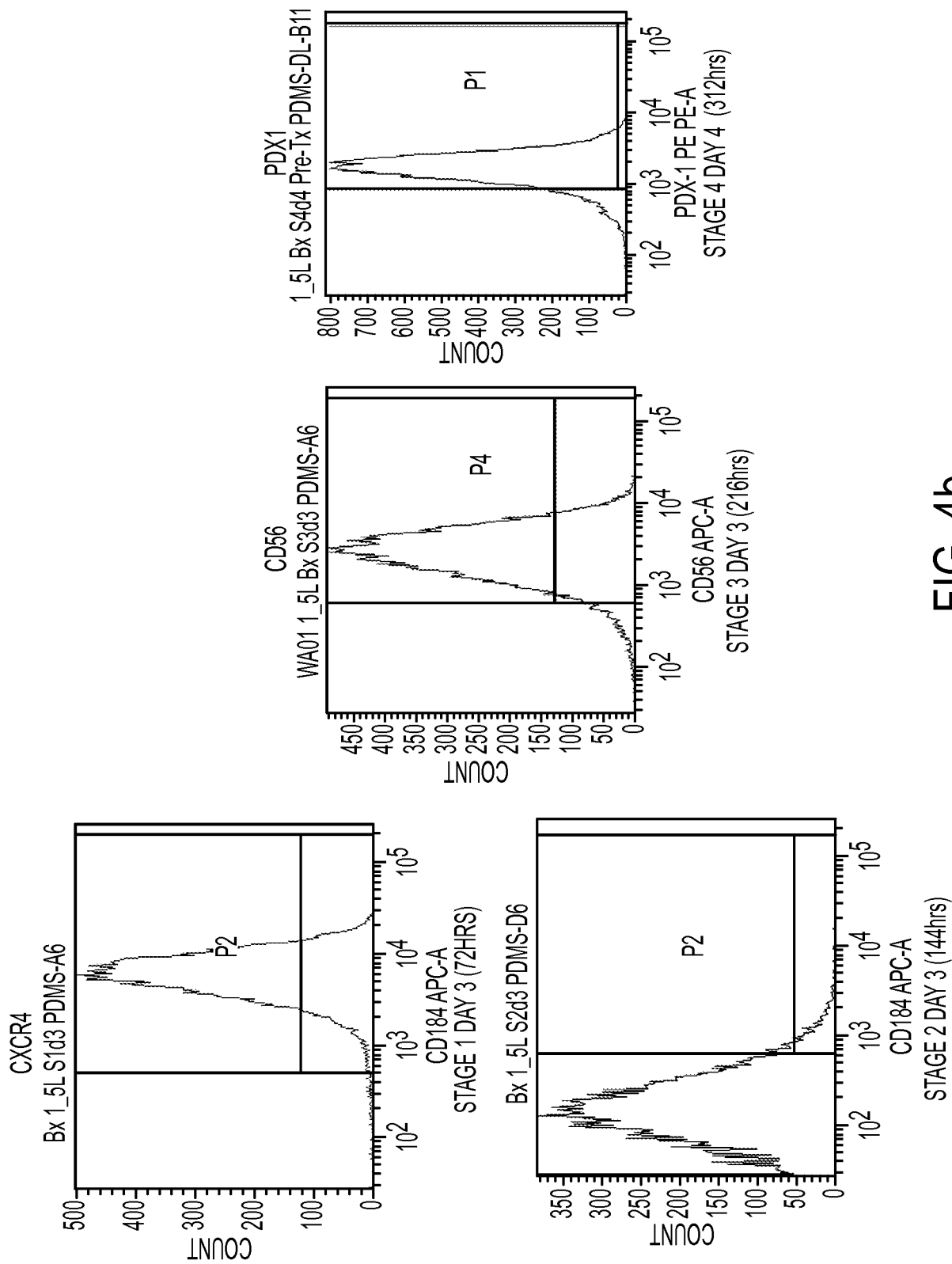


FIG. 4b

Figure 4C

PRD-1130A - Theracyte Device Transplant Recipients

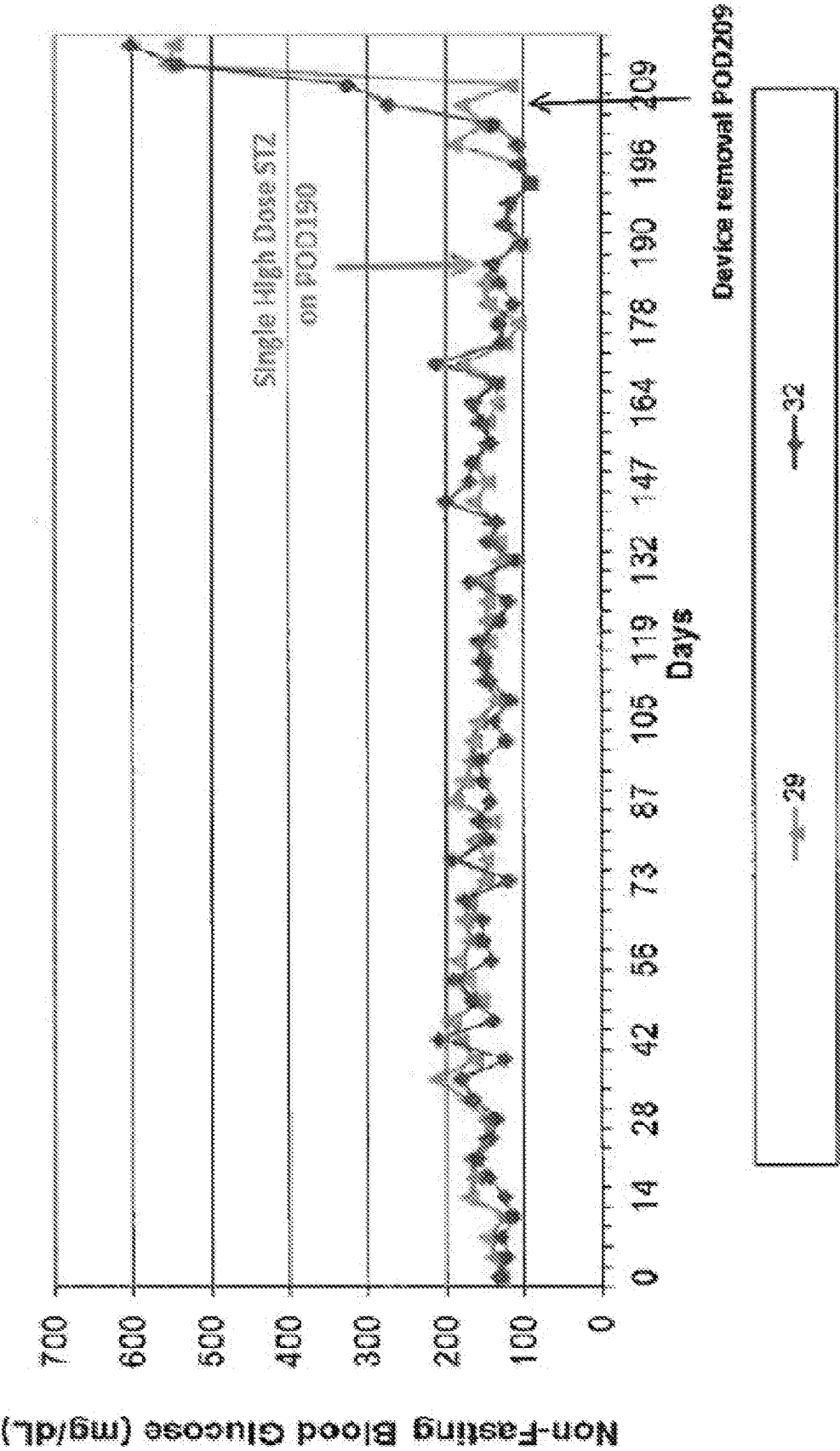


Figure 5a

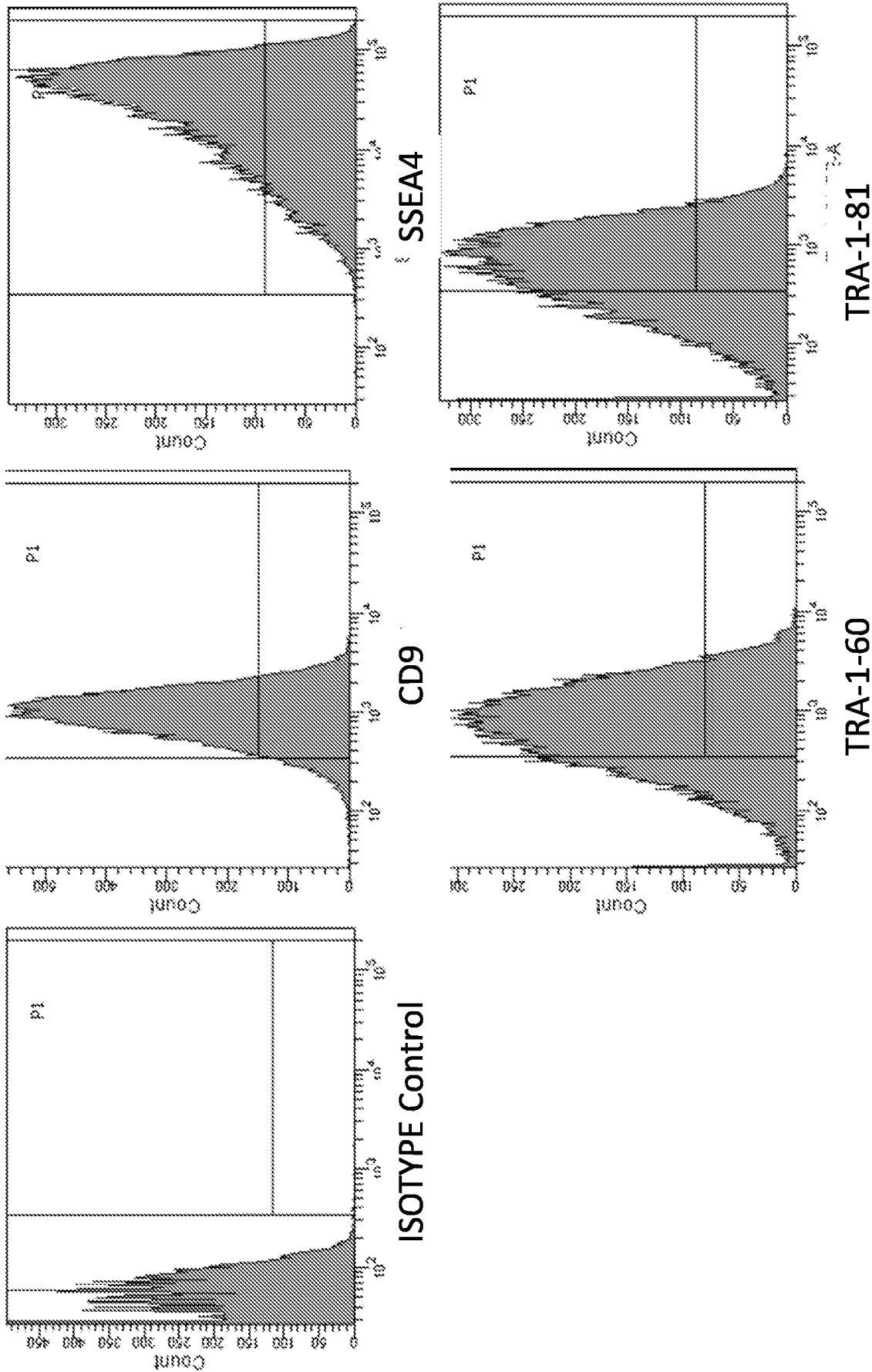
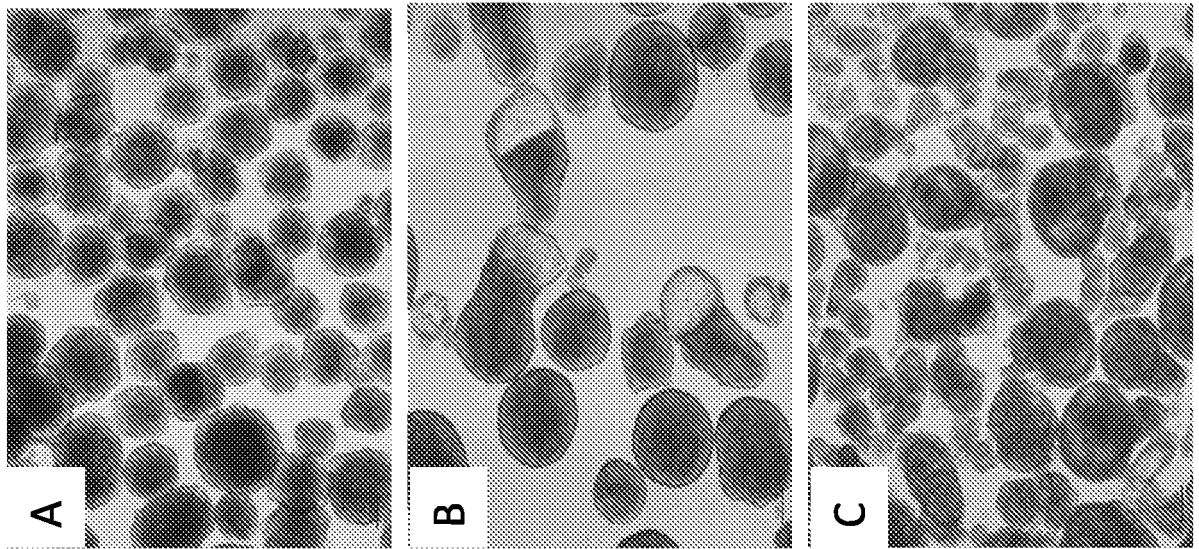


Figure 5c



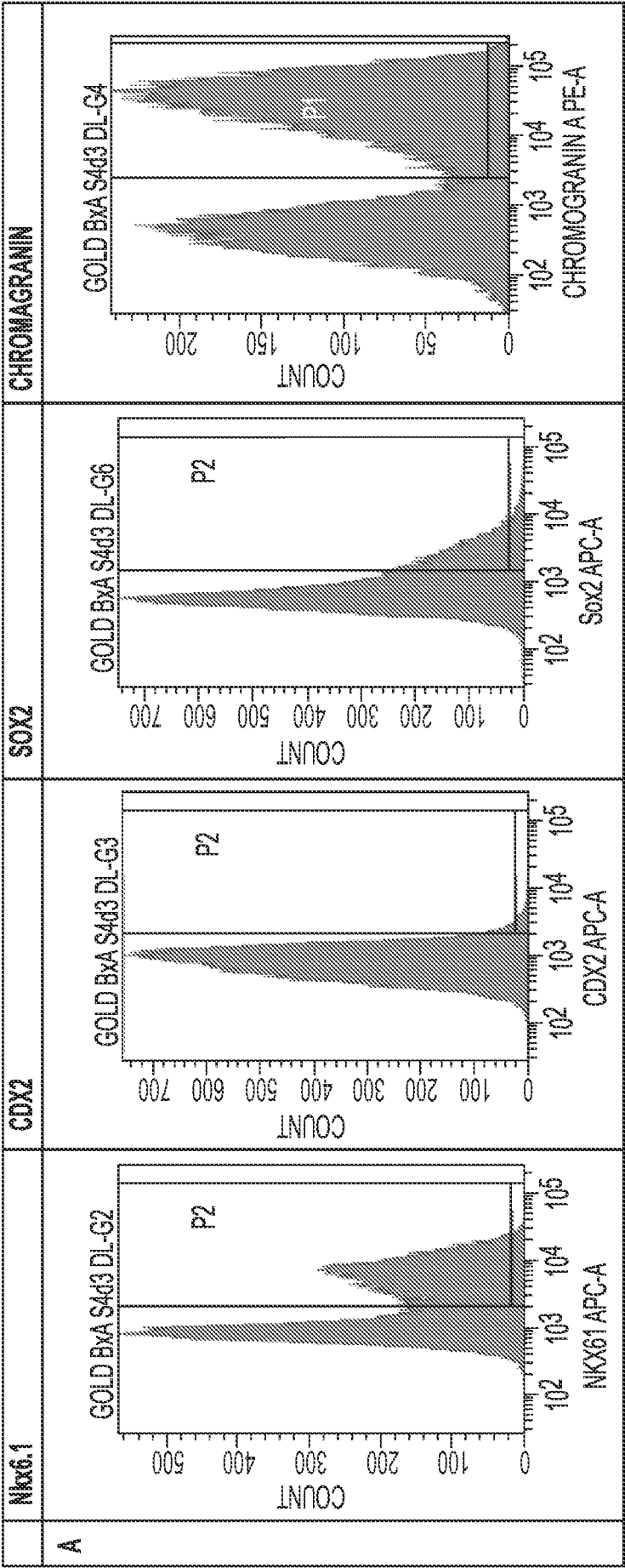


FIG. 5D

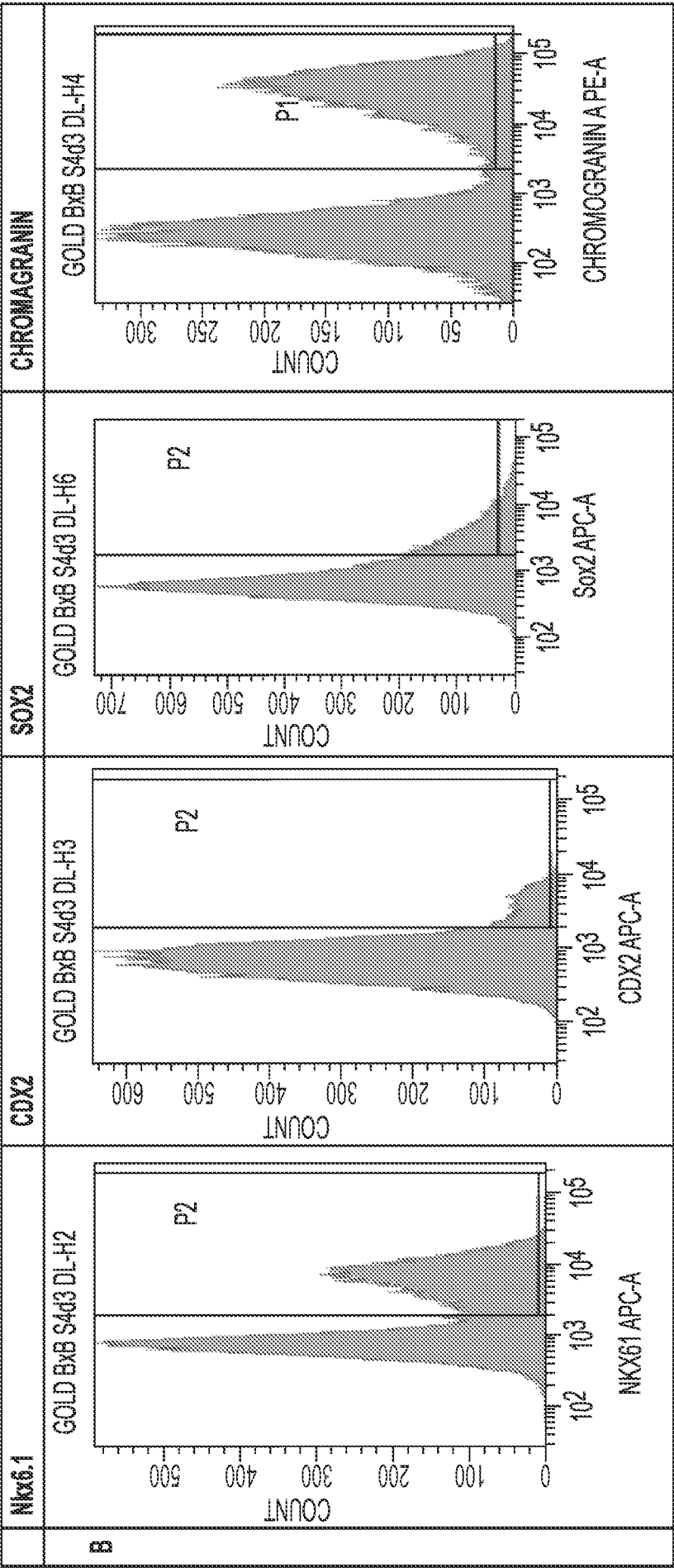


FIG. 5D (Continued)

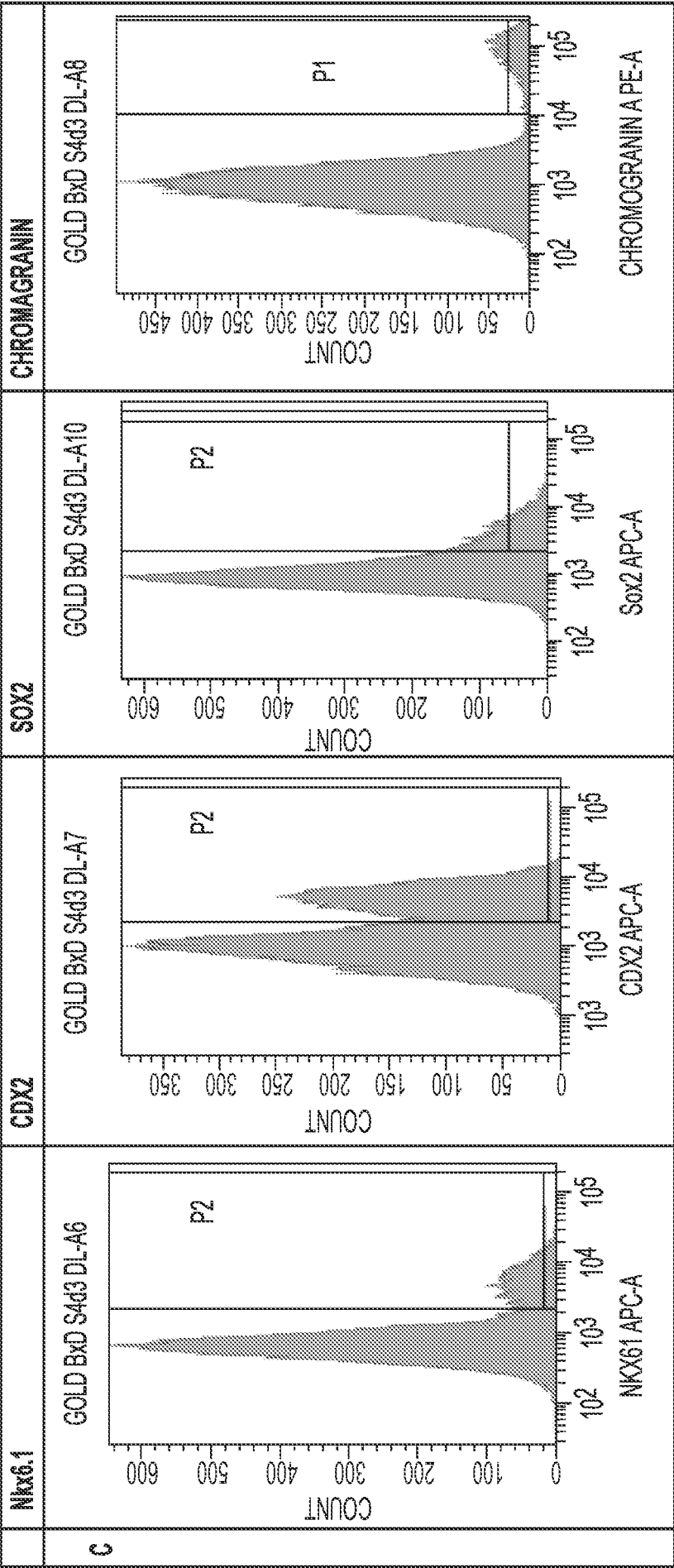


FIG. 5D (Continued)

Figure 5E

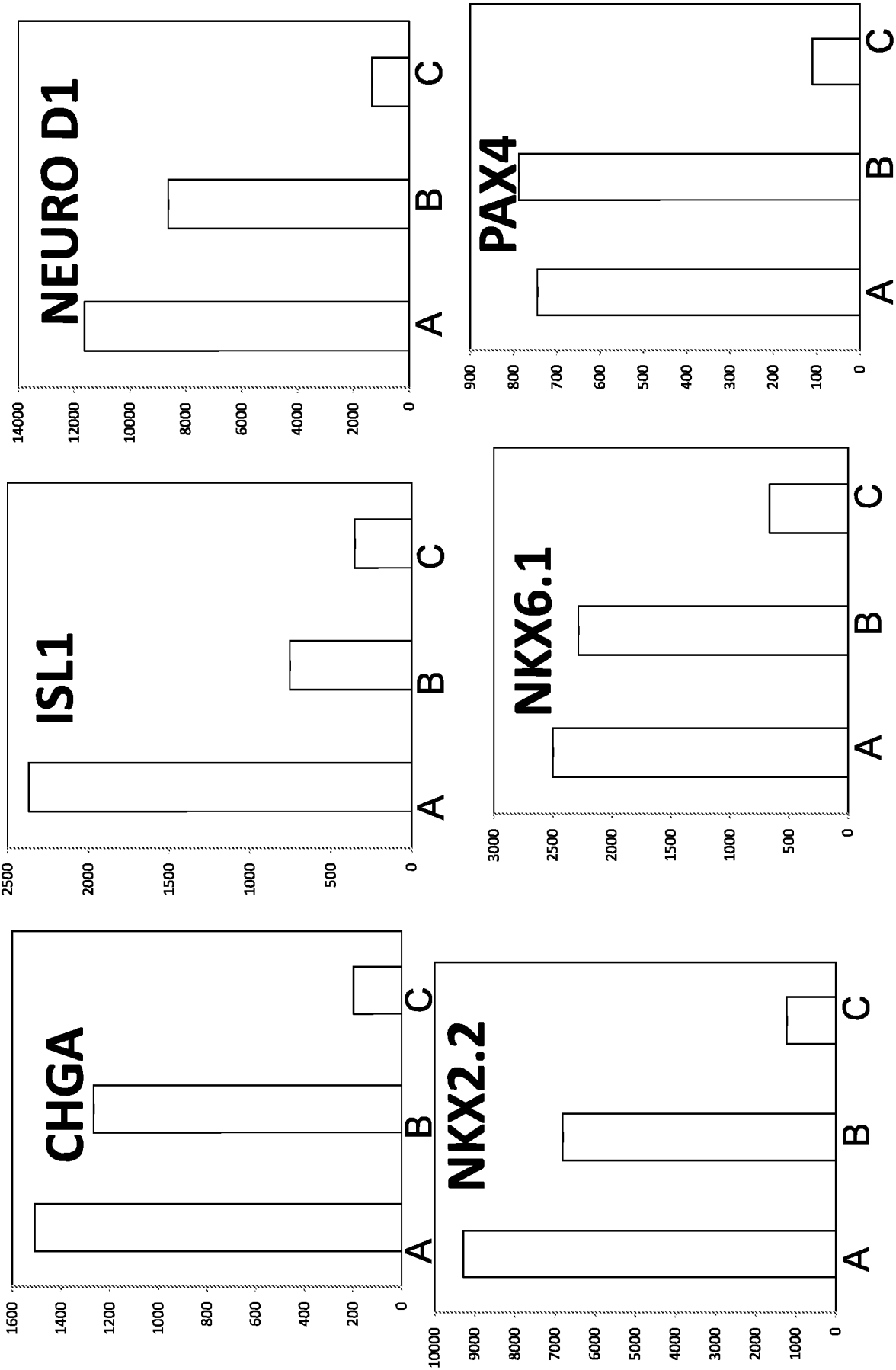


Figure 5E (continued)

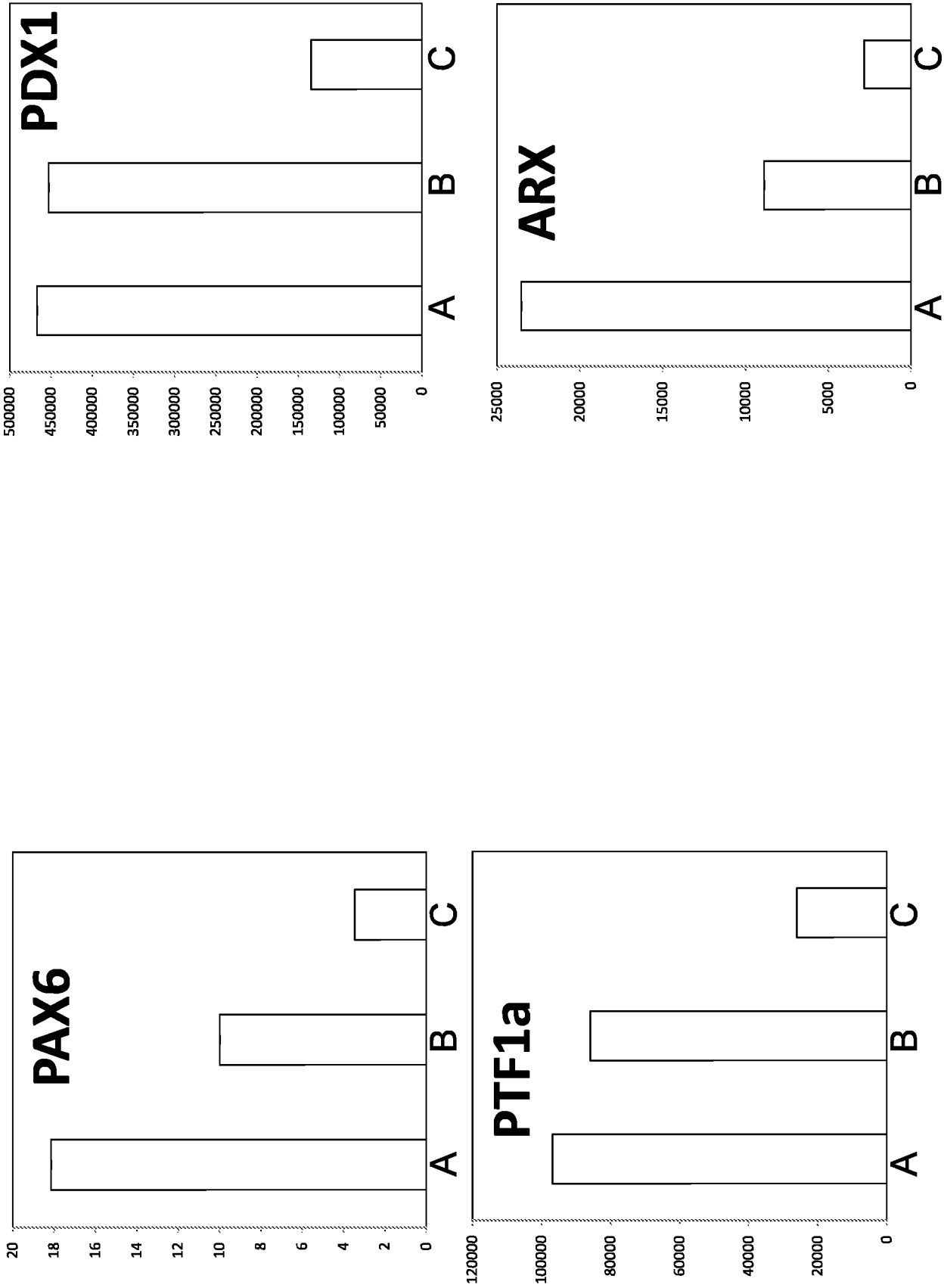


Figure 5E (continued)

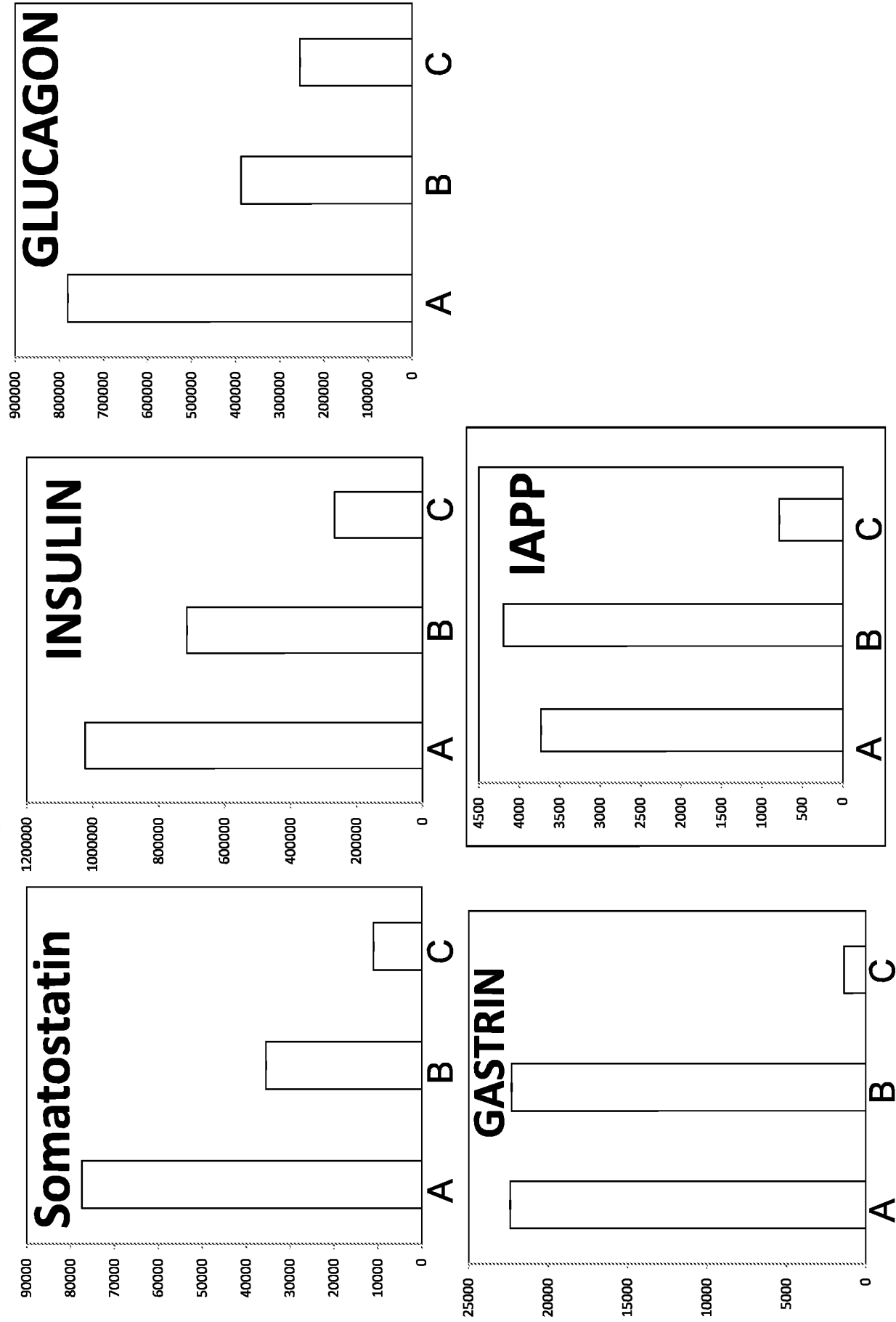


Figure 5E (continued)

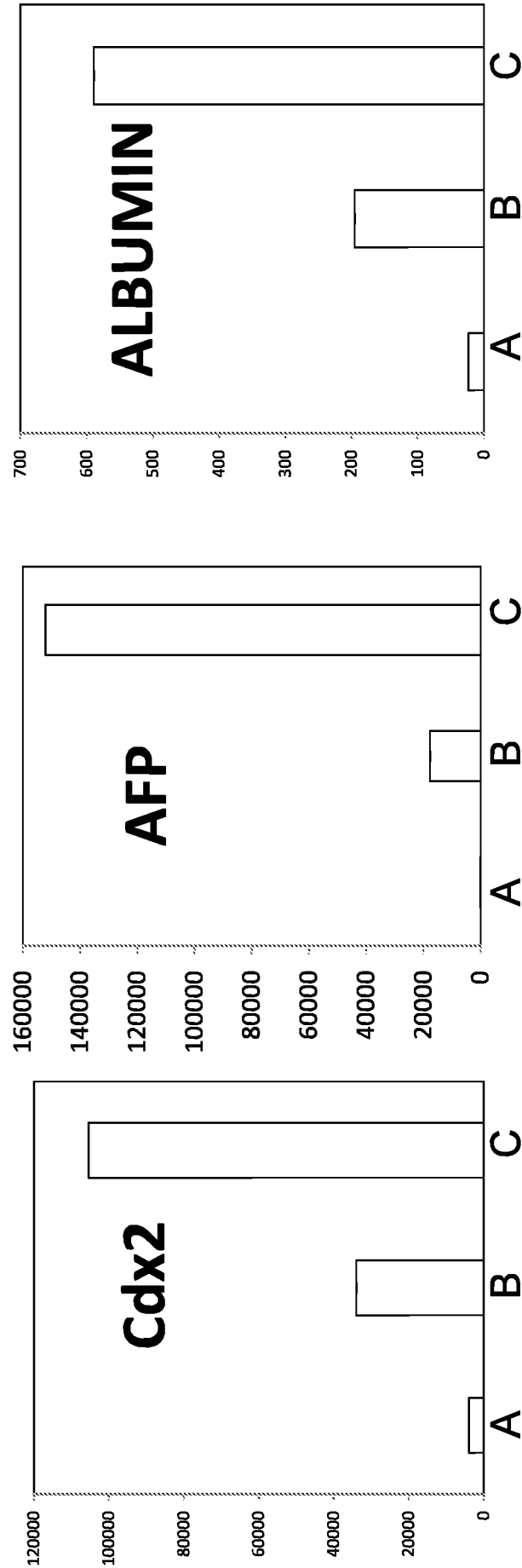


Figure 5f

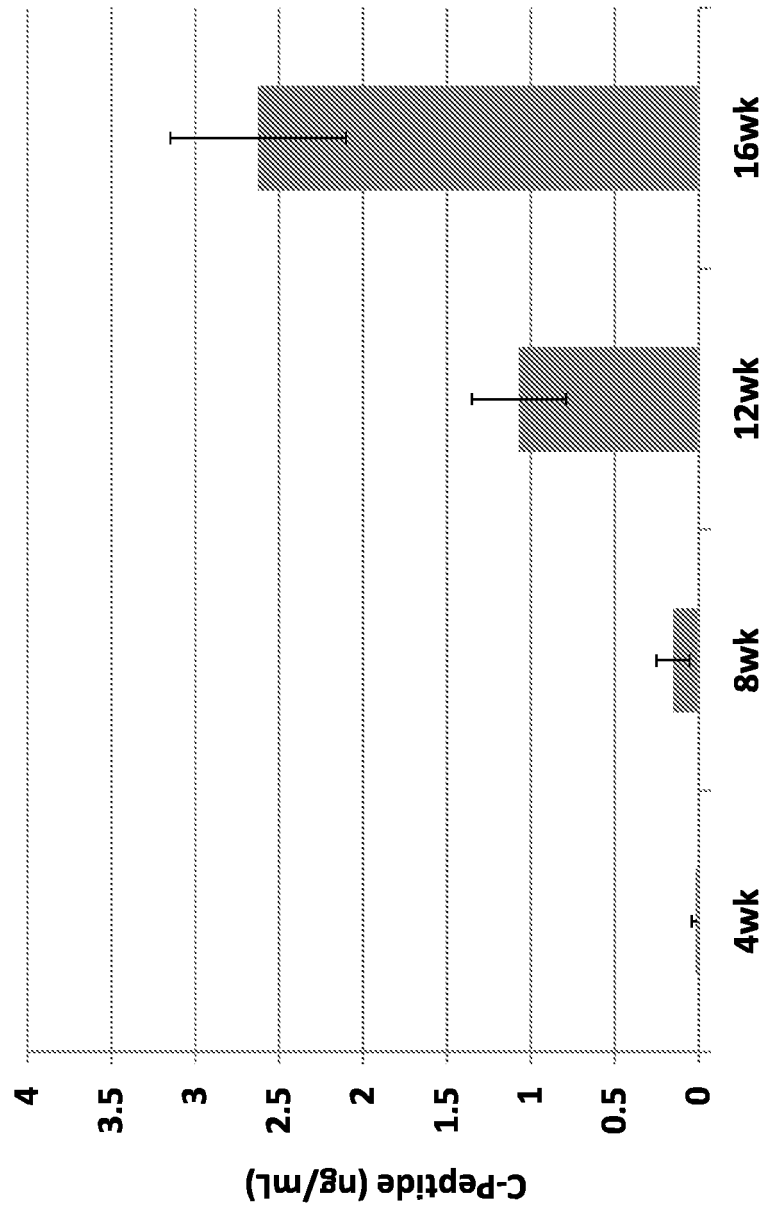


Figure 5g

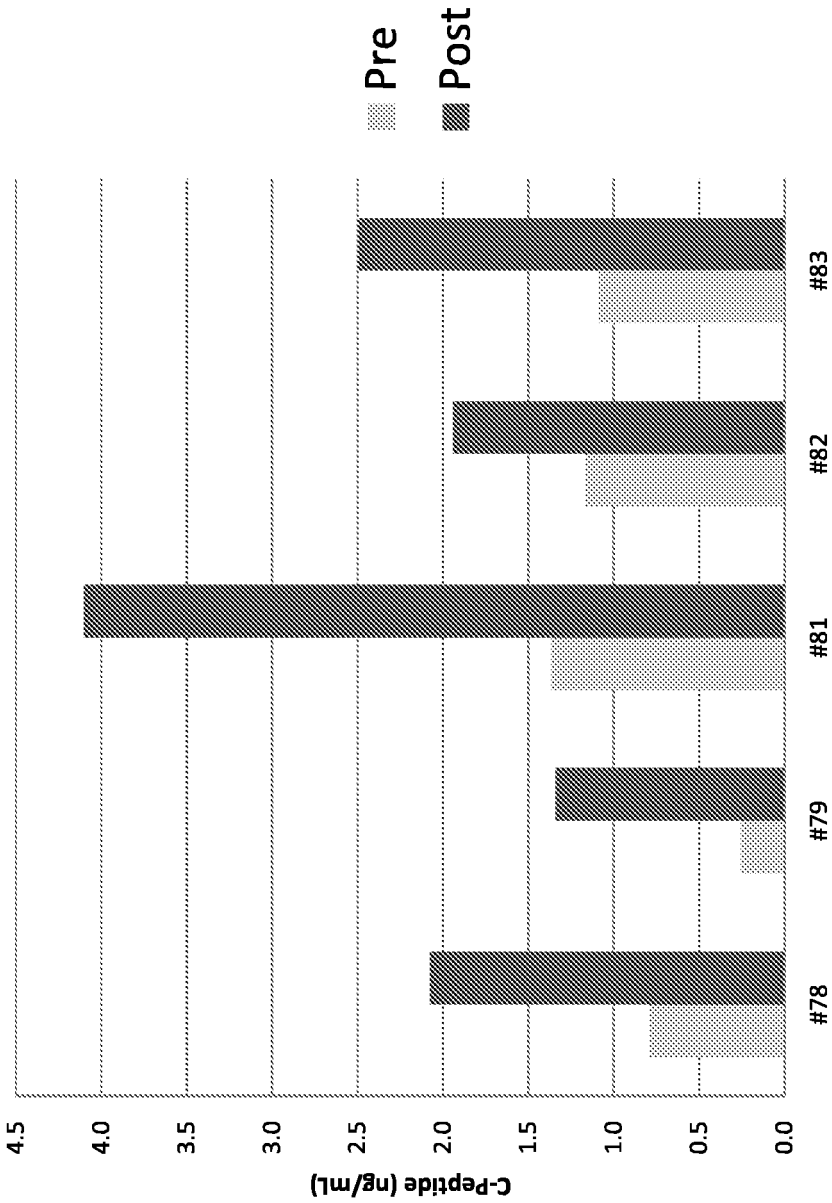


Figure 5h

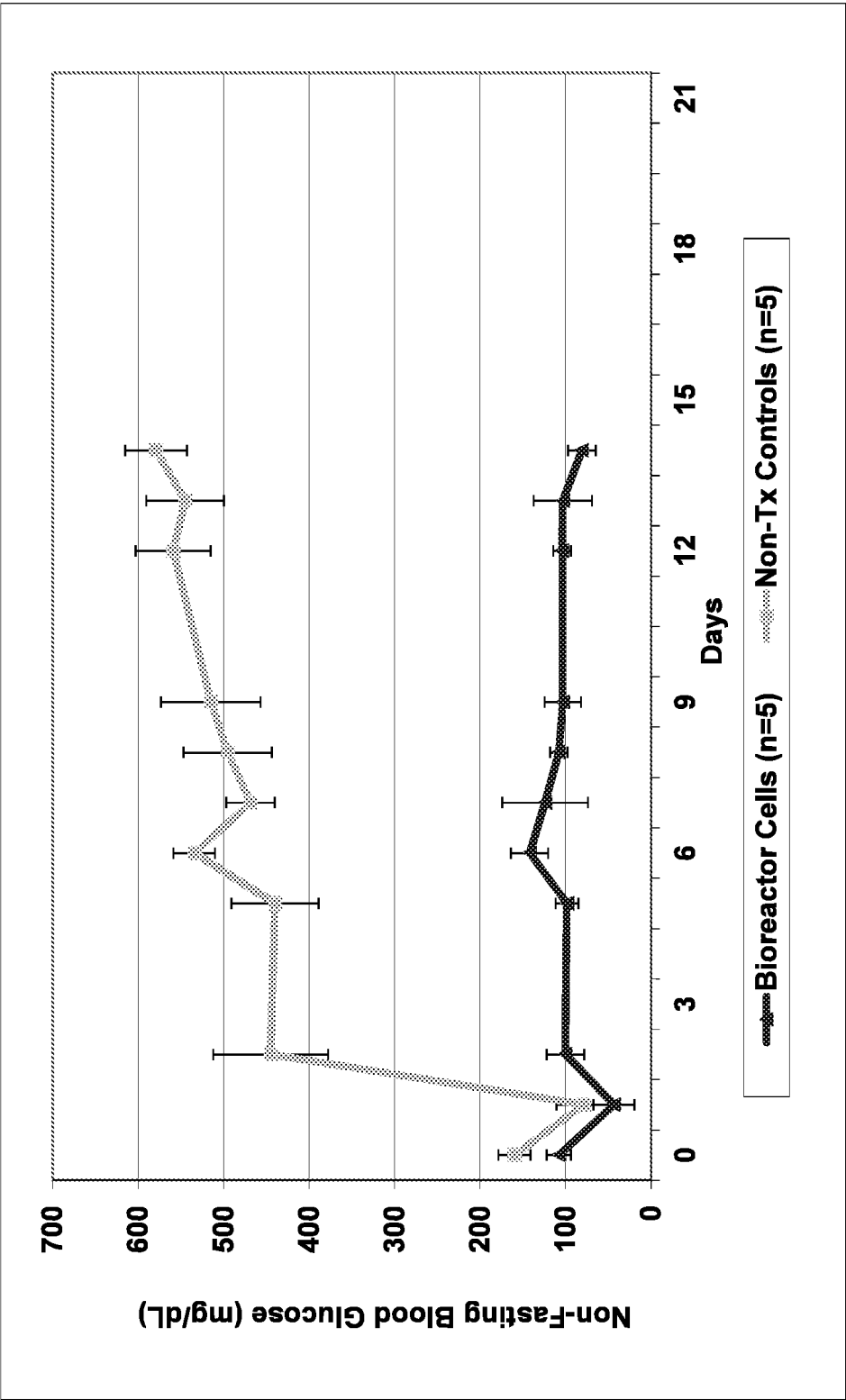


Figure 6a

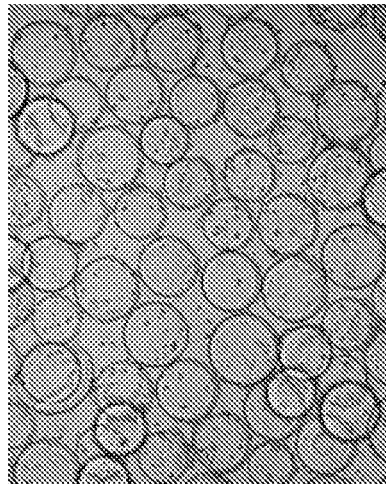
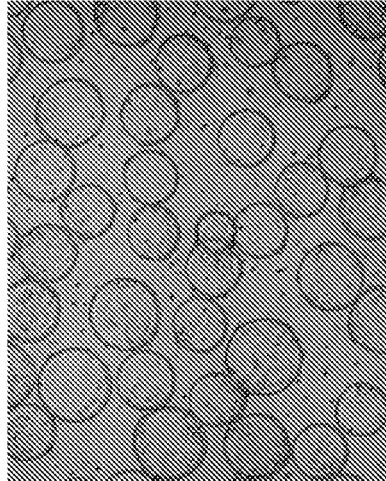
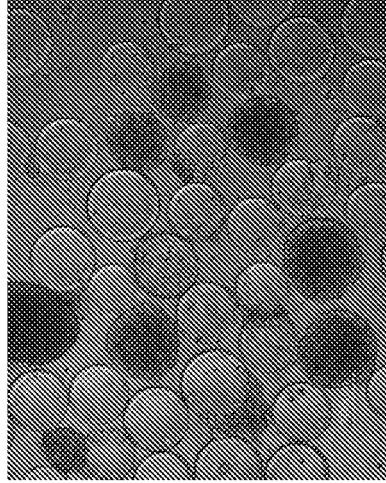


Figure 6b

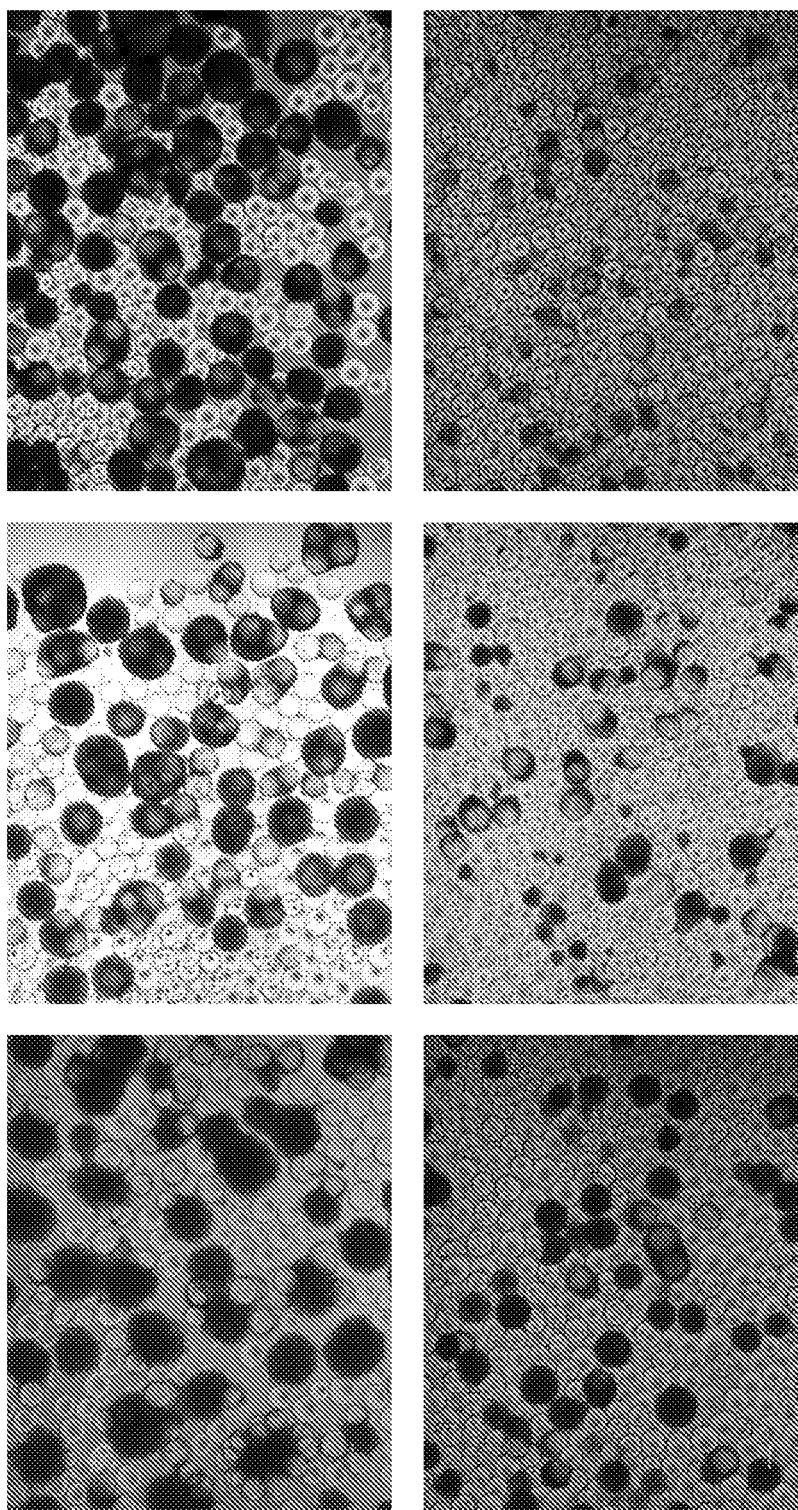


Figure 6c

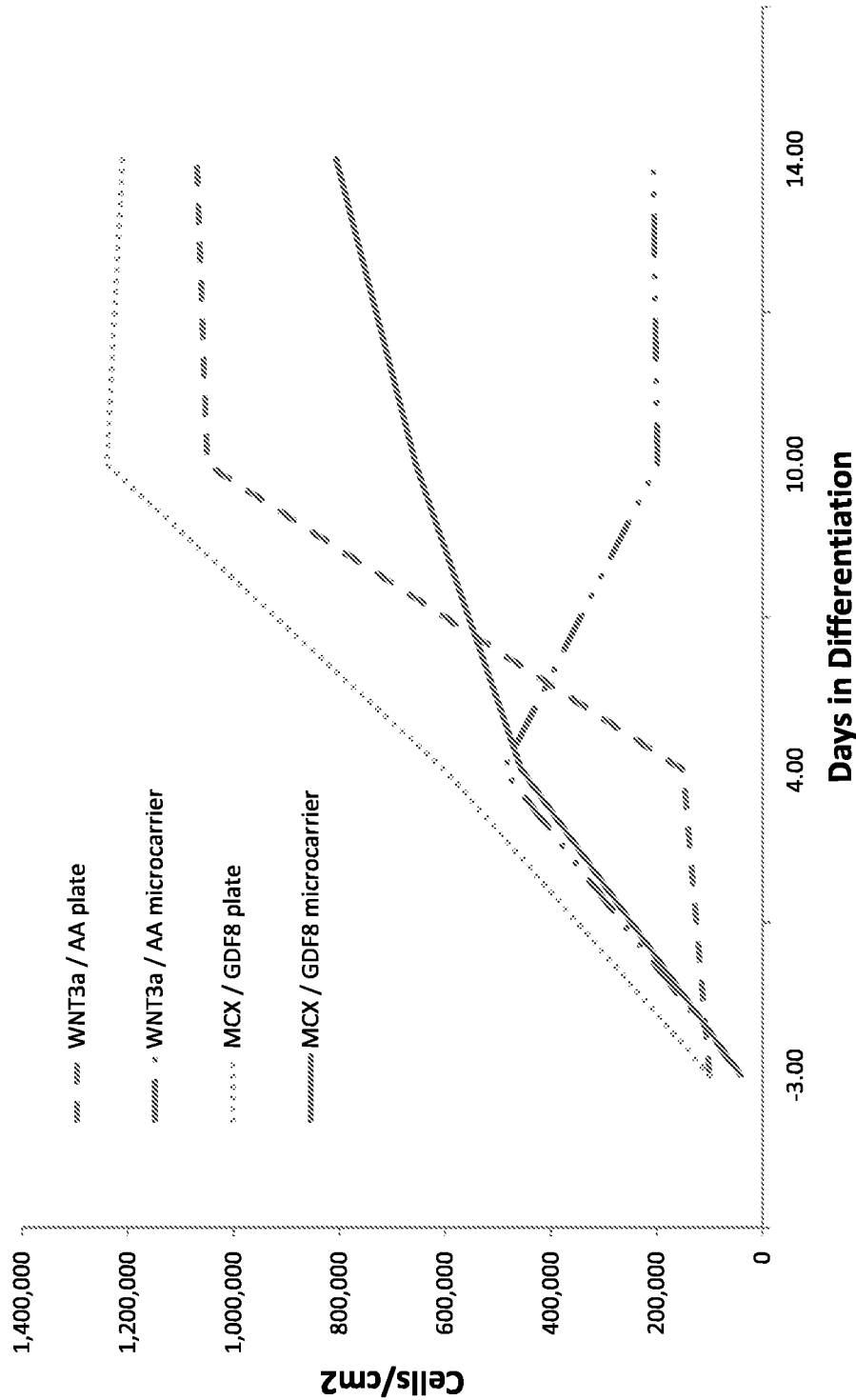


Figure 6d

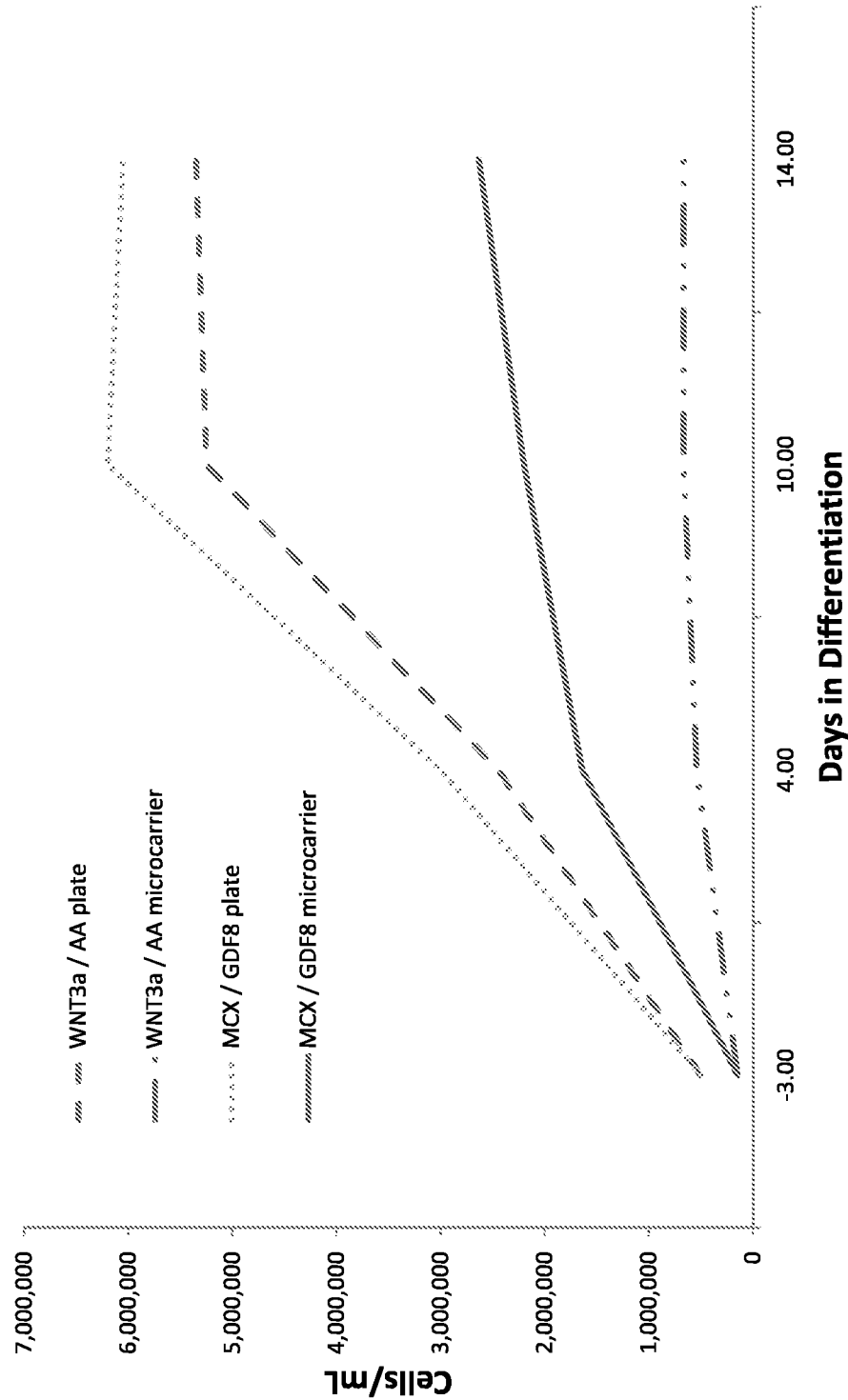




Figure 6f

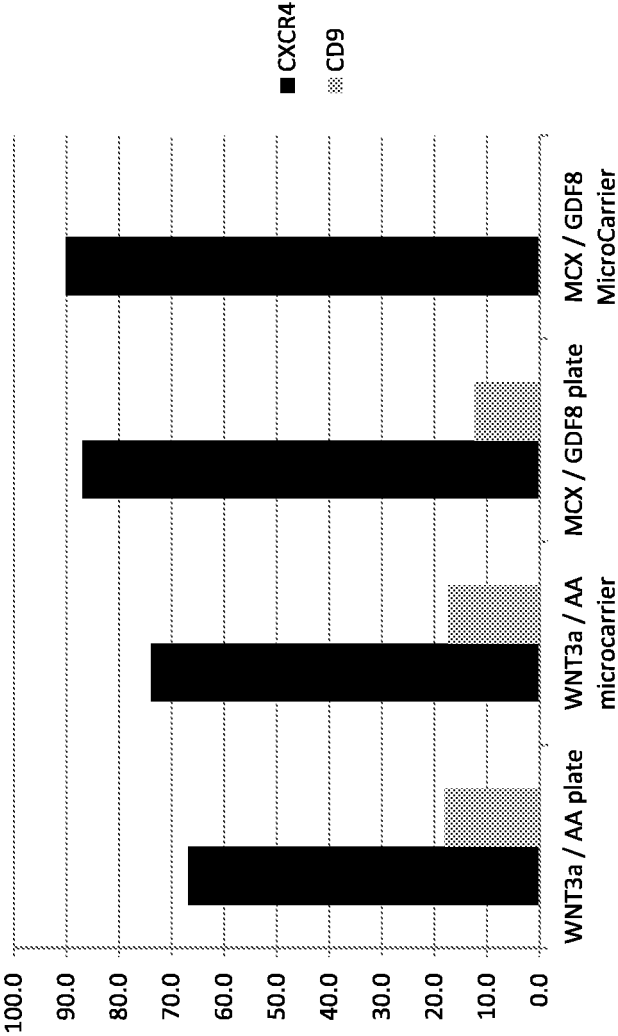


Figure 6g

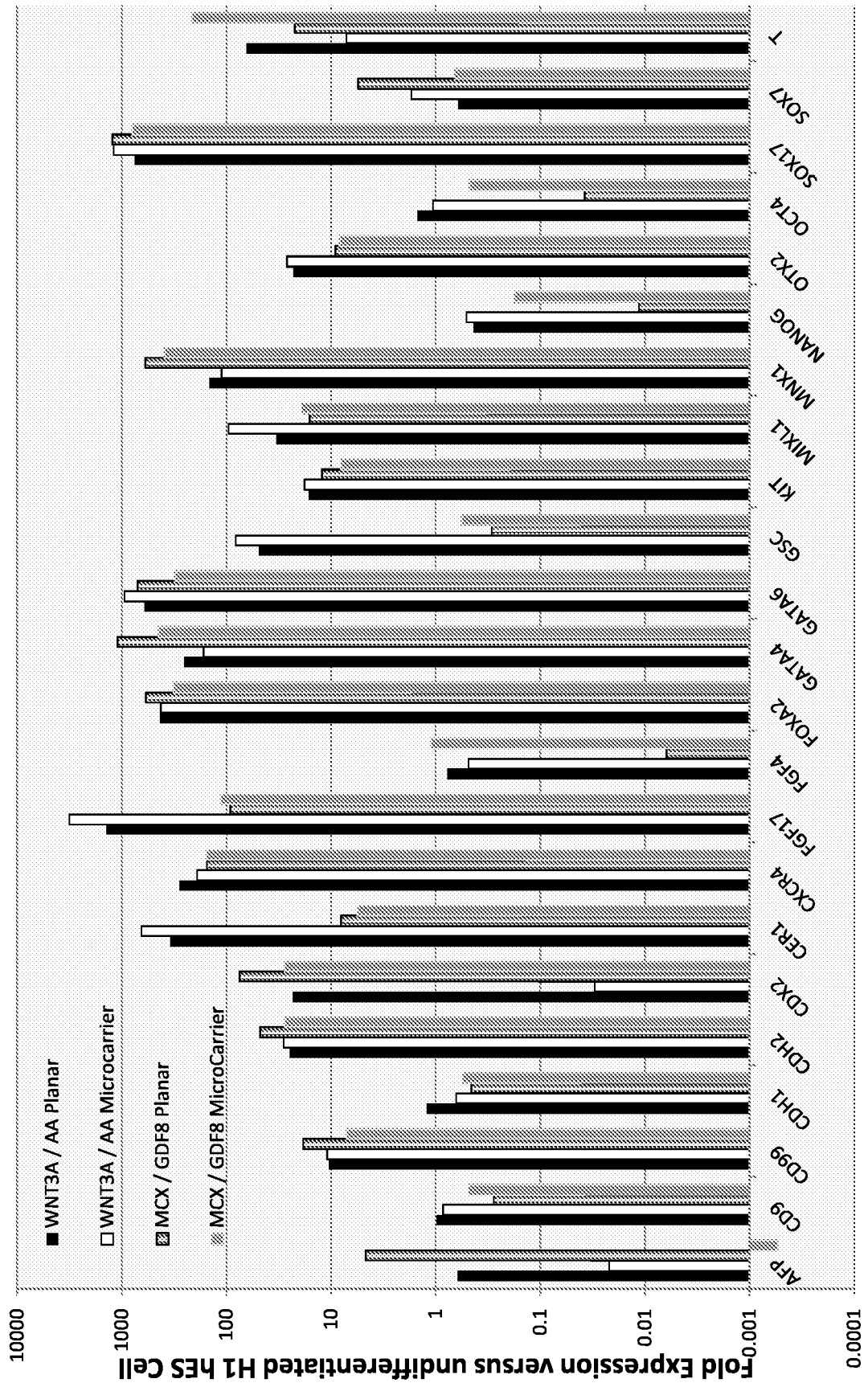


Figure 7: Cell Count

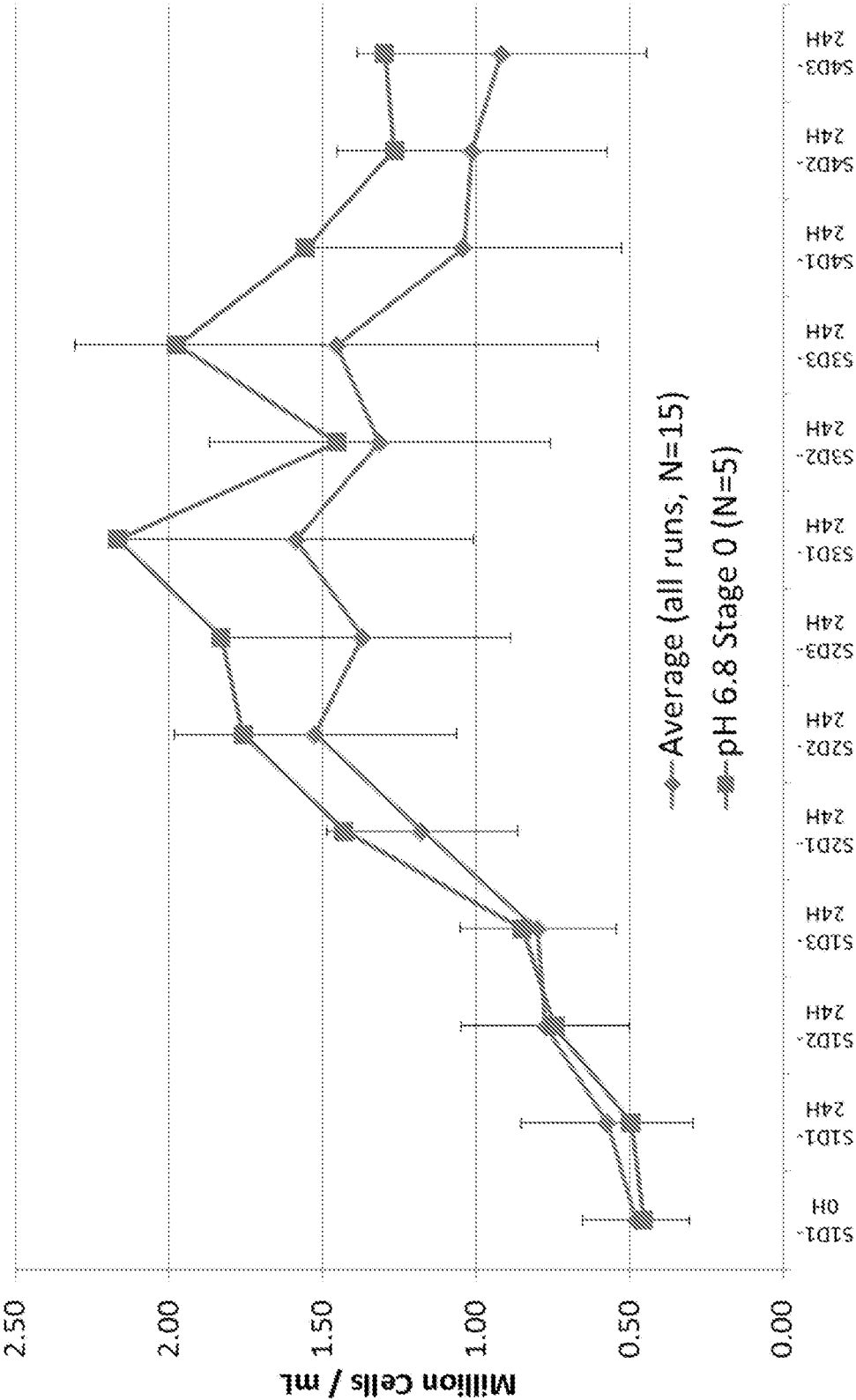


Figure 8: Average Daily Bioreactor
pH Levels

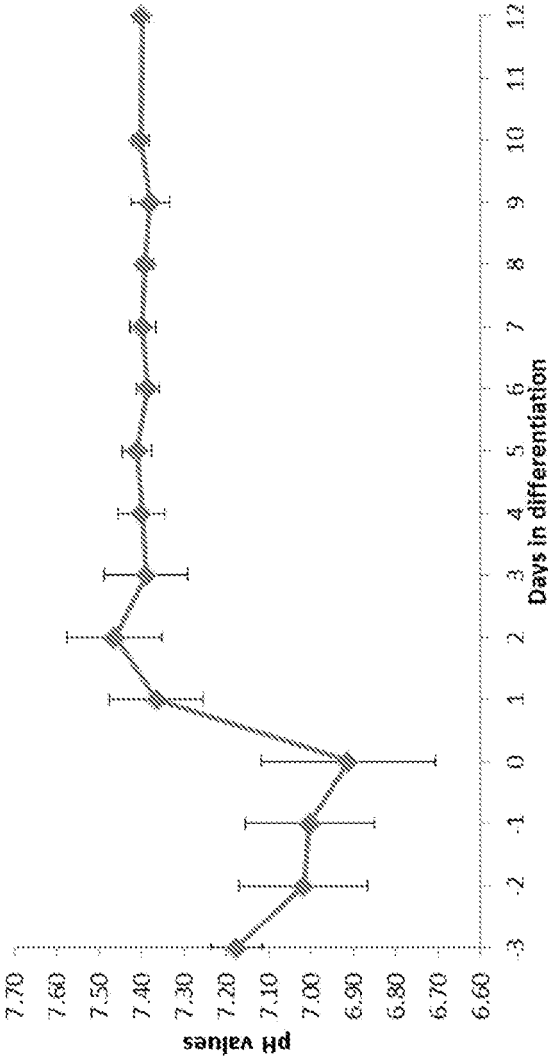


Figure 9: Average Daily Bioreactor
Lactate Levels

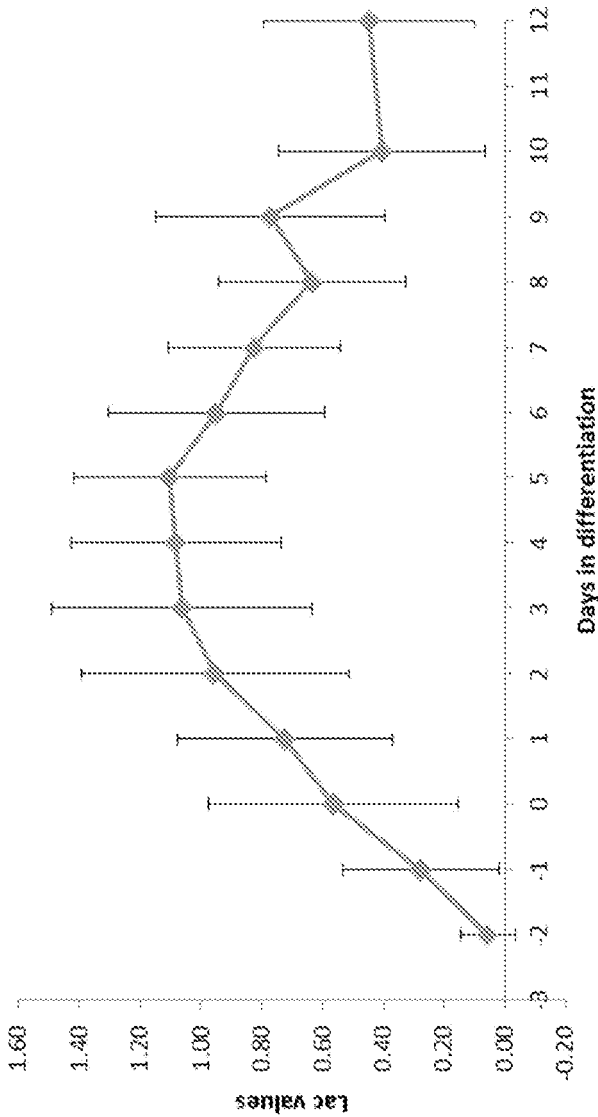


Figure 10: Average Daily Bioreactor
Glucose Levels

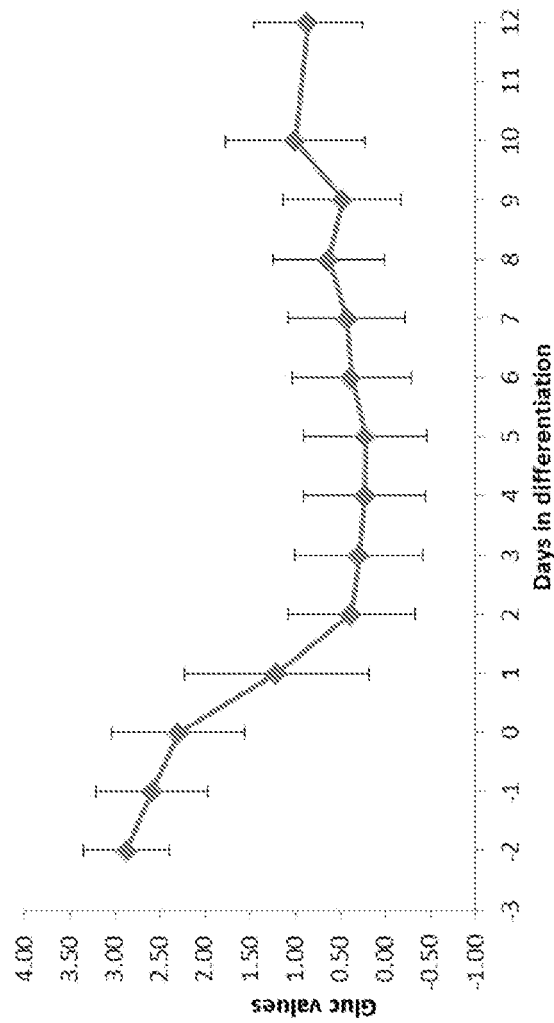


Figure 11: Average Stage 0 Day 1 Expression by qRT-PCR (n=12), Pluripotency Array (mean $\pm$ St. Dev.)

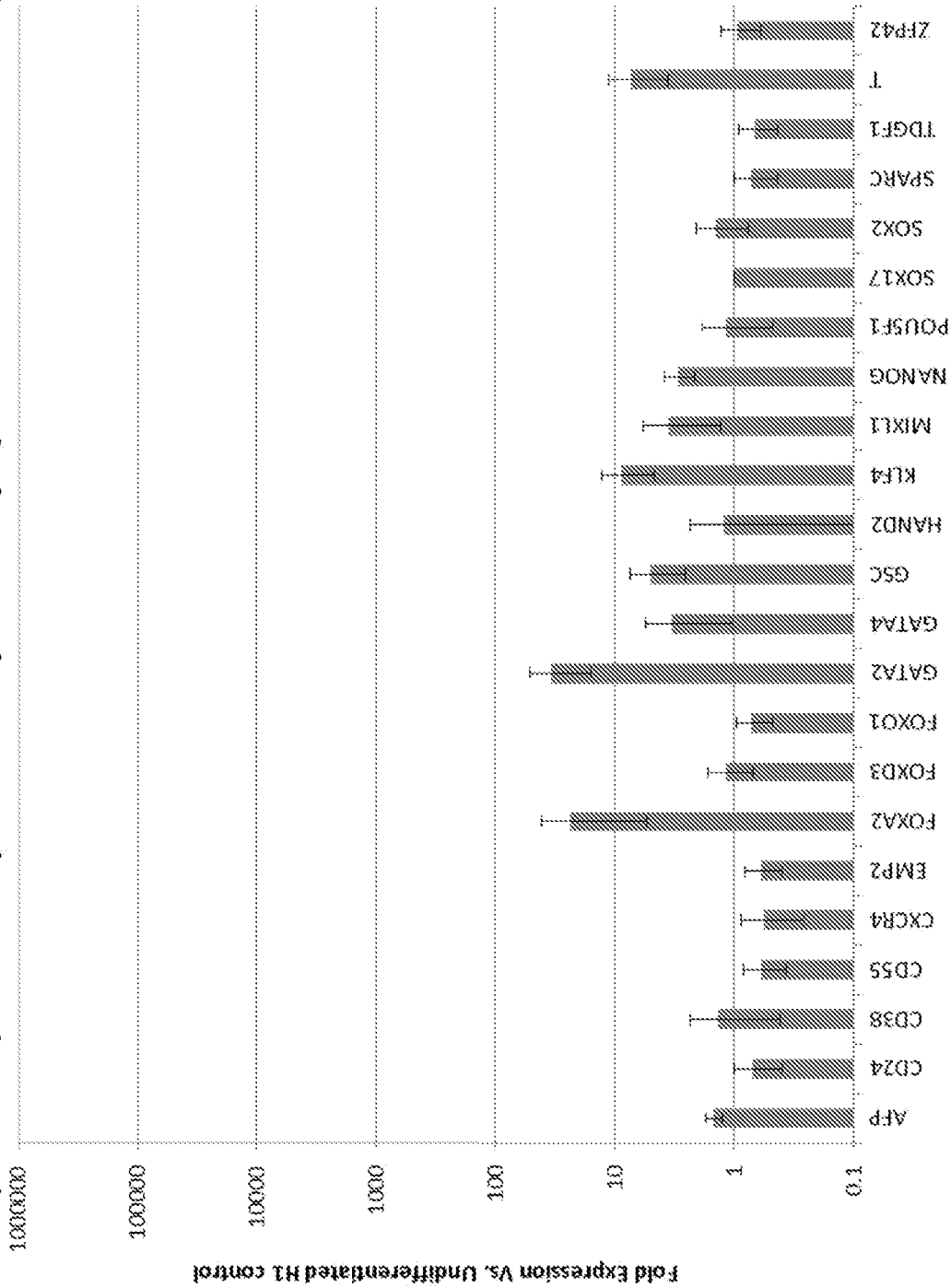


Figure 12: Average Stage 0 Day 1
Expression by qRT-PCR (n=10),
DE Array (mean $\pm$ St. Dev.)

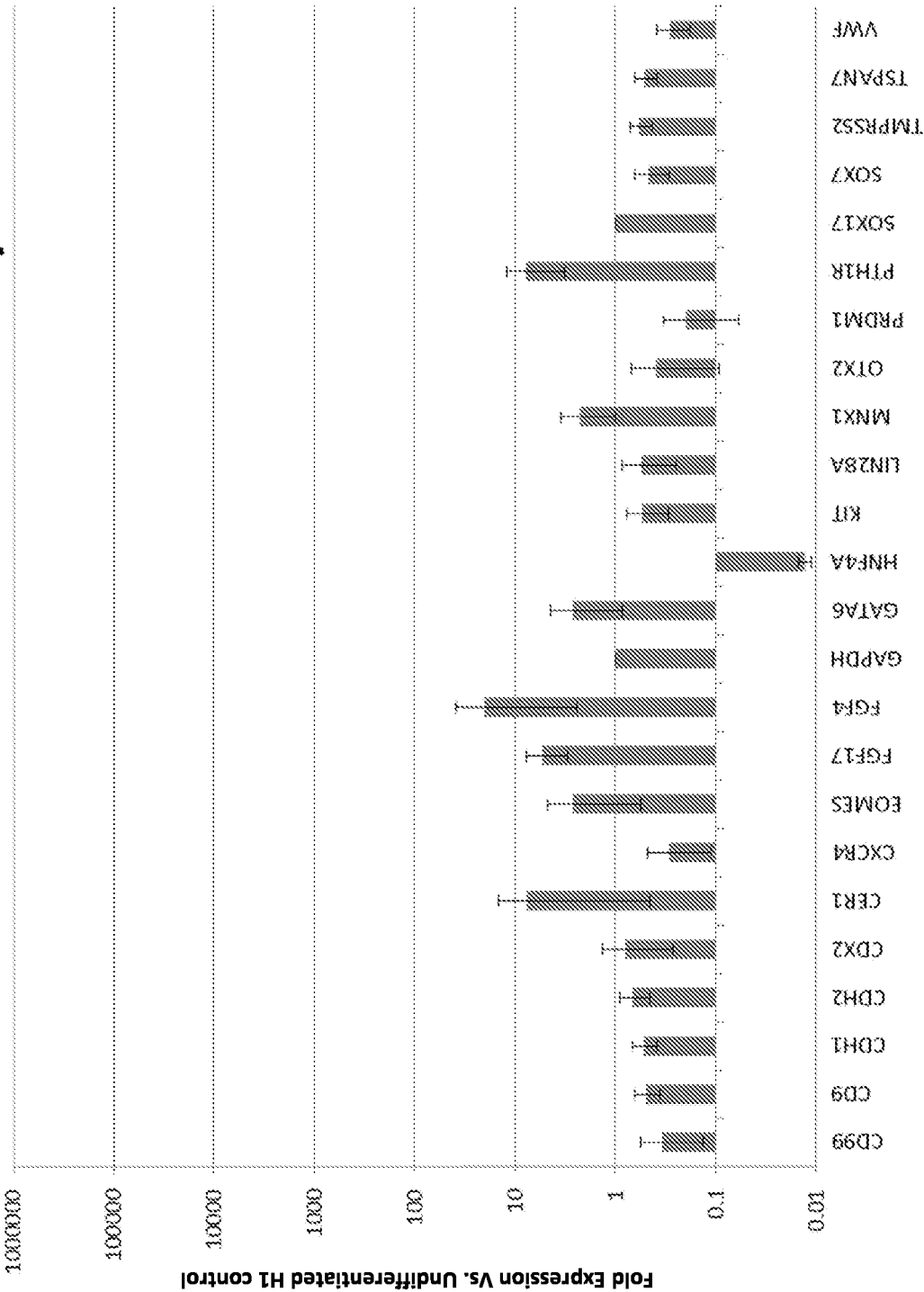


Figure 13: Average Stage 0 Day 3
Expression by qRT-PCR (n=12),
Pluripotency Array (mean $\pm$ St. Dev.)

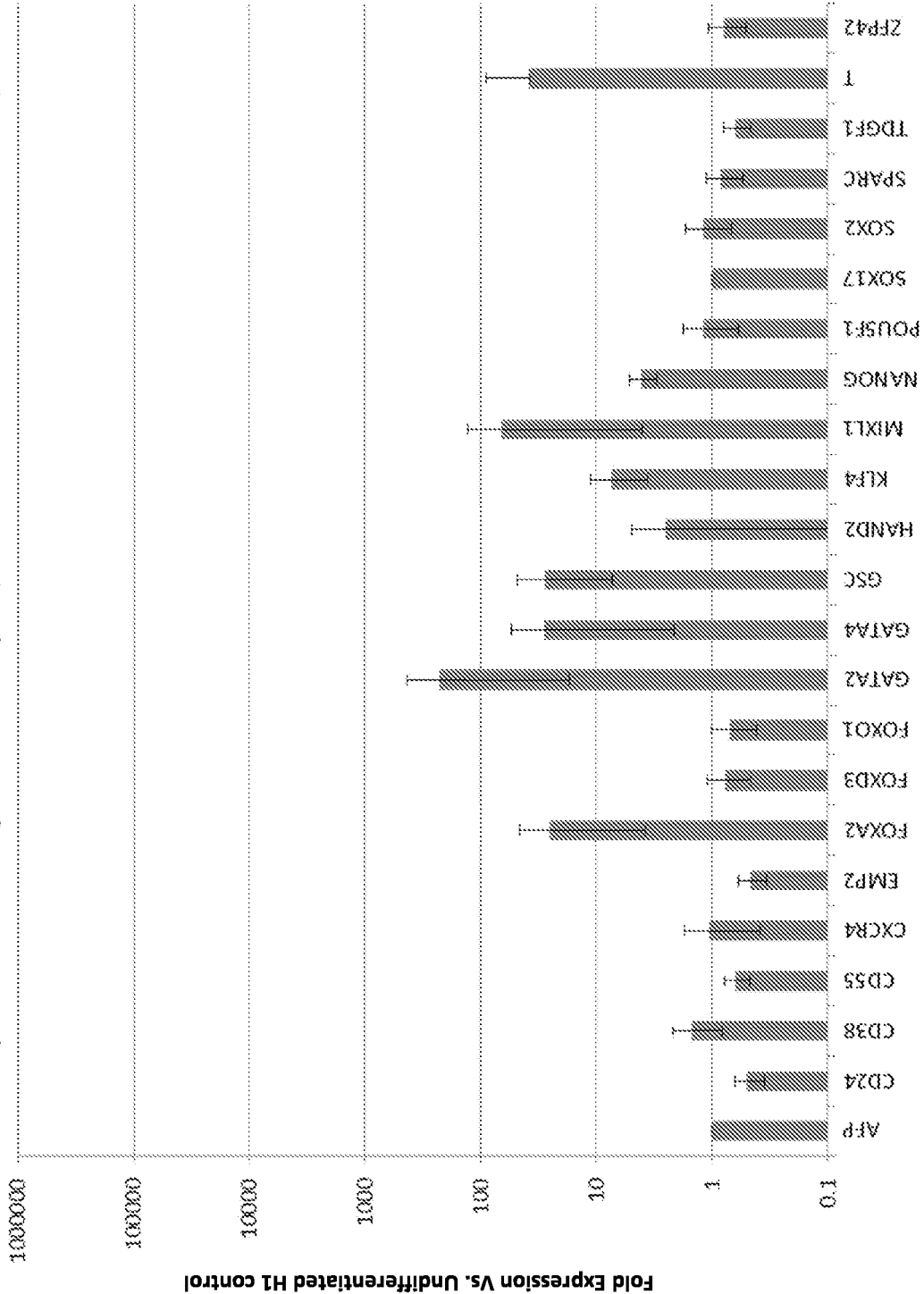


Figure 14: Average Stage 0 Day 3
Expression by qRT-PCR (n=10),
DE Array (mean $\pm$ St. Dev.)

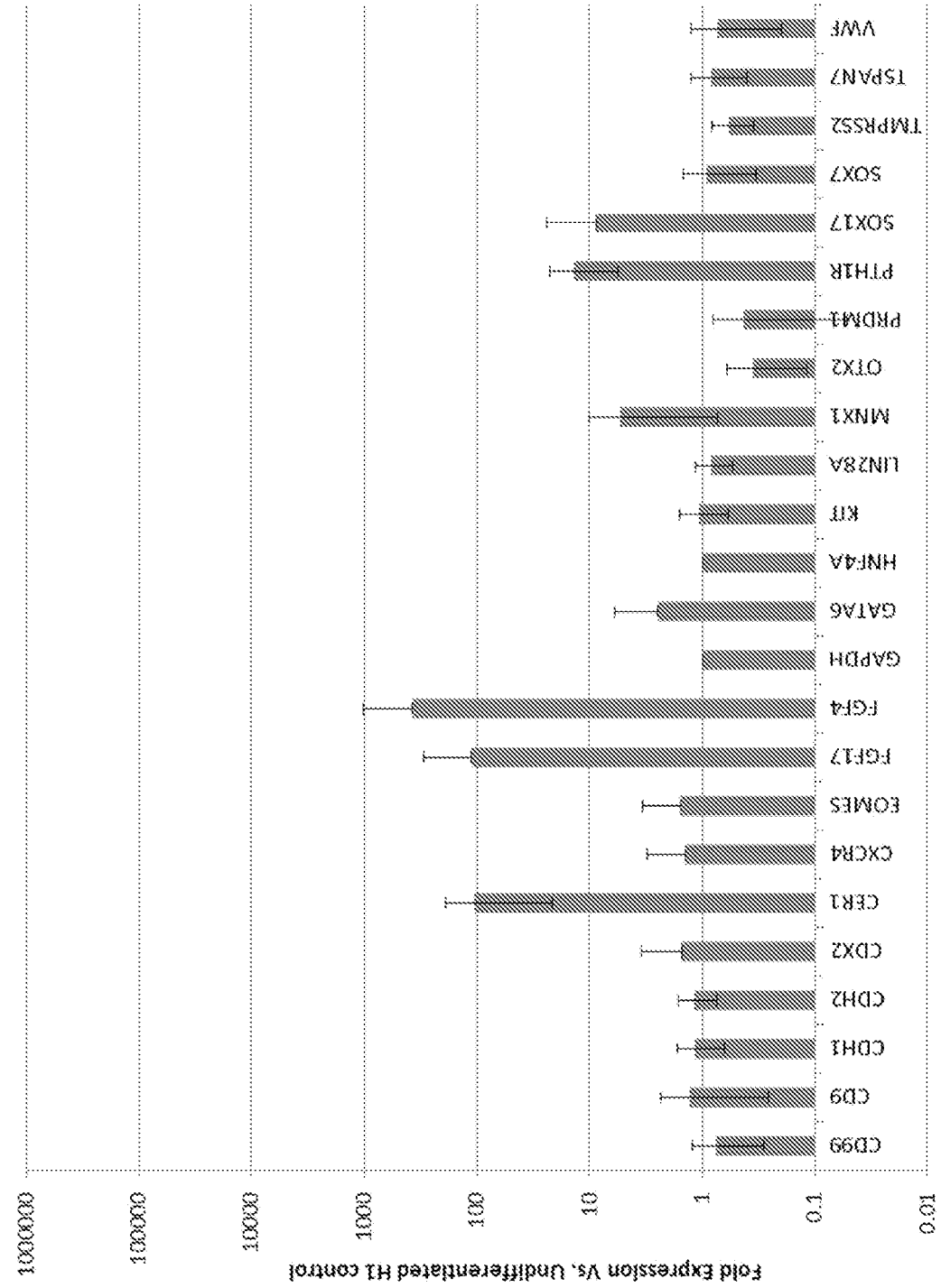


Figure 15: Average FACS Results
Stage 0 Day 3 (mean $\pm$ St. Dev.)

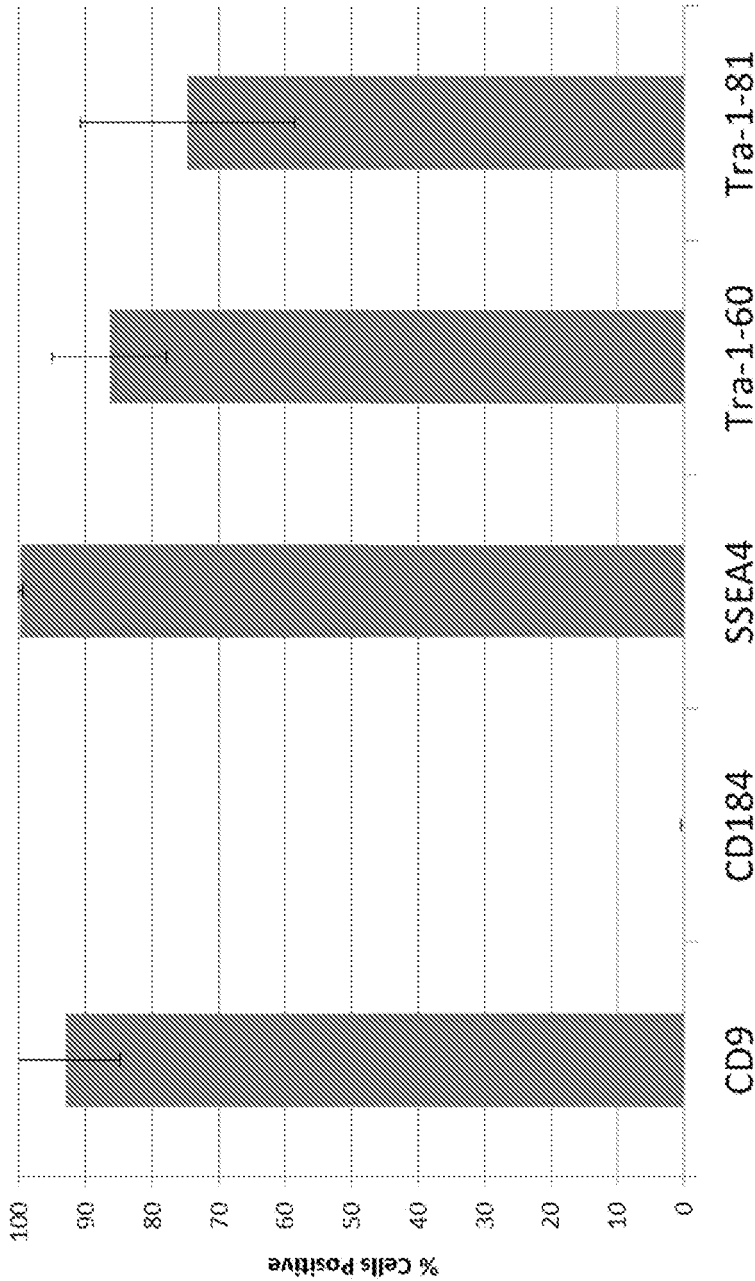


Figure 16: Stage 0 Days 1 and 3 expression
(n=12, mean $\pm$ St. Dev.)
by qRT-PCR Pluripotency Array

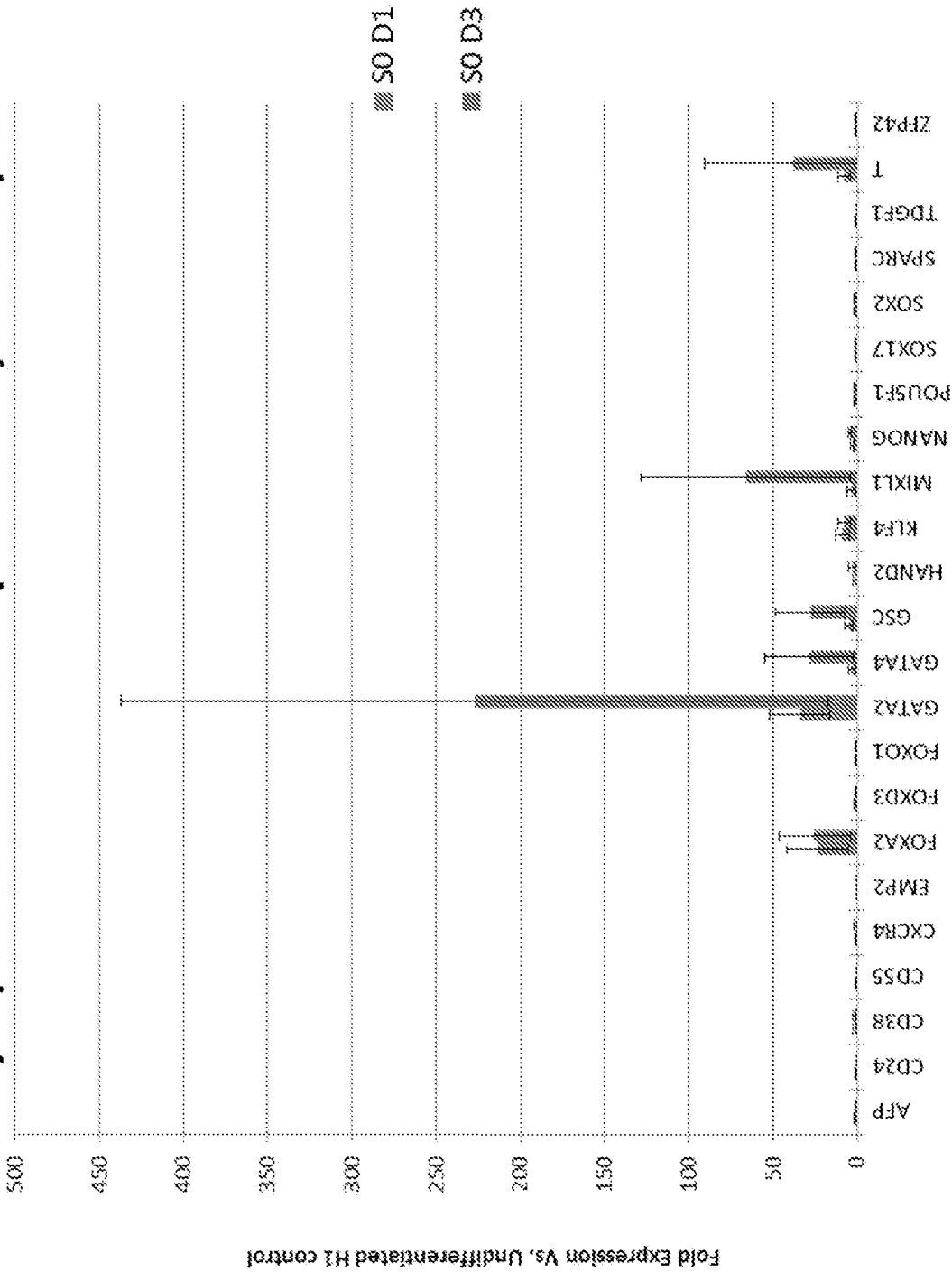


Figure 17: Stage 0 Days 1 and 3 expression
(n=10, mean $\pm$ St. Dev.)
by qRT-PCR DE Array

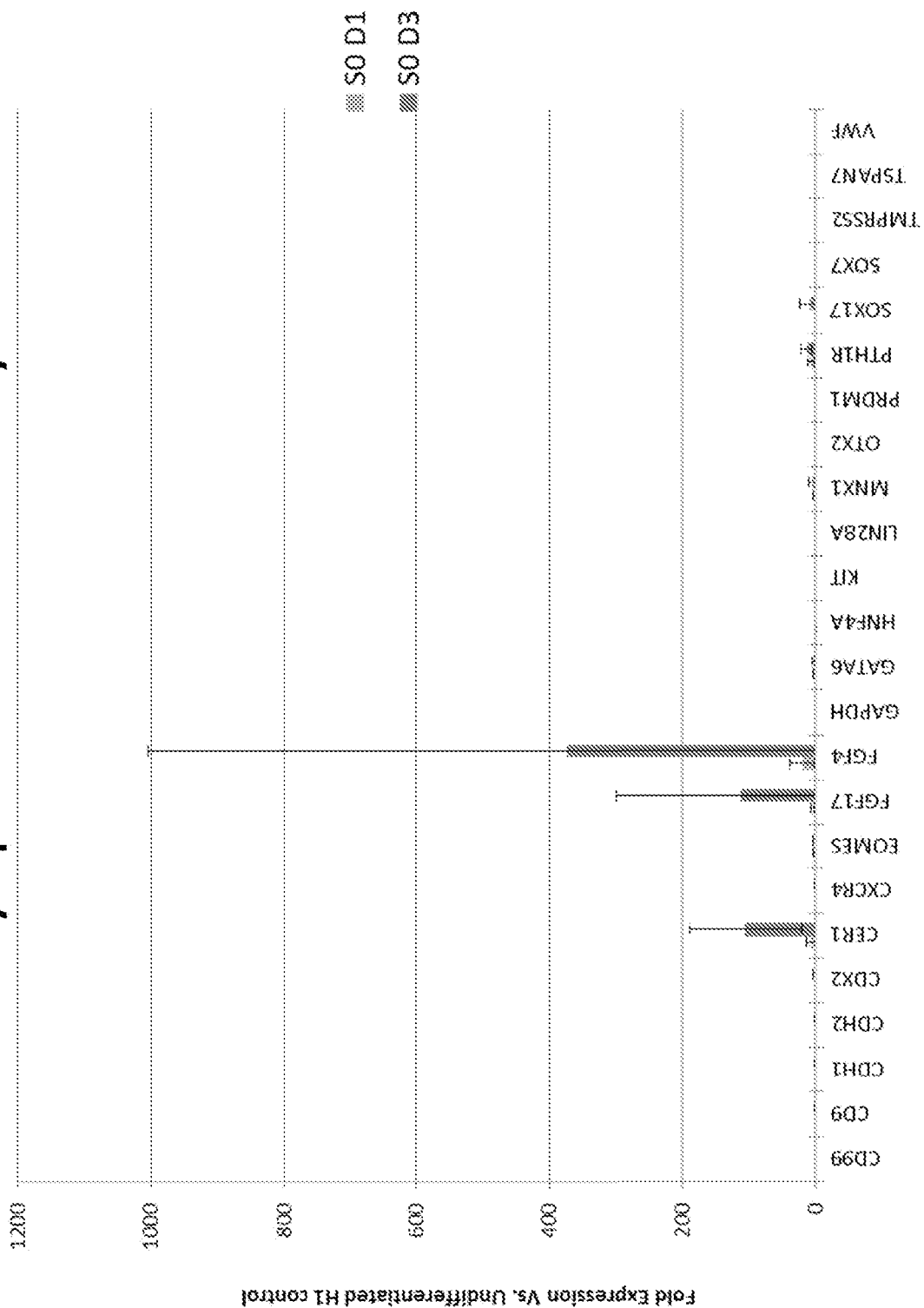


Figure 18: Stage 1 Day 1 expression
(n=13, mean $\pm$ St. Dev.)
by qRT-PCR Pluripotency Array

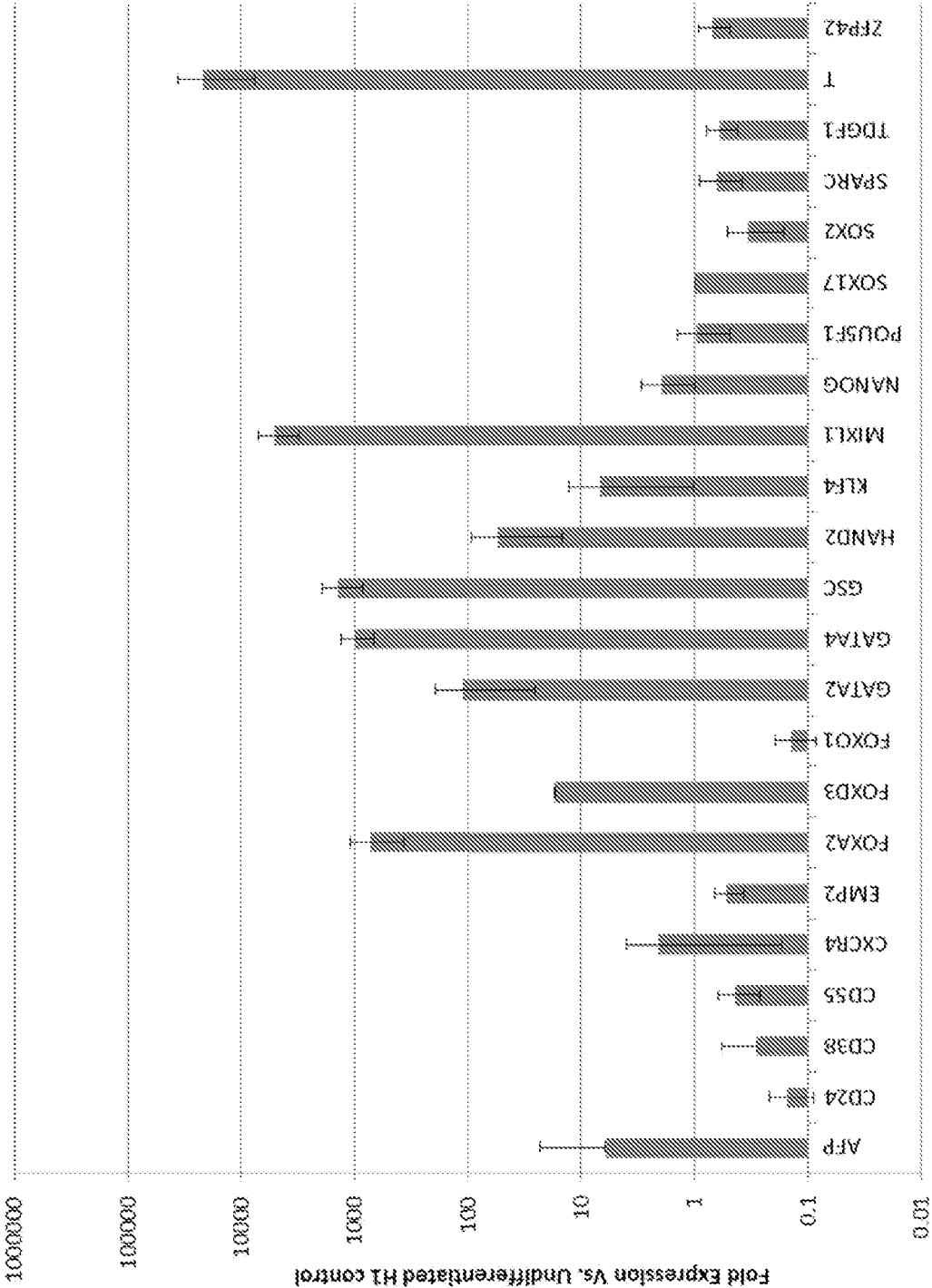


Figure 19: Stage 1 Day 1 expression
(n=14, mean $\pm$ St. Dev.)
by qRT-PCR DE Array

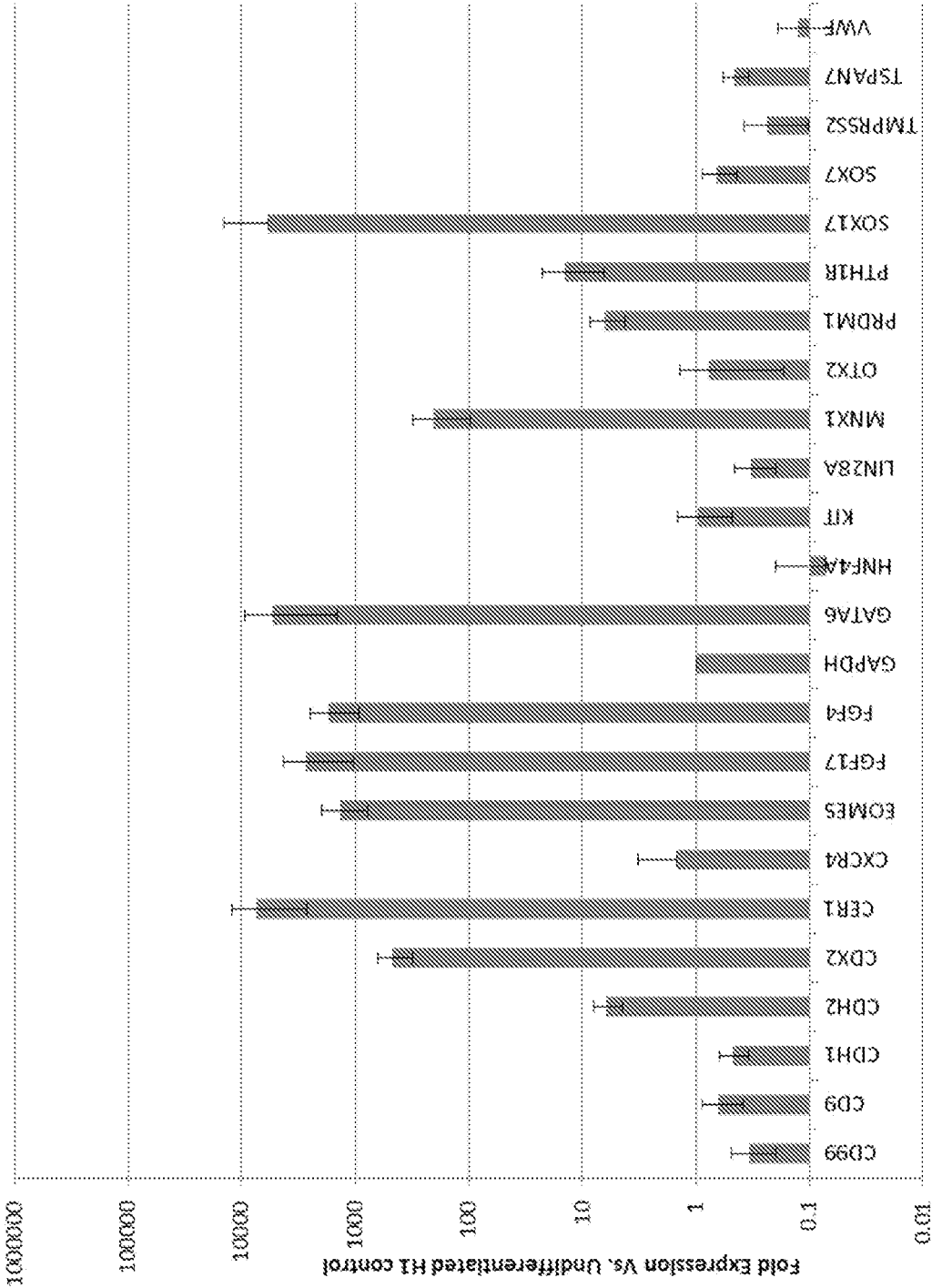


Figure 20: Stage 1 Day 3 expression
(n=13, mean $\pm$ St. Dev.)
by qRT-PCR Pluripotency Array

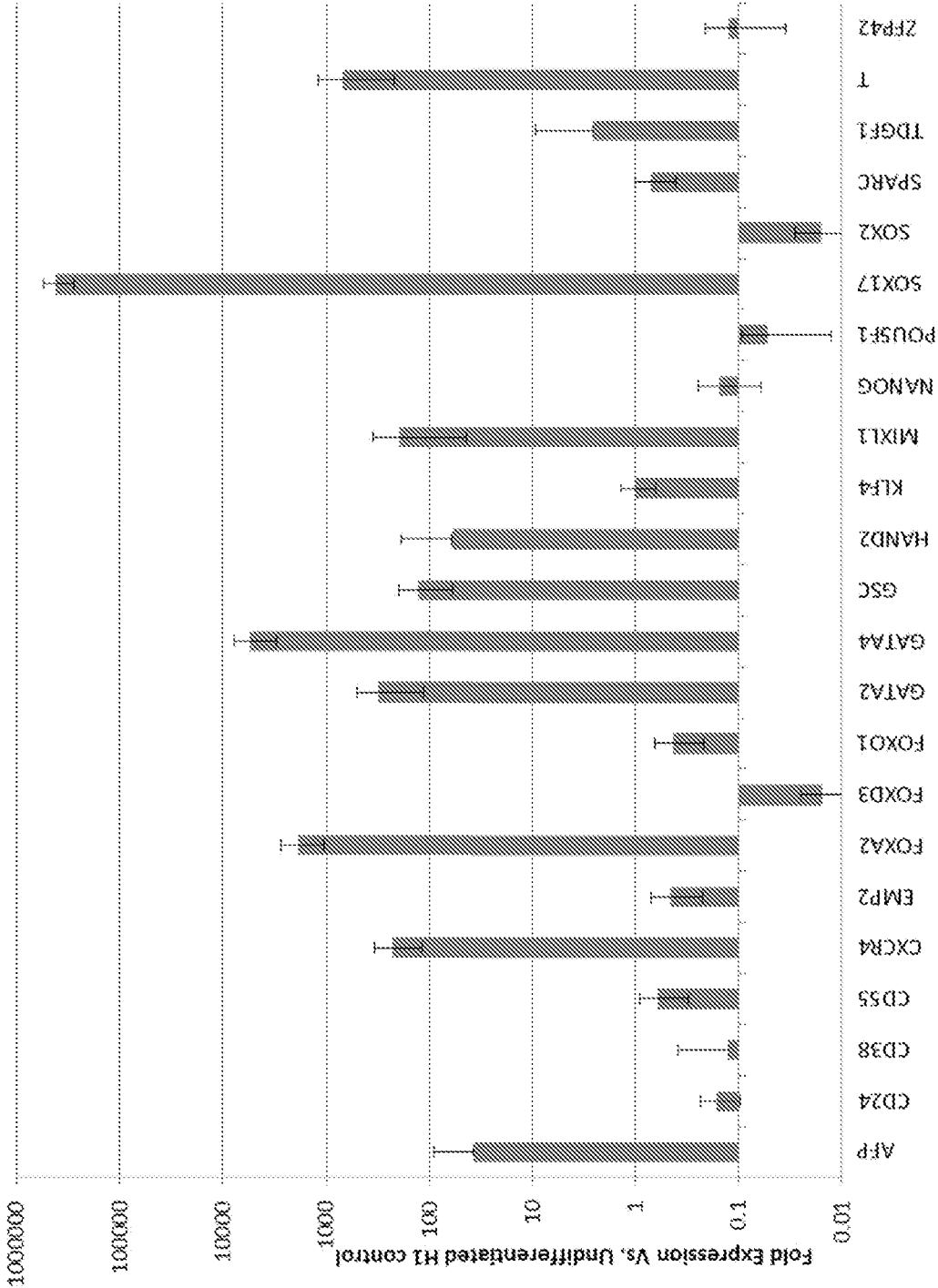


Figure 21: Stage 1 Day 3 expression
(n=13, mean $\pm$ St. Dev.)
by qRT-PCR DE Array

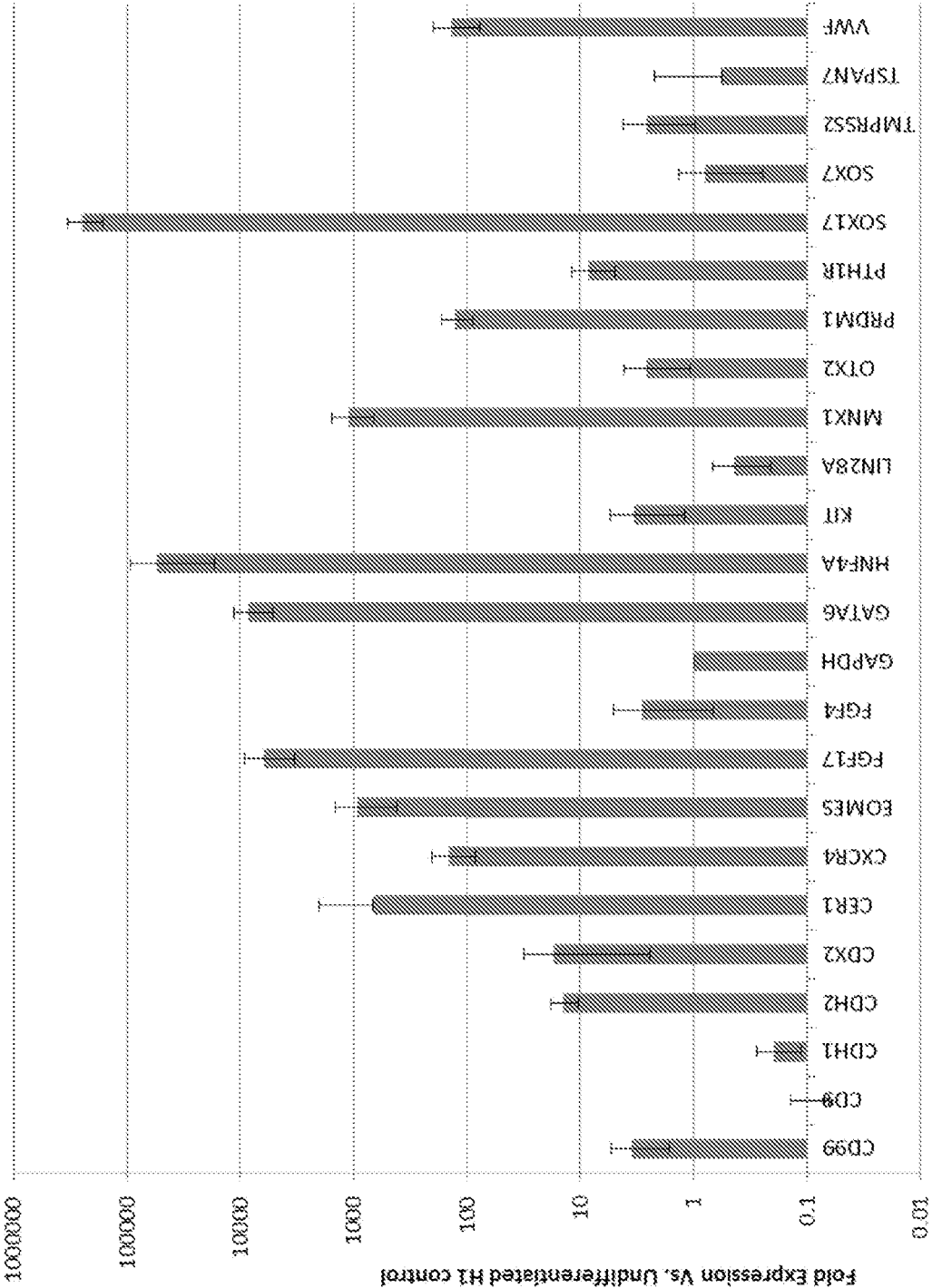


Figure 22: Average FACS results
Stage 1 Day 3 (mean $\pm$ St. Dev.)

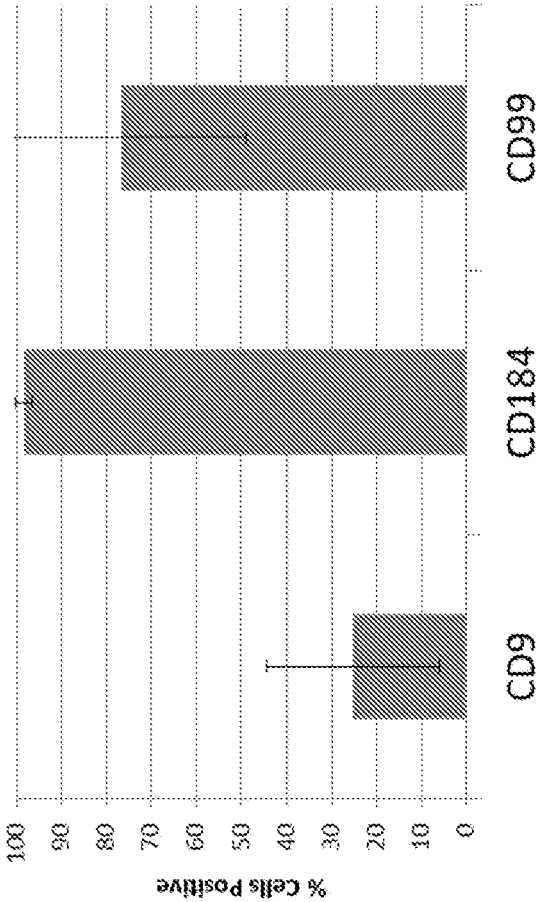


Figure 23: Stage 1 Day 3, Stage 2 Day 1, and Stage 2 Day 3 expression
(n=14, mean $\pm$ St. Dev.)
by qRT-PCR DE Array

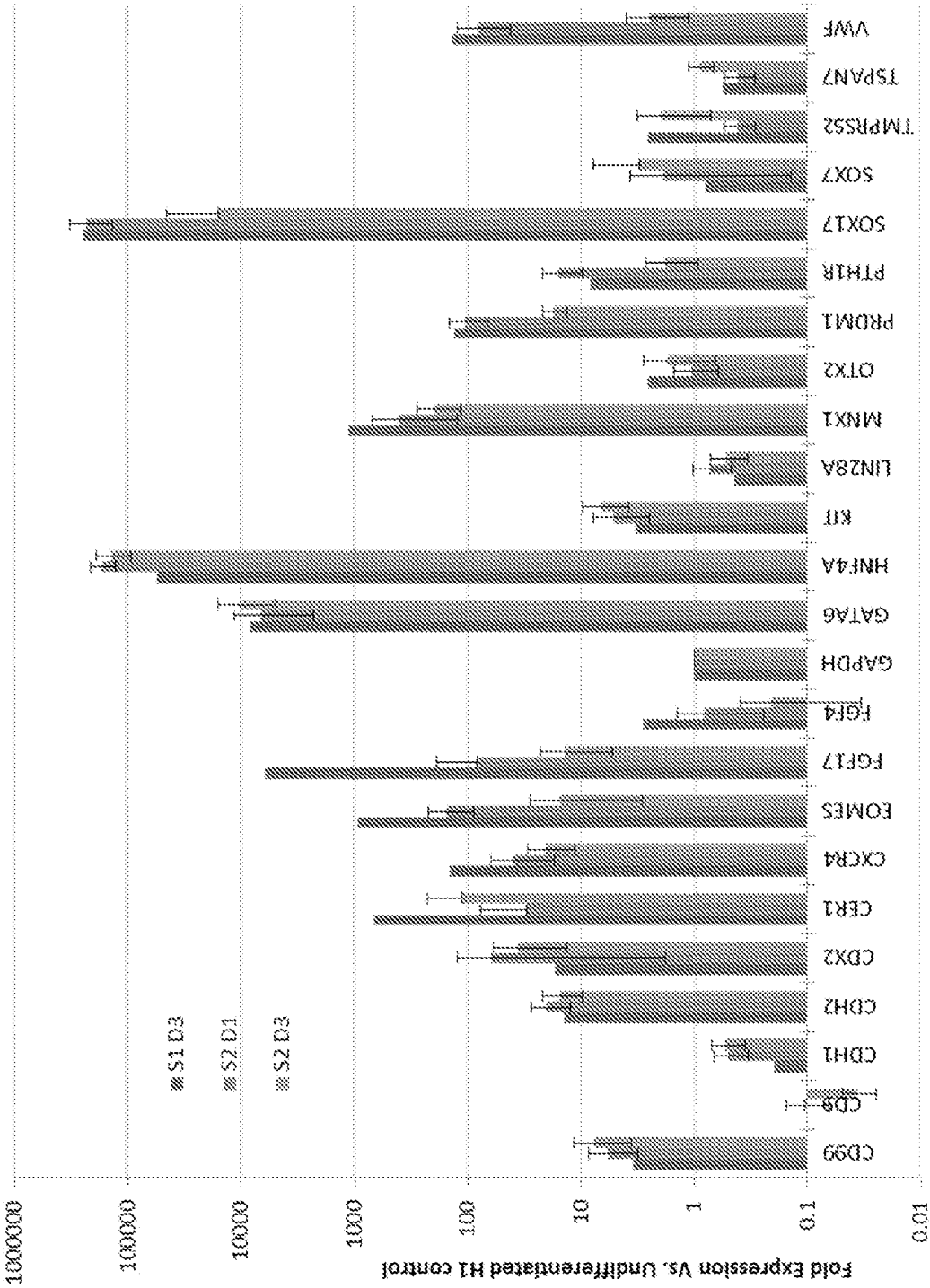


Figure 24: Stage 2 Day 1 and 3 expression
(n=12, mean $\pm$ St. Dev.)
by qRT-PCR GT Array

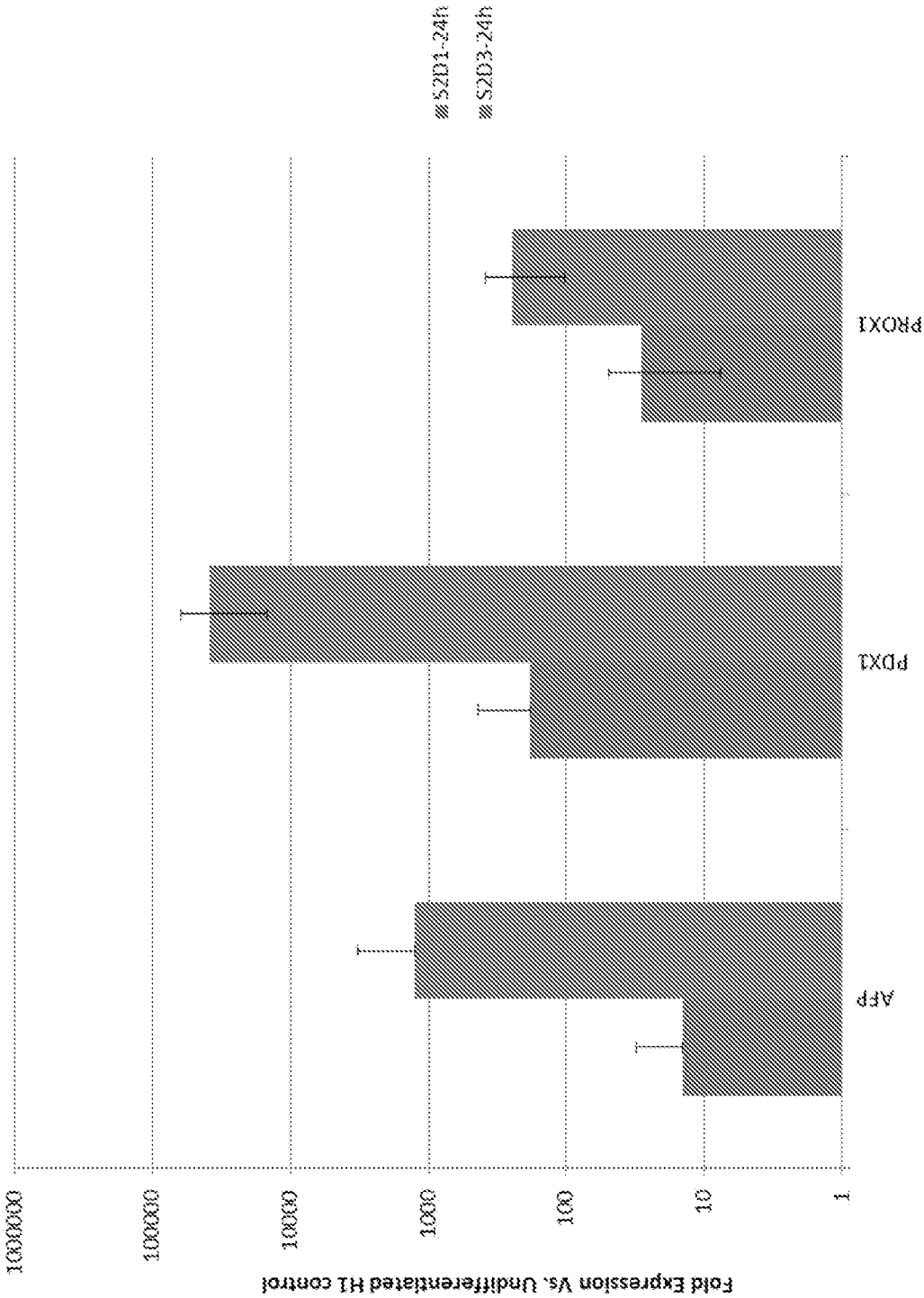
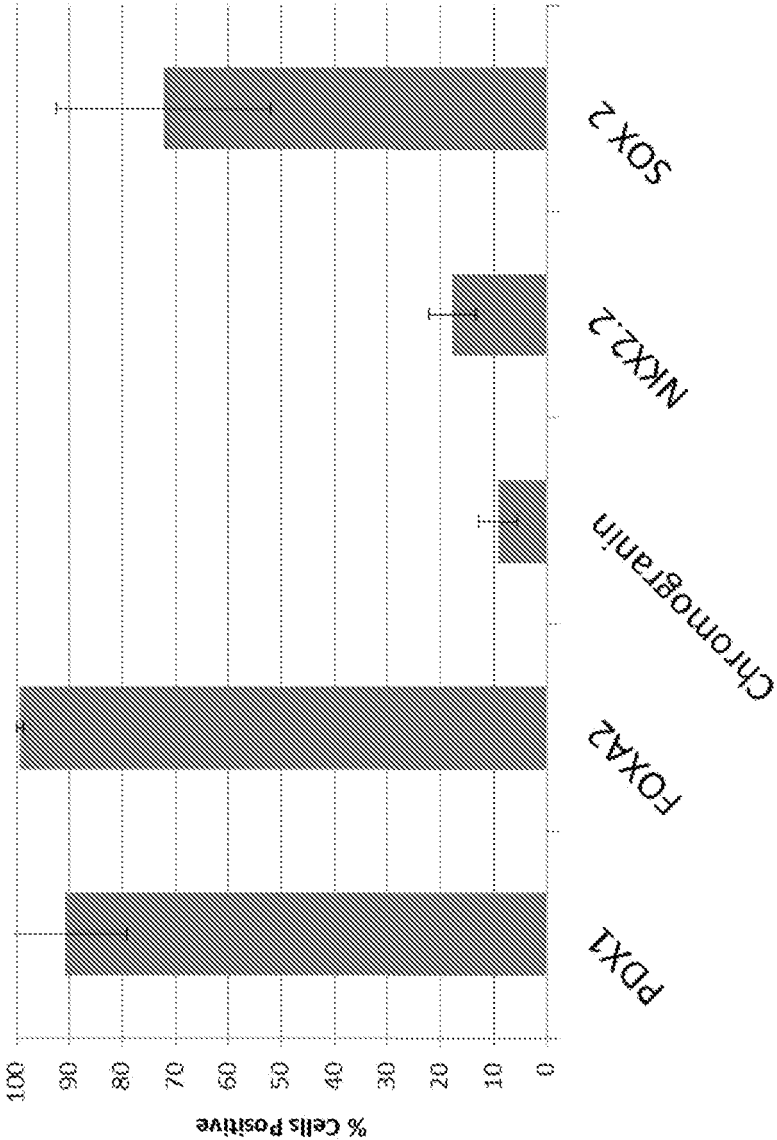


Figure 25: Average FACS results
Stage 3 Day 3 (mean $\pm$ St. Dev.)



Pdx1	FoxA2	Chromogranin	Nkx 2.2	SOX 2
90.9	99.2	9.1	17.8	72.3
11.9	0.6	3.6	4.4	20.2

Figure 26: Stage 3 Day 1 and 3 expression
(n=10, mean $\pm$ St. Dev.)
by qRT-PCR S4 Array

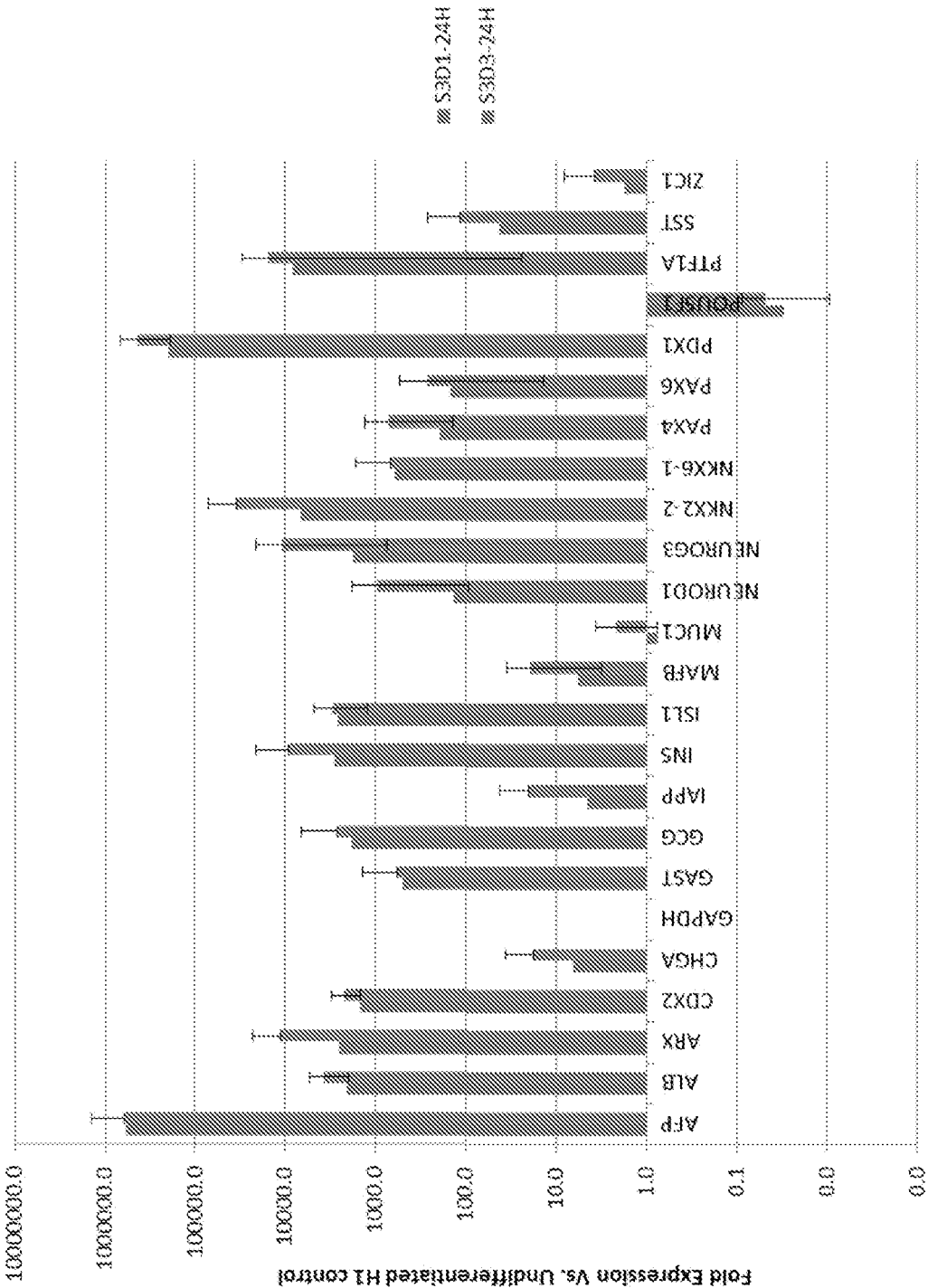
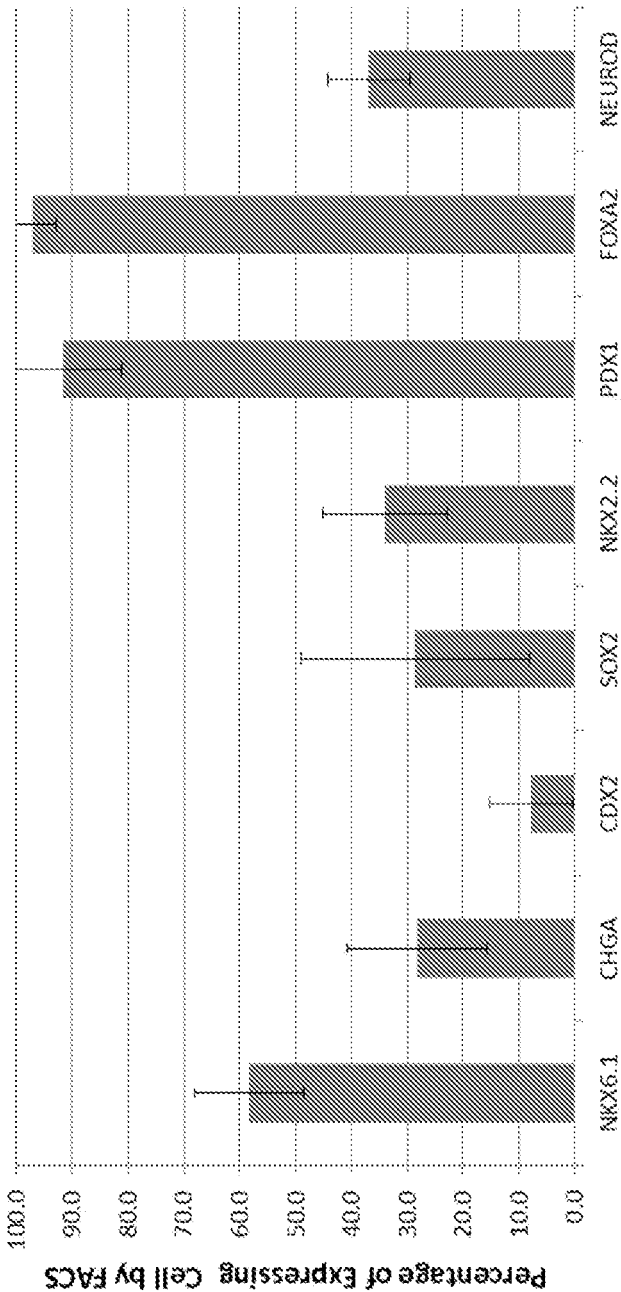


Figure 27: Average FACS results
Stage 4 Day 3 (mean $\pm$ St. Dev.)



N=13	NKX6.1	CHGA	CDX2	SOX2	NKX2.2	PDX1	FOXA2	NEUROD
Overall Average	58.3	28.1	7.7	28.6	34.0	91.7	97.2	36.9
Overall Stdev	9.7	12.5	7.5	20.4	11.1	10.4	4.3	7.4

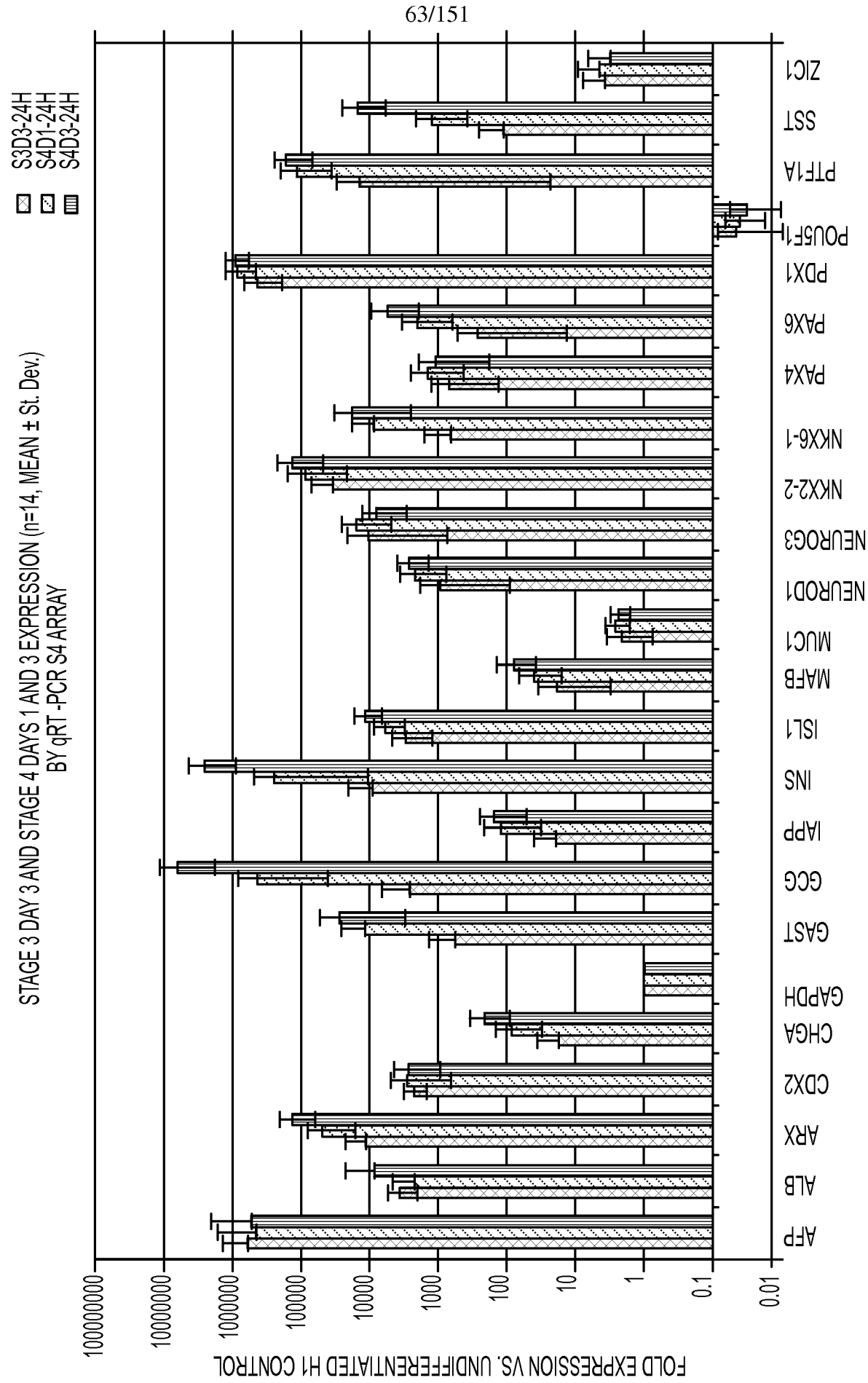


FIG. 28

Figure 29: Average FACS results
Stage 4 Day 3 (mean $\pm$ St. Dev.)

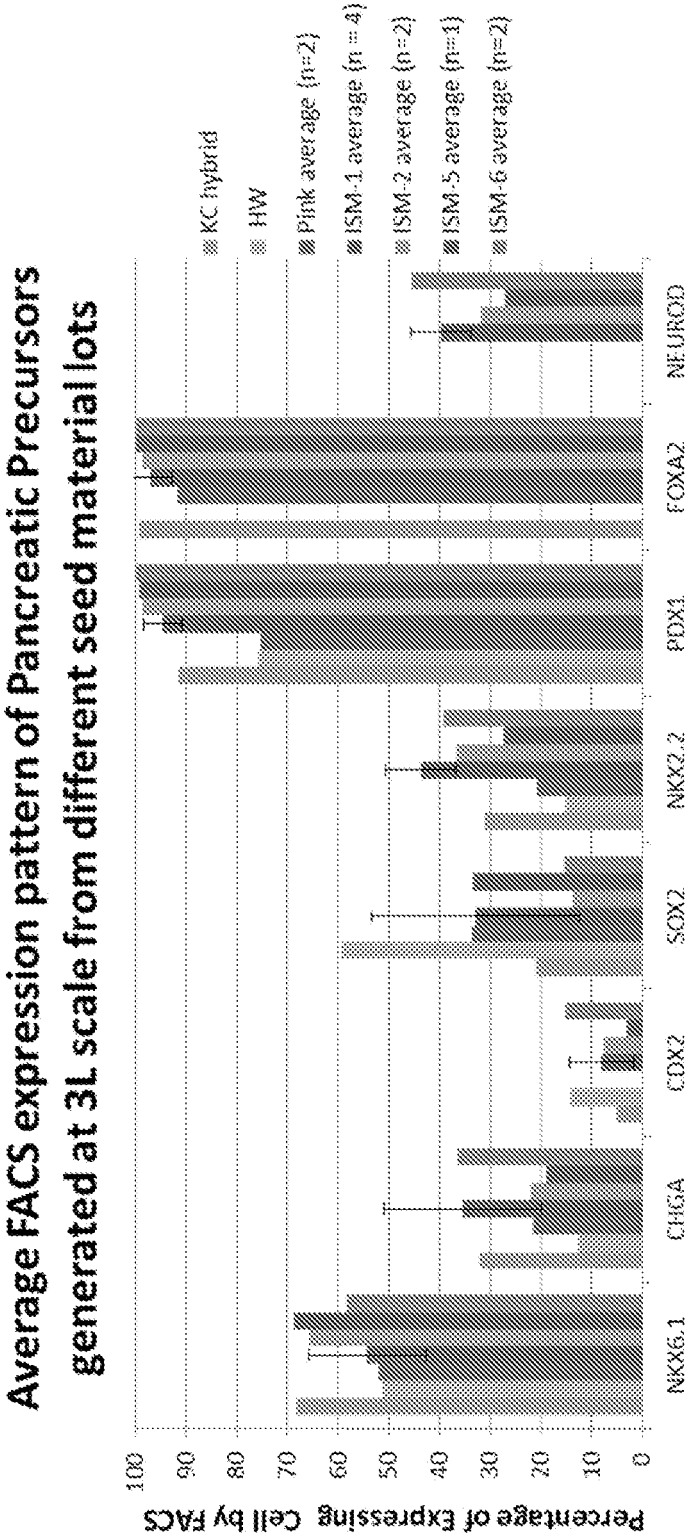


Figure 30: Average FACS results
Stage 4 Day 3 (mean $\pm$ St. Dev.)

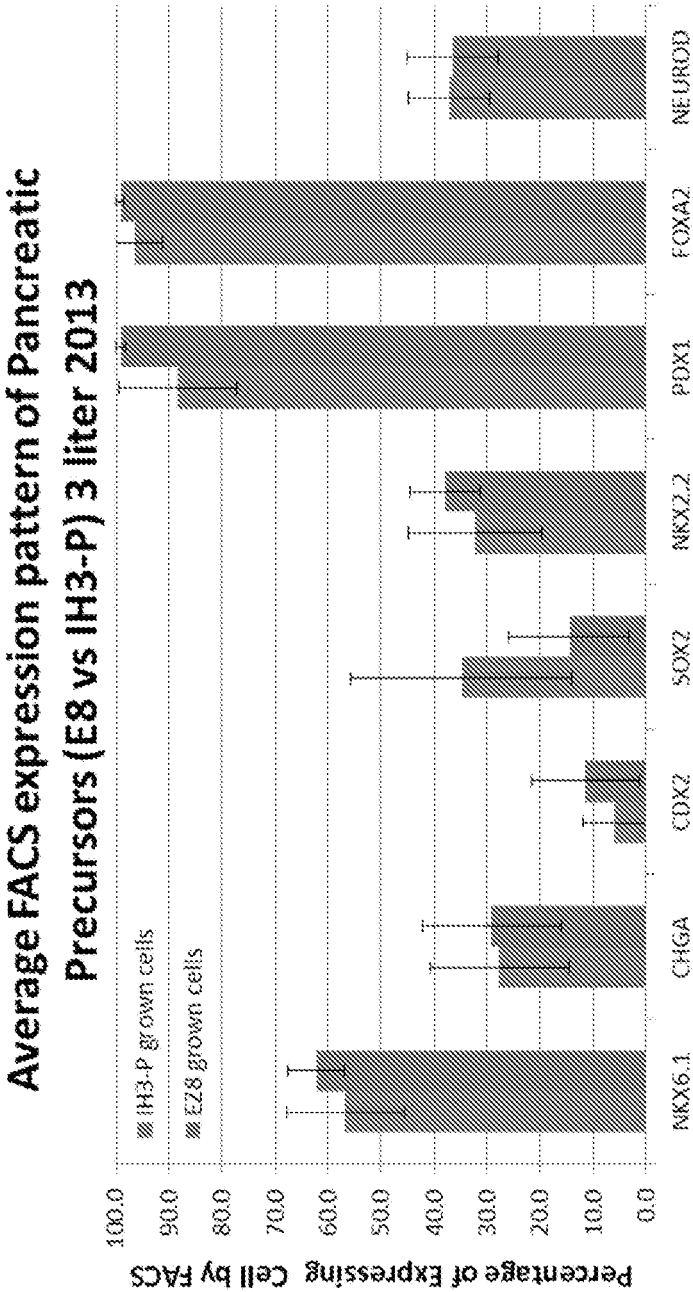


Figure 31: Average FACS results
Stage 4 Day 3 (mean $\pm$ St. Dev.)

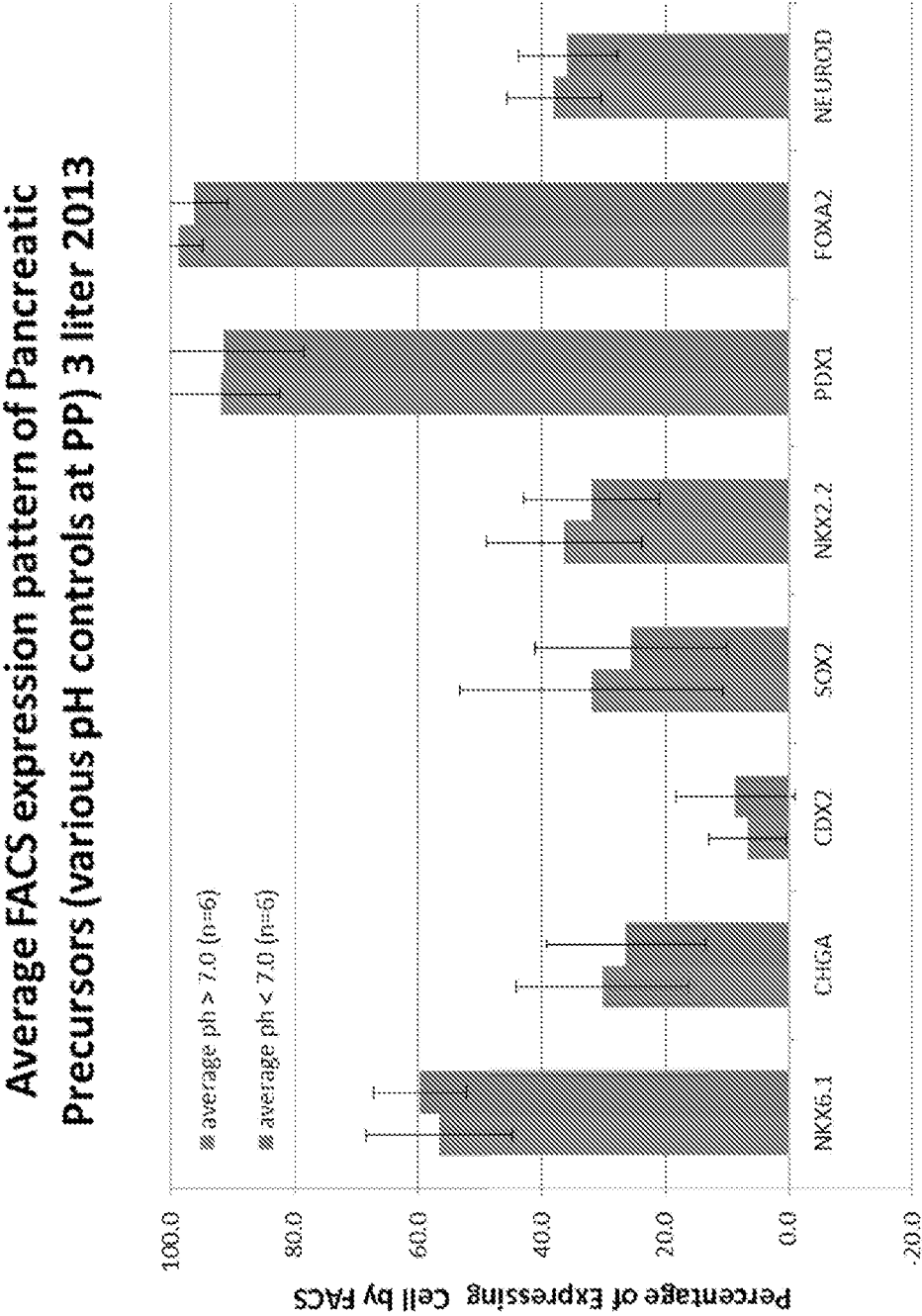


Figure 32: Average FACS results
Stage 4 Day 3 (mean $\pm$ St. Dev.)
vs. Run using Anti-Foam C

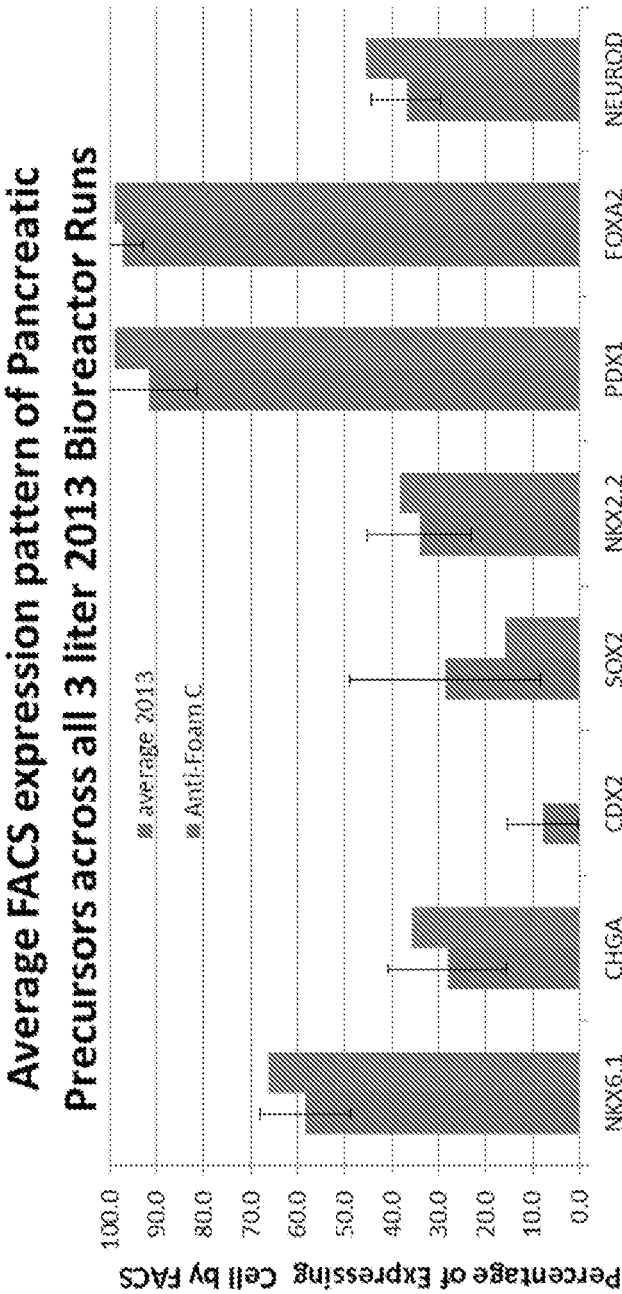


Figure 33: qRT-PCR Expression levels 24 hours prior to start of differentiation

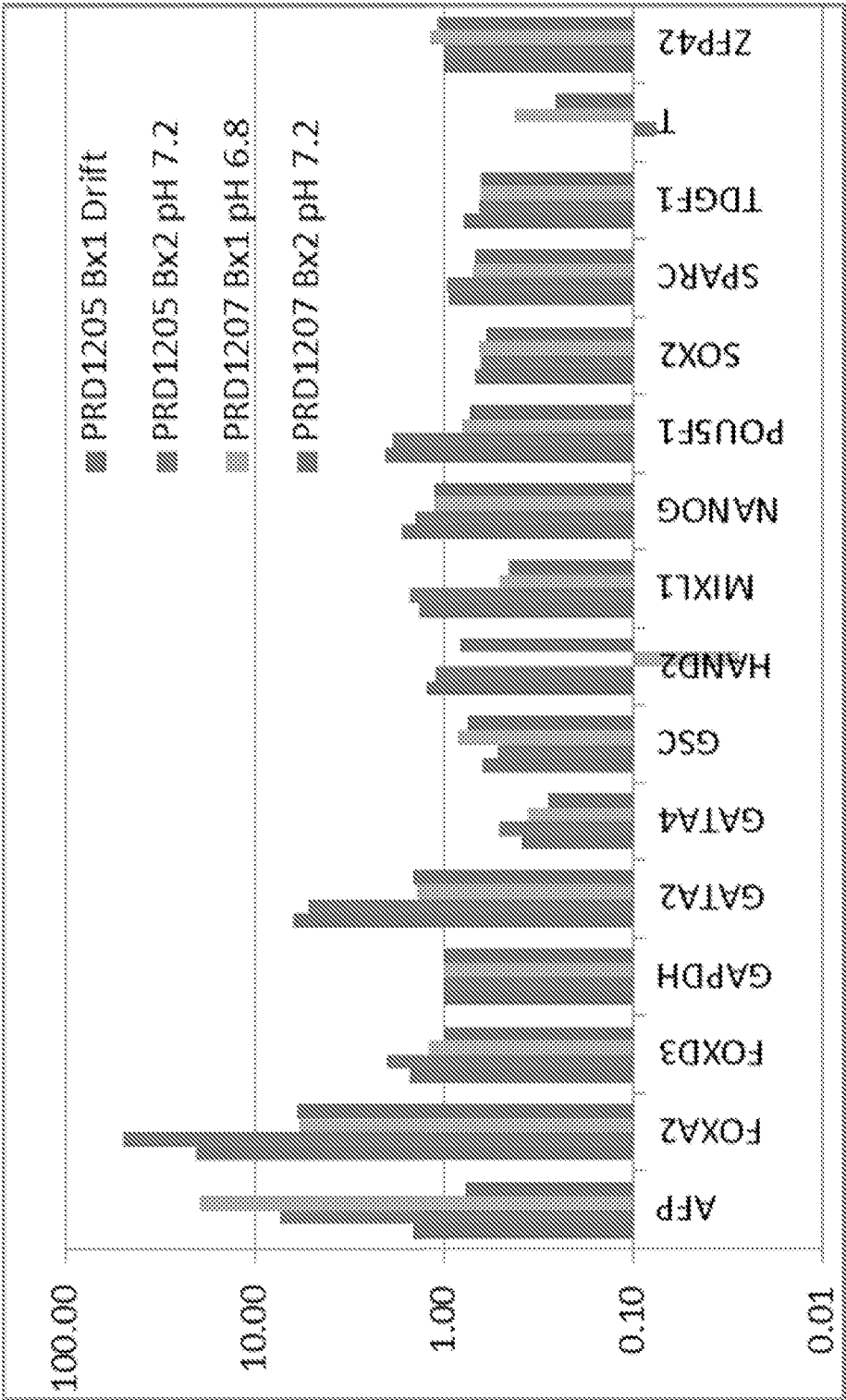


Figure 34: qRT-PCR Expression levels 24 hours after the start of differentiation

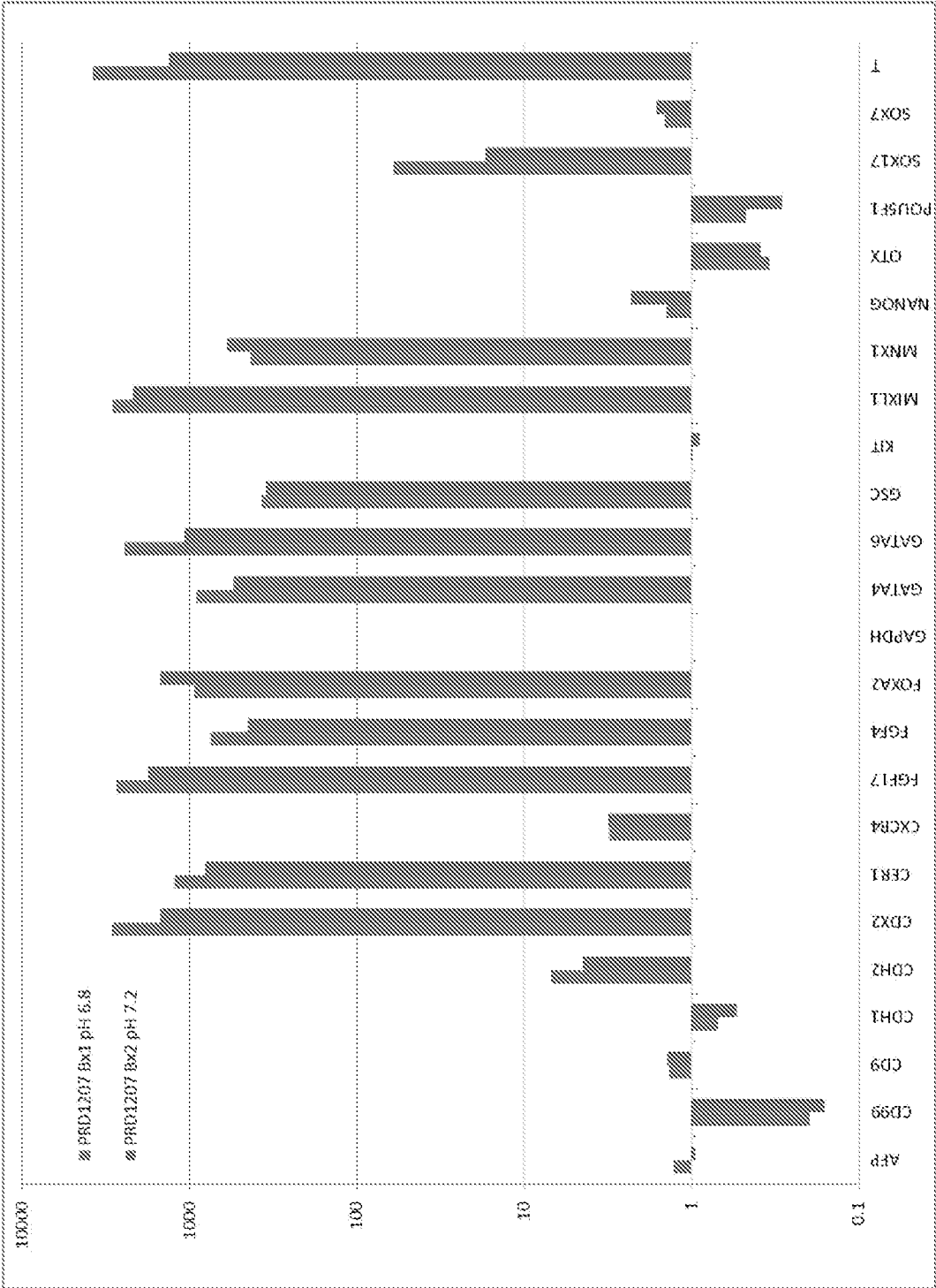


Figure 35: qRT-PCR Expression levels 72 hours after the start of differentiation

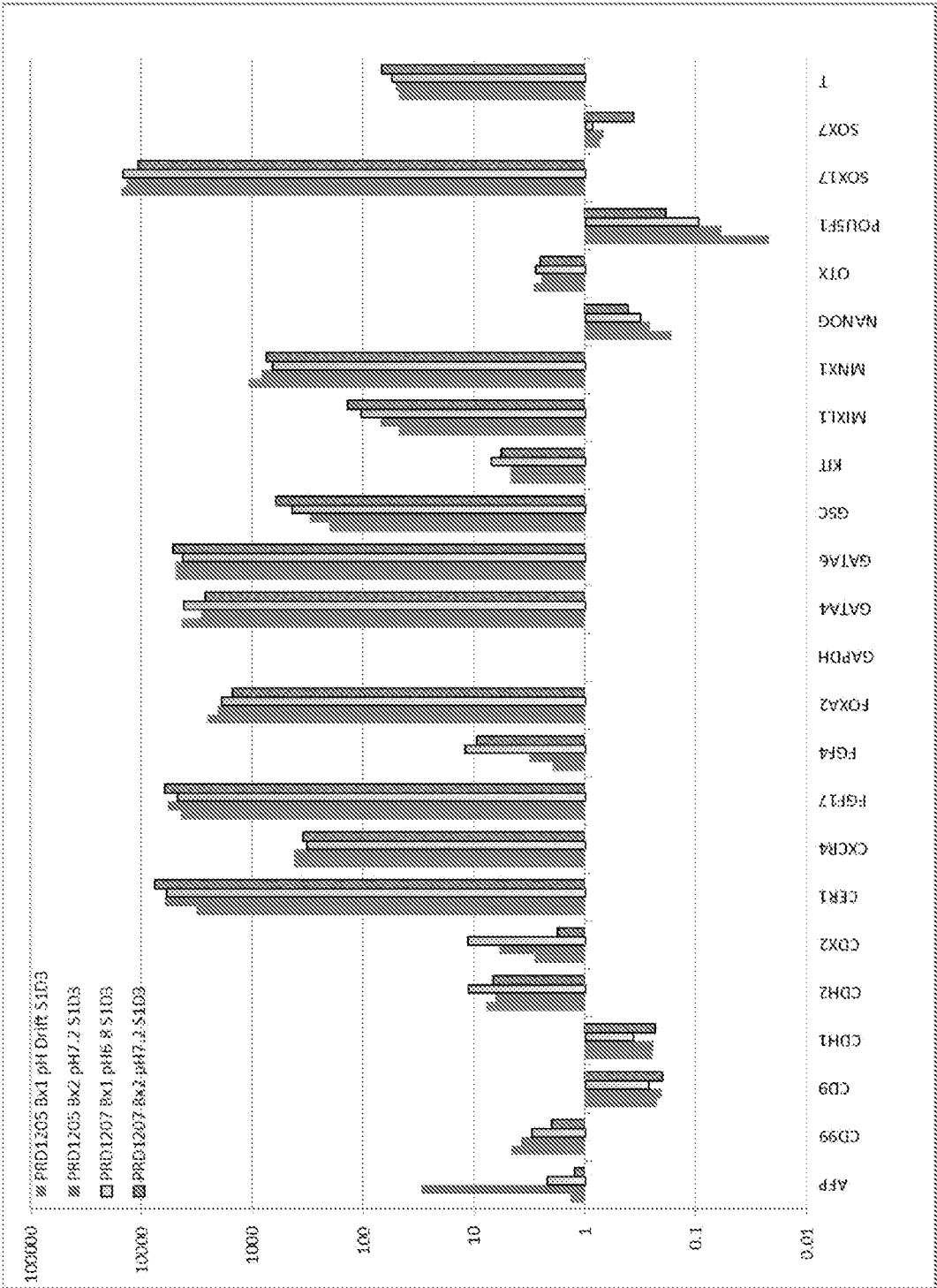


Figure 36(a): qRT-PCR Expression levels from Stage 2 to Stage 3 and 4 of

differentiation

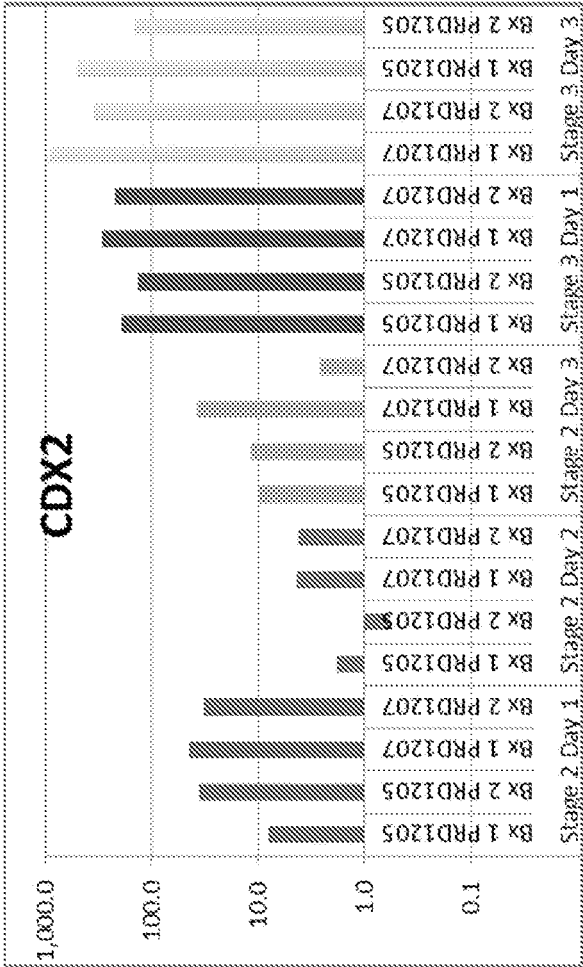
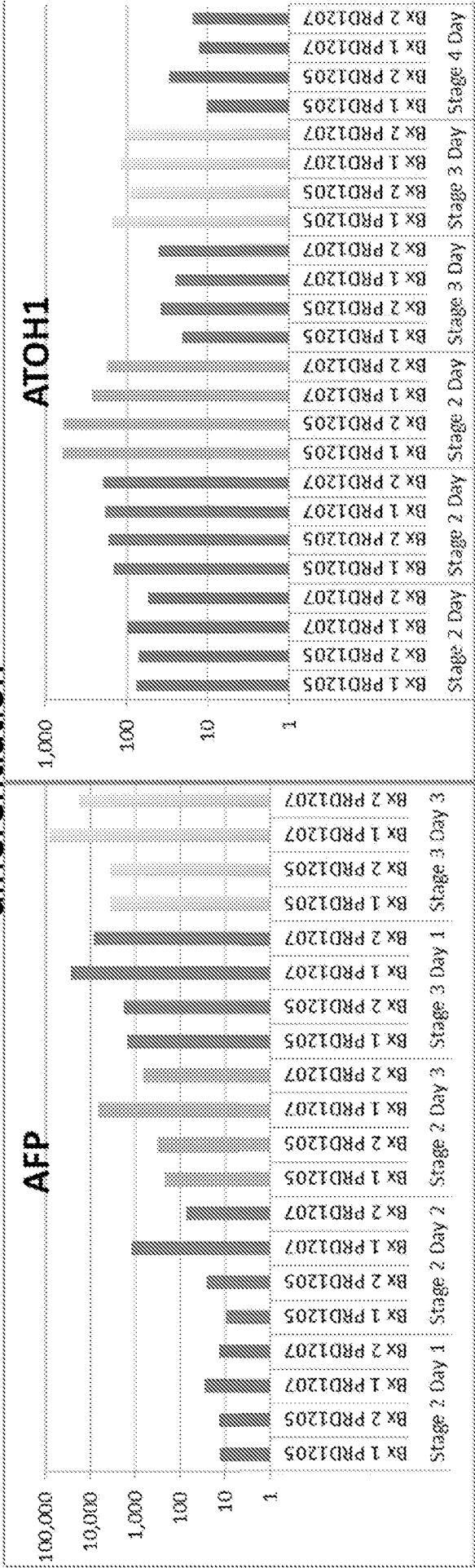


Figure 36(b) cont.: qRT-PCR Expression levels from Stage 2 to Stage 3 and 4 of differentiation

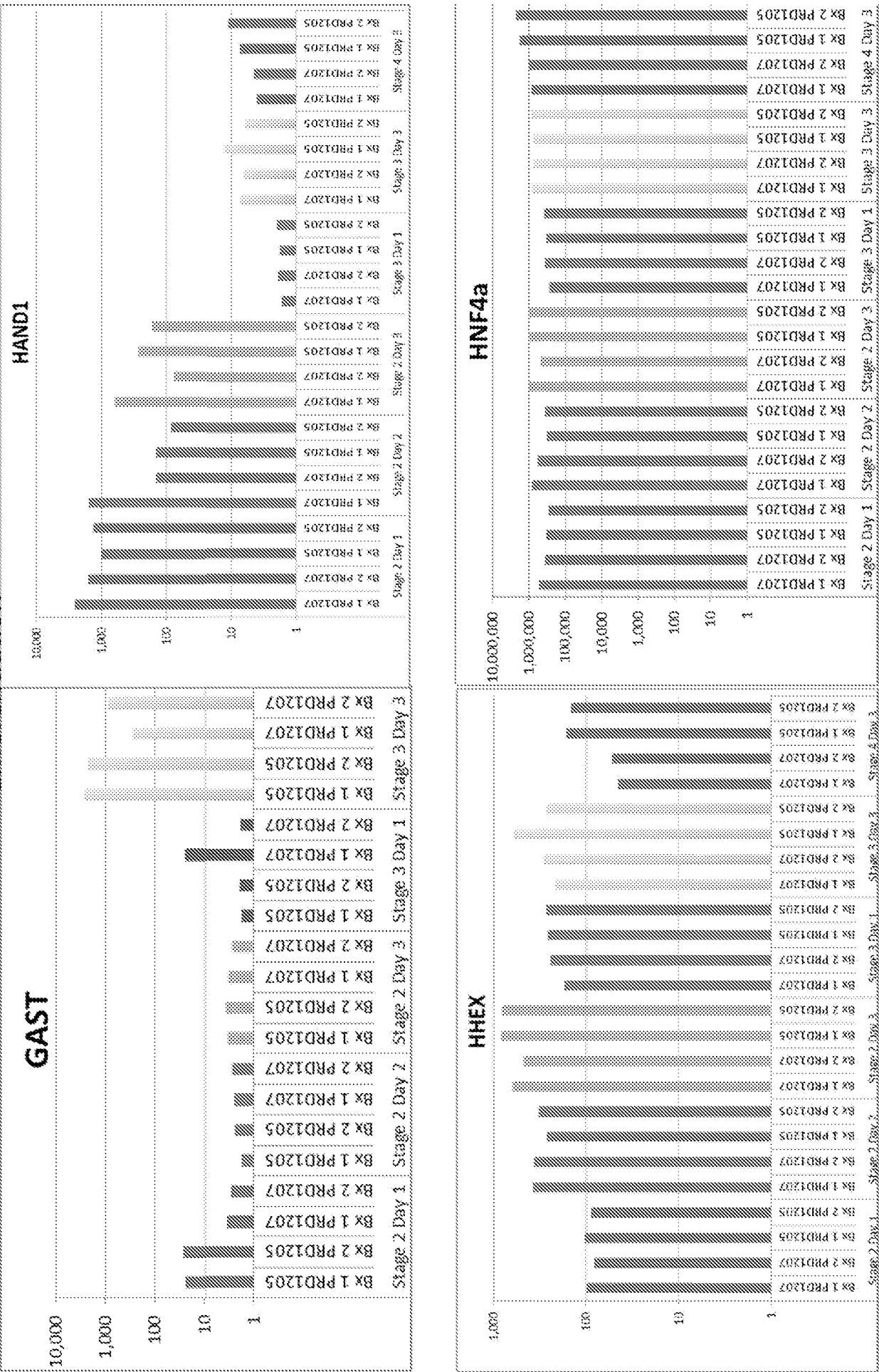


Figure 36(c) cont.: qRT-PCR Expression levels from Stage 2 to Stage 3 and 4 of differentiation

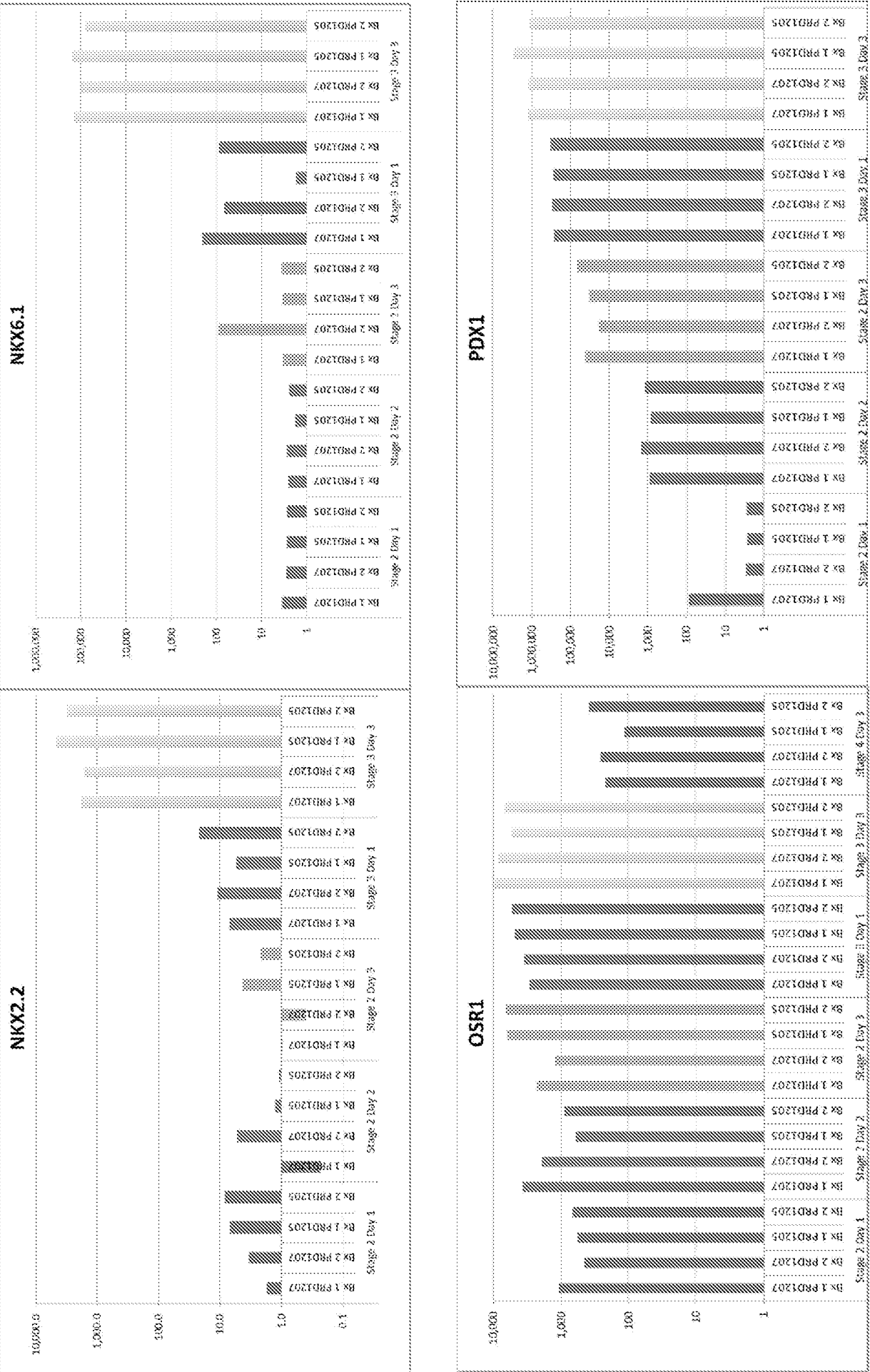


Figure 36(d) cont.: qRT-PCR Expression levels from Stage 2 to Stage 3 and 4 of differentiation

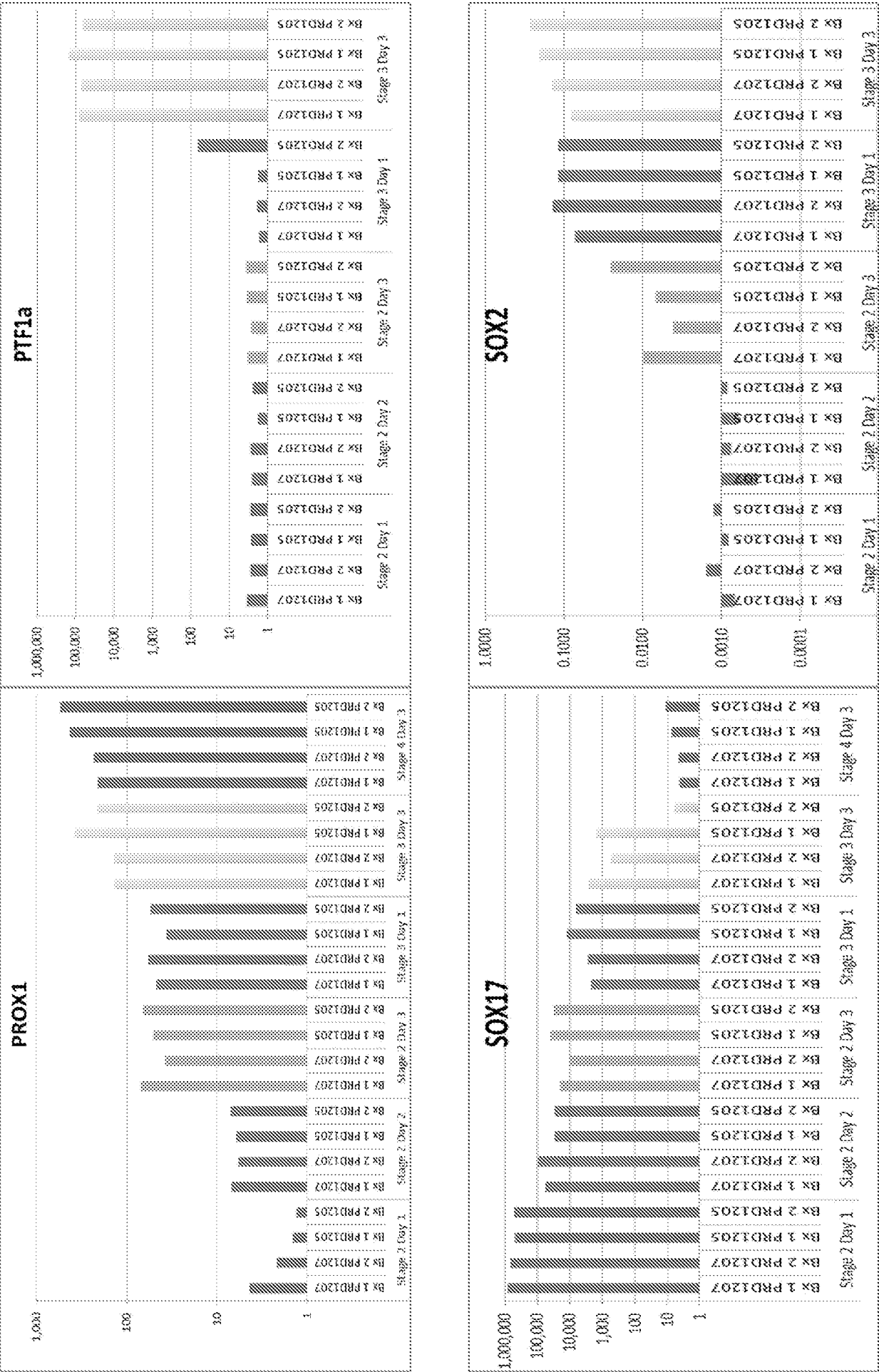


Figure 36(e) cont.: qRT-PCR Expression levels from Stage 2 to Stage 3 and 4 of differentiation

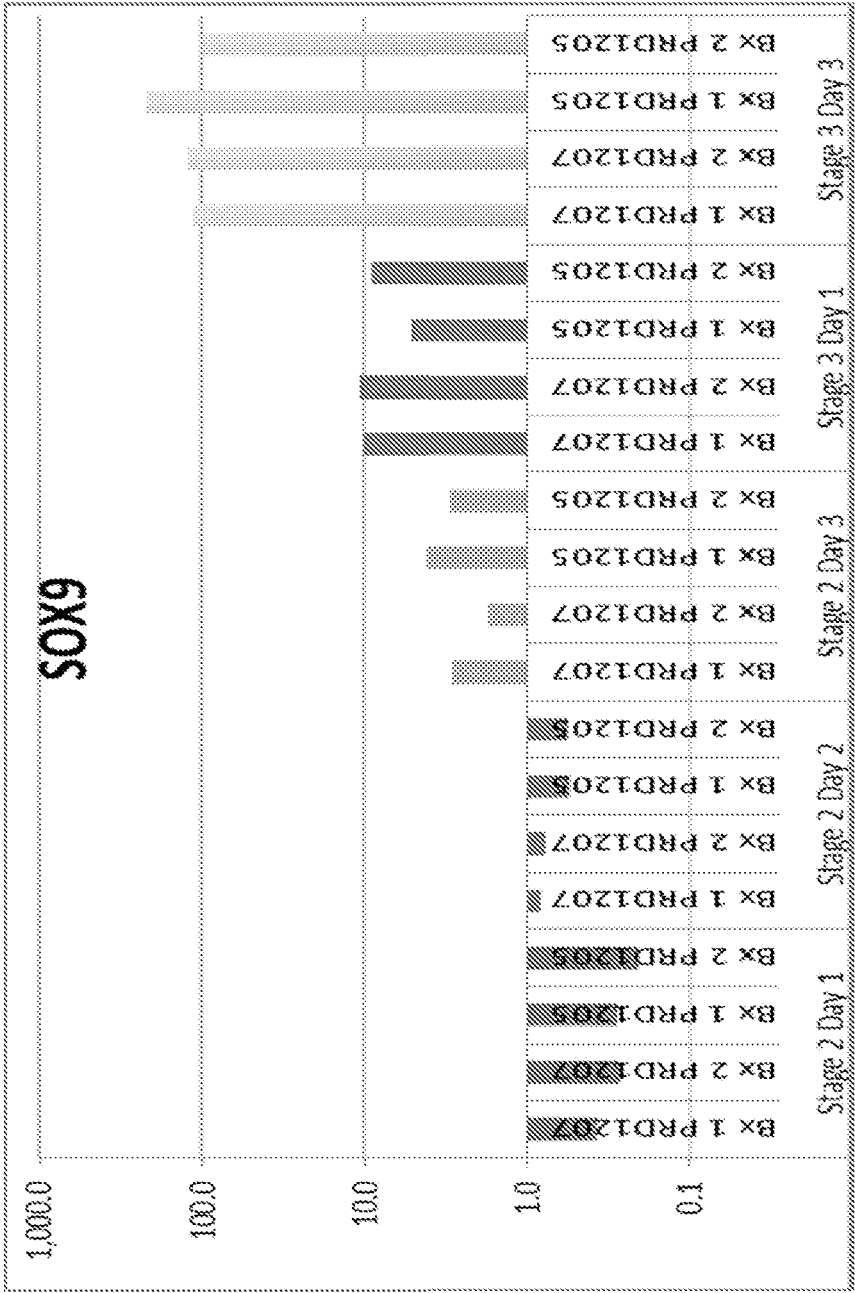


Figure 37: qRT-PCR Expression levels at Stage 4
Day 3 of differentiation

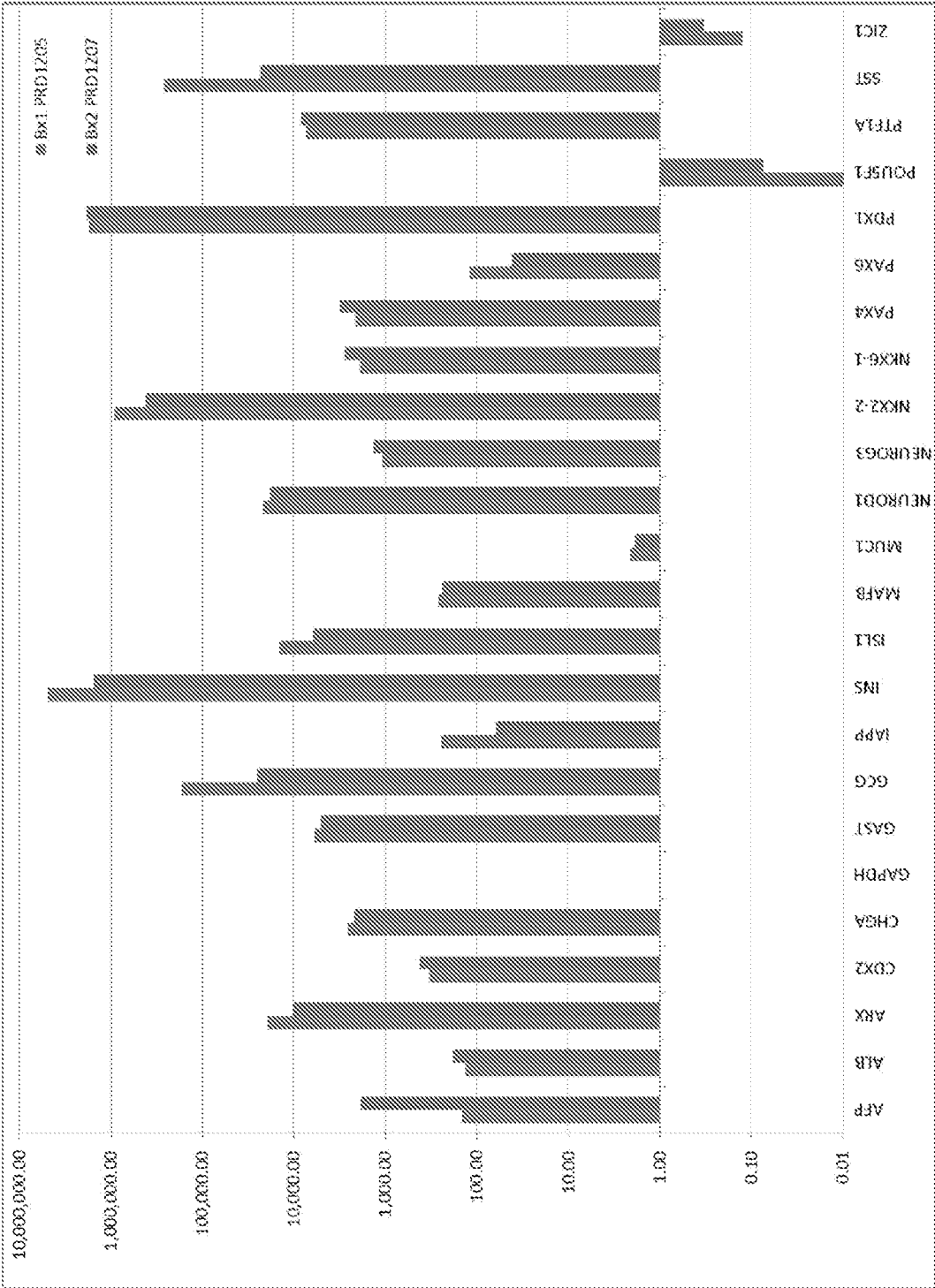


Figure 38: Cell Density in the bioreactor

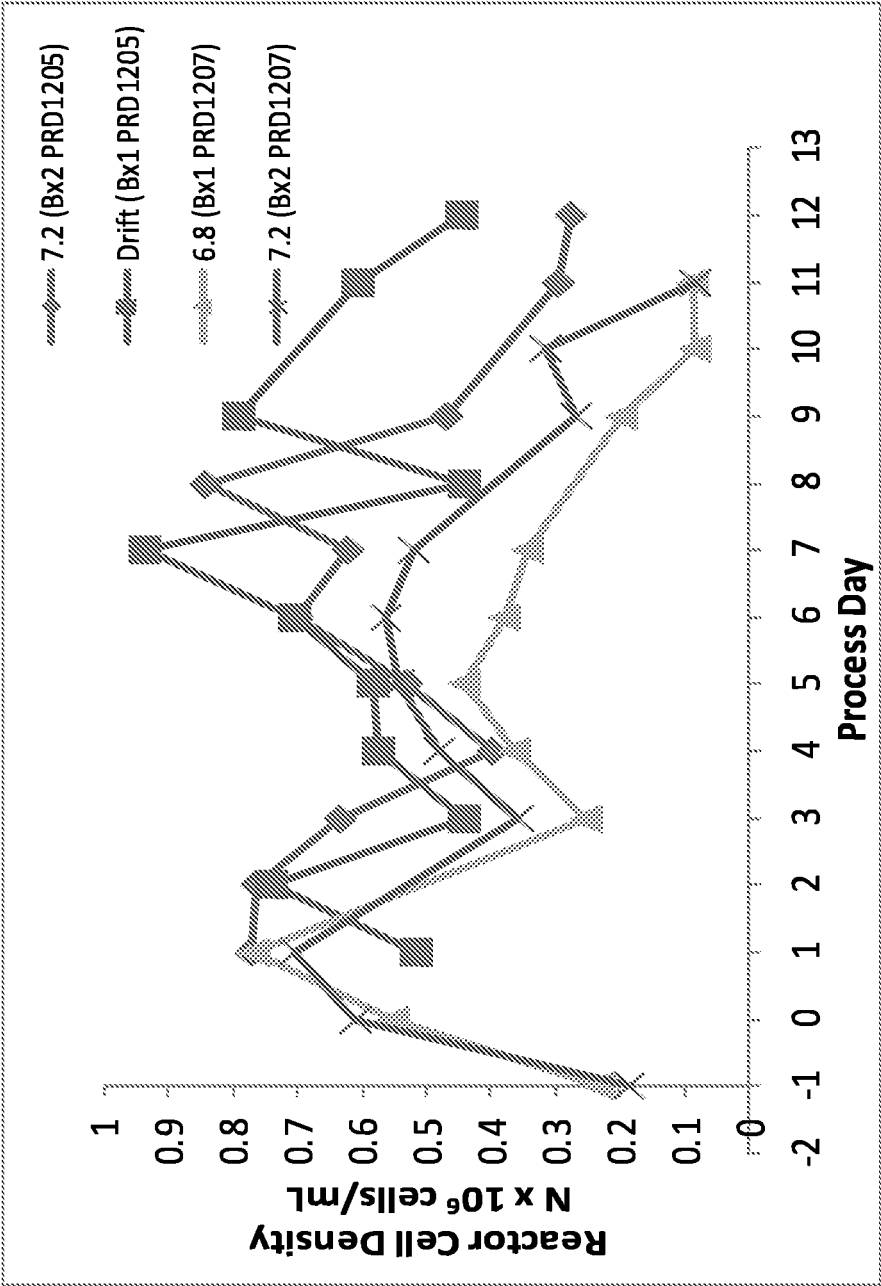


Figure 39(a): Stage 4 Day 3 bioreactor product
function *in vivo*

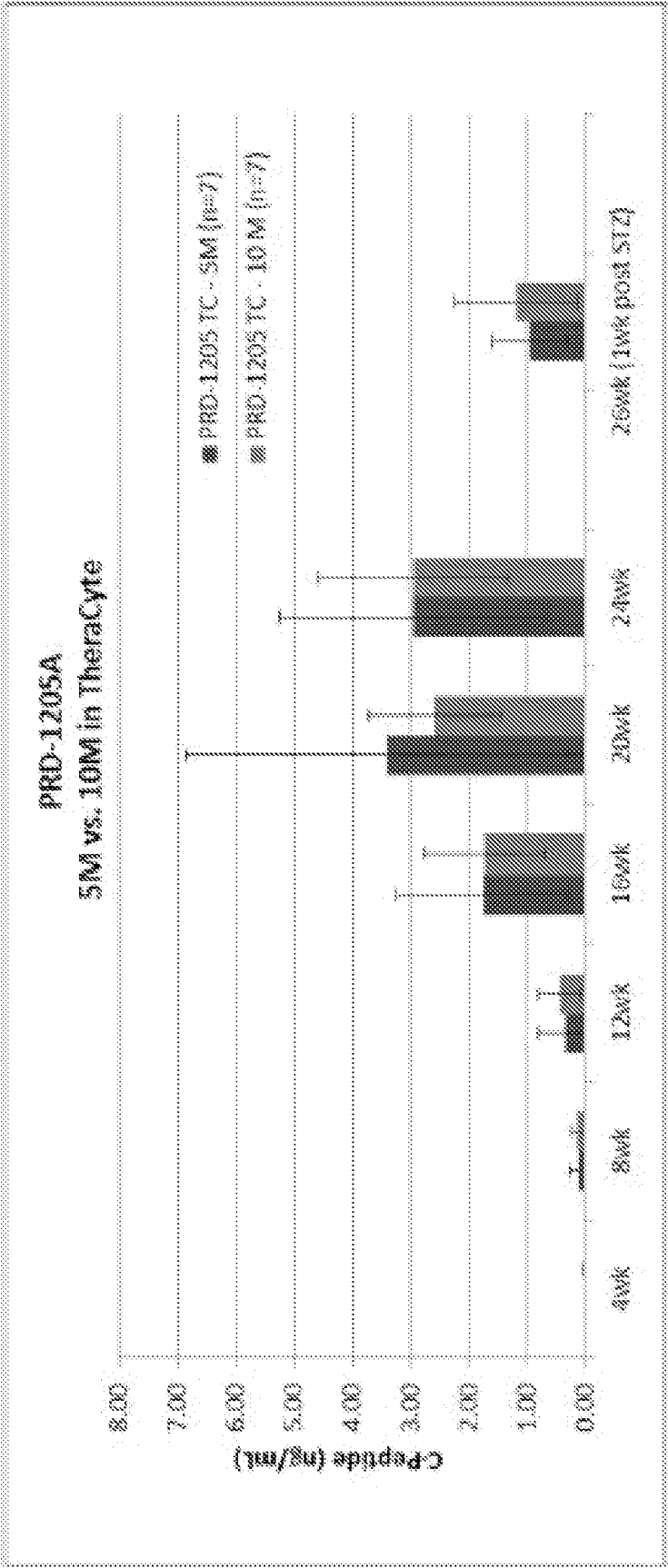


Figure 39(b): Stage 4 Day 3 bioreactor product
function *in vivo*

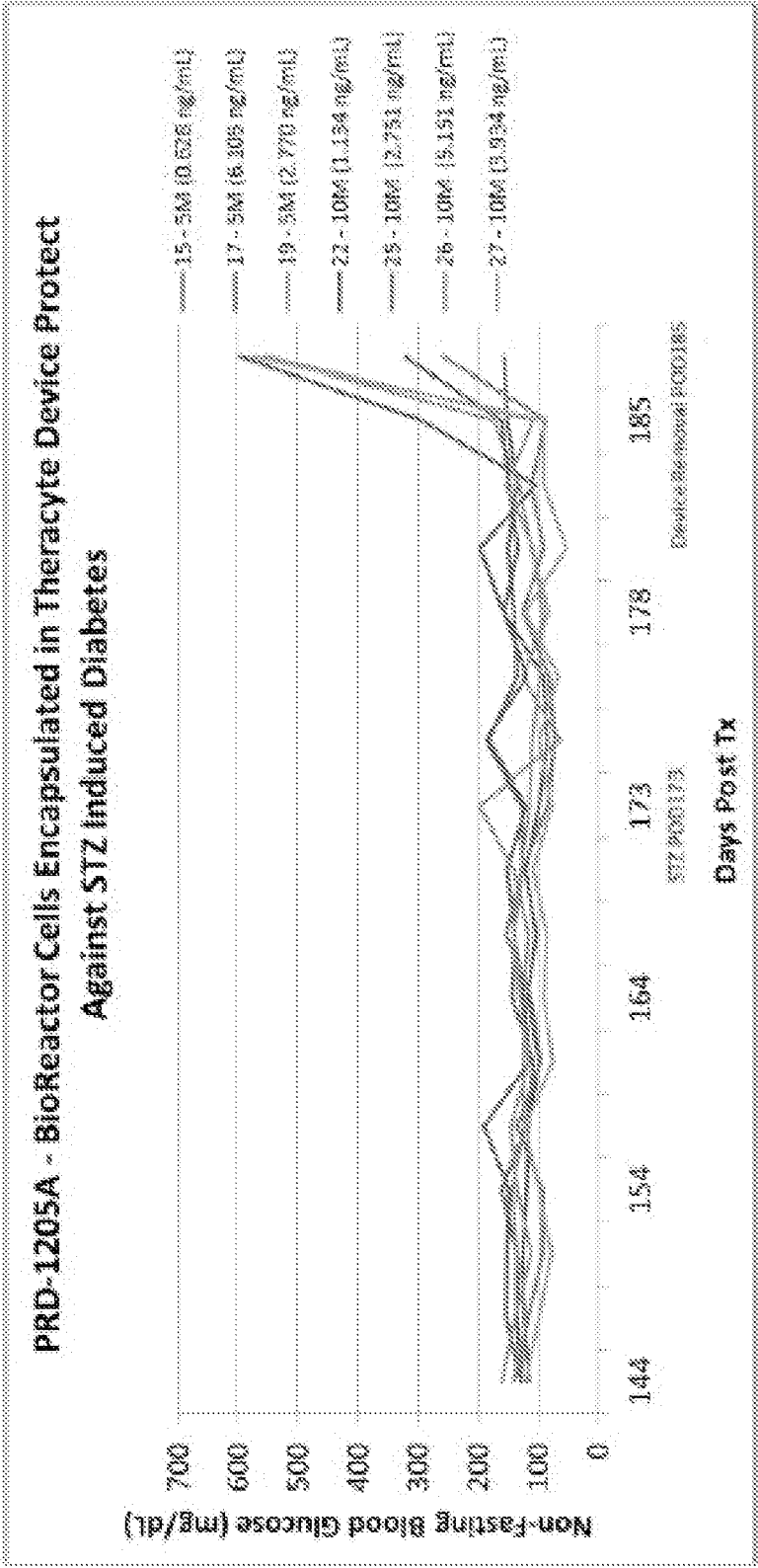


Figure 39(c): Stage 4 Day 3 bioreactor product
function *in vivo*

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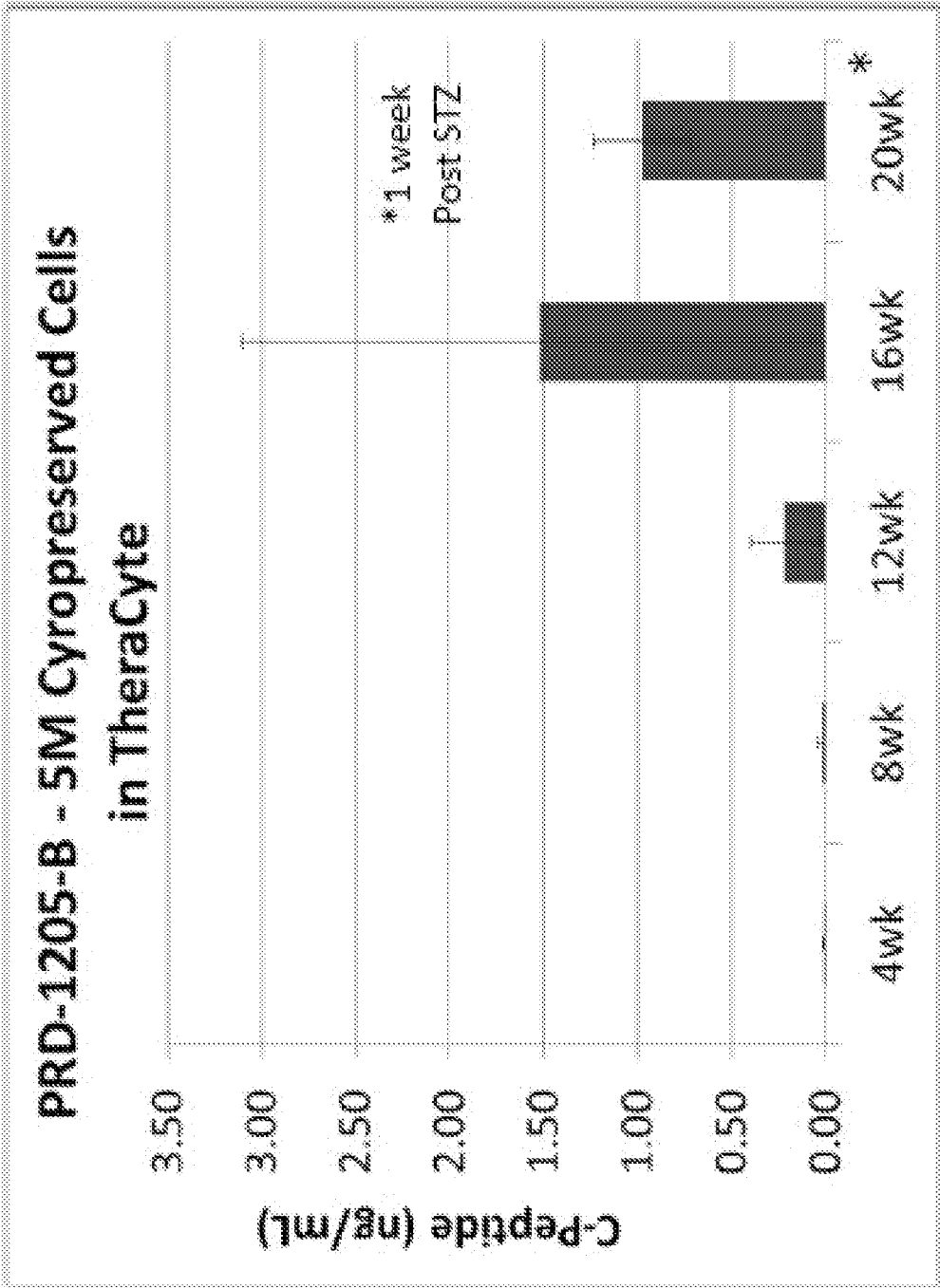


Figure 39(d): Stage 4 Day 3 bioreactor product
function *in vivo*

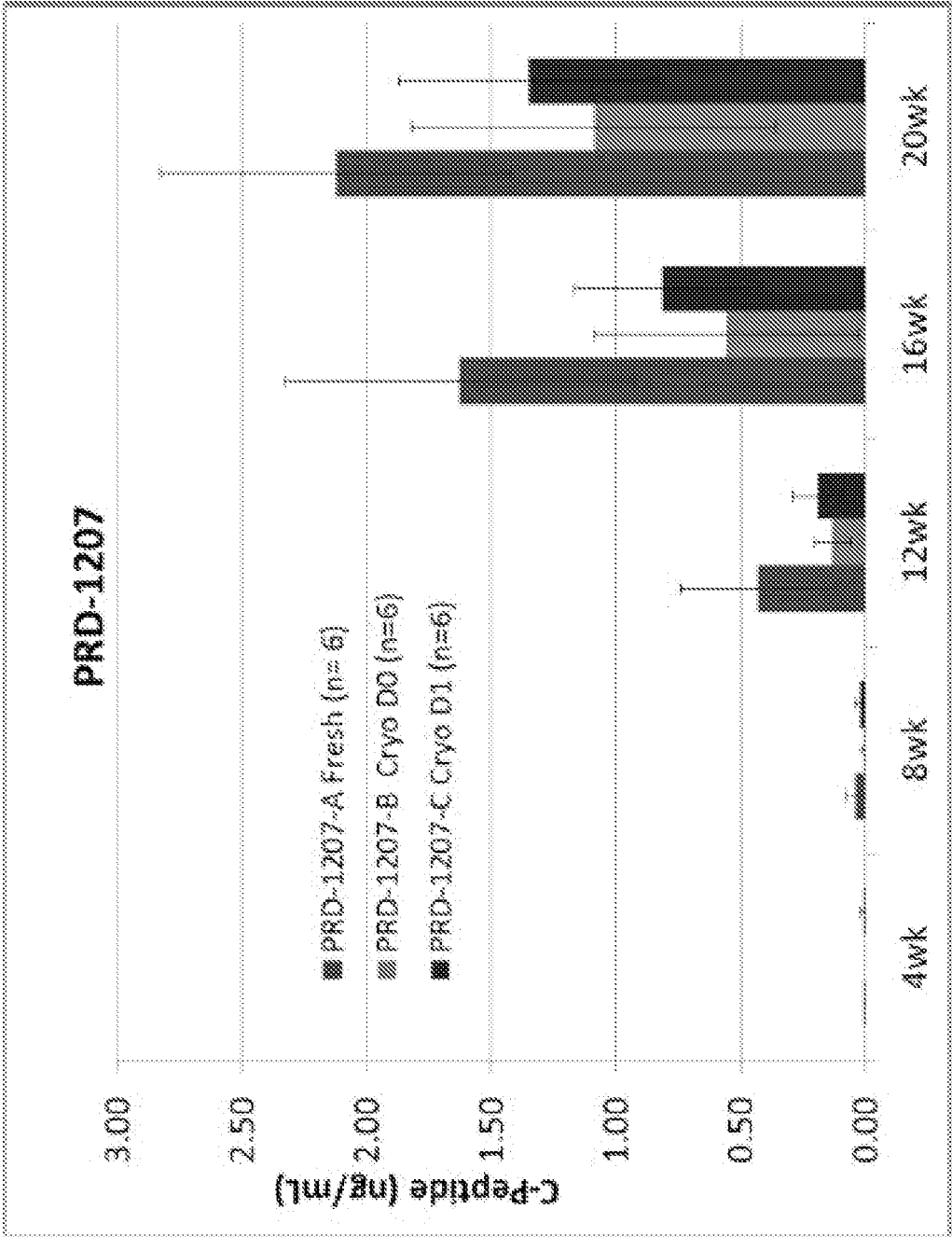


Figure 40A

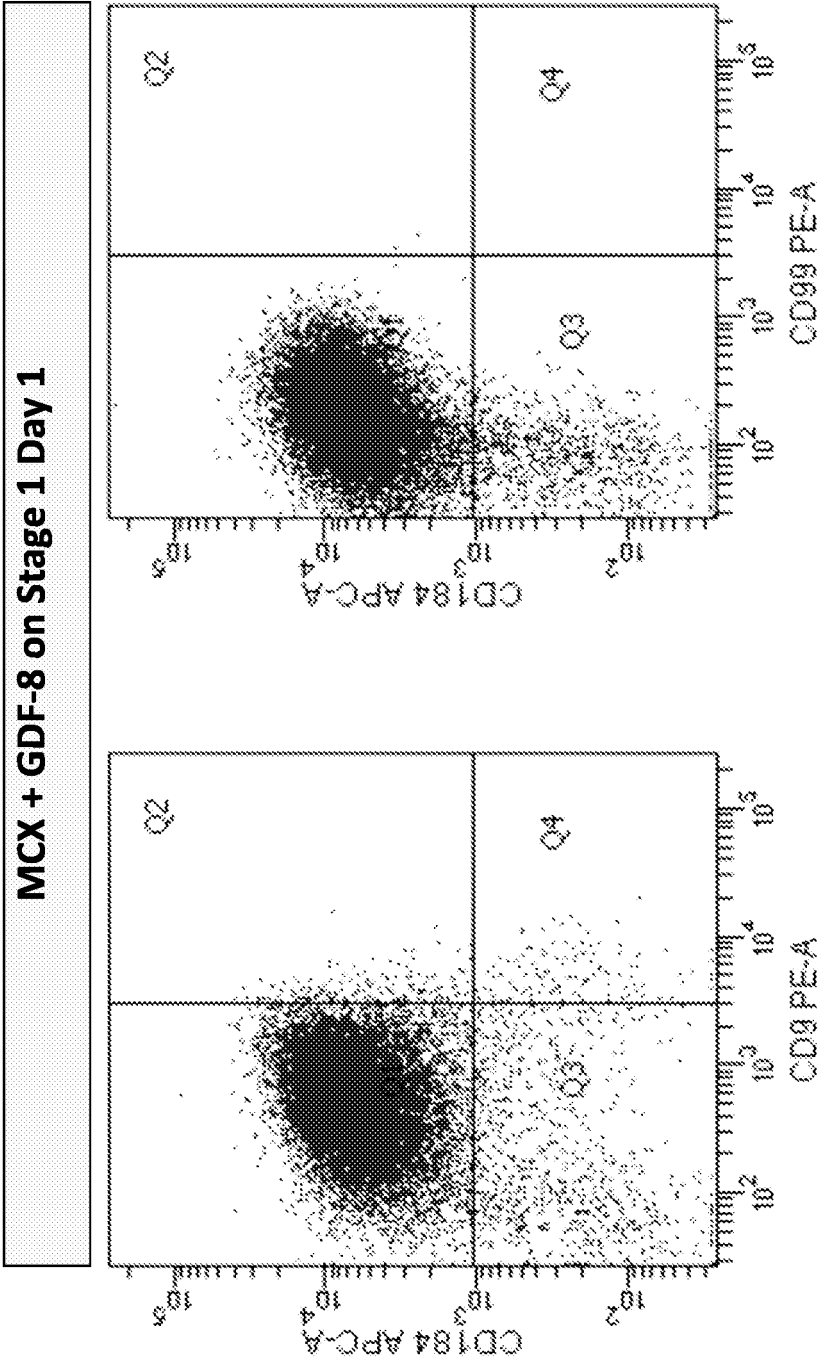


Figure 40B

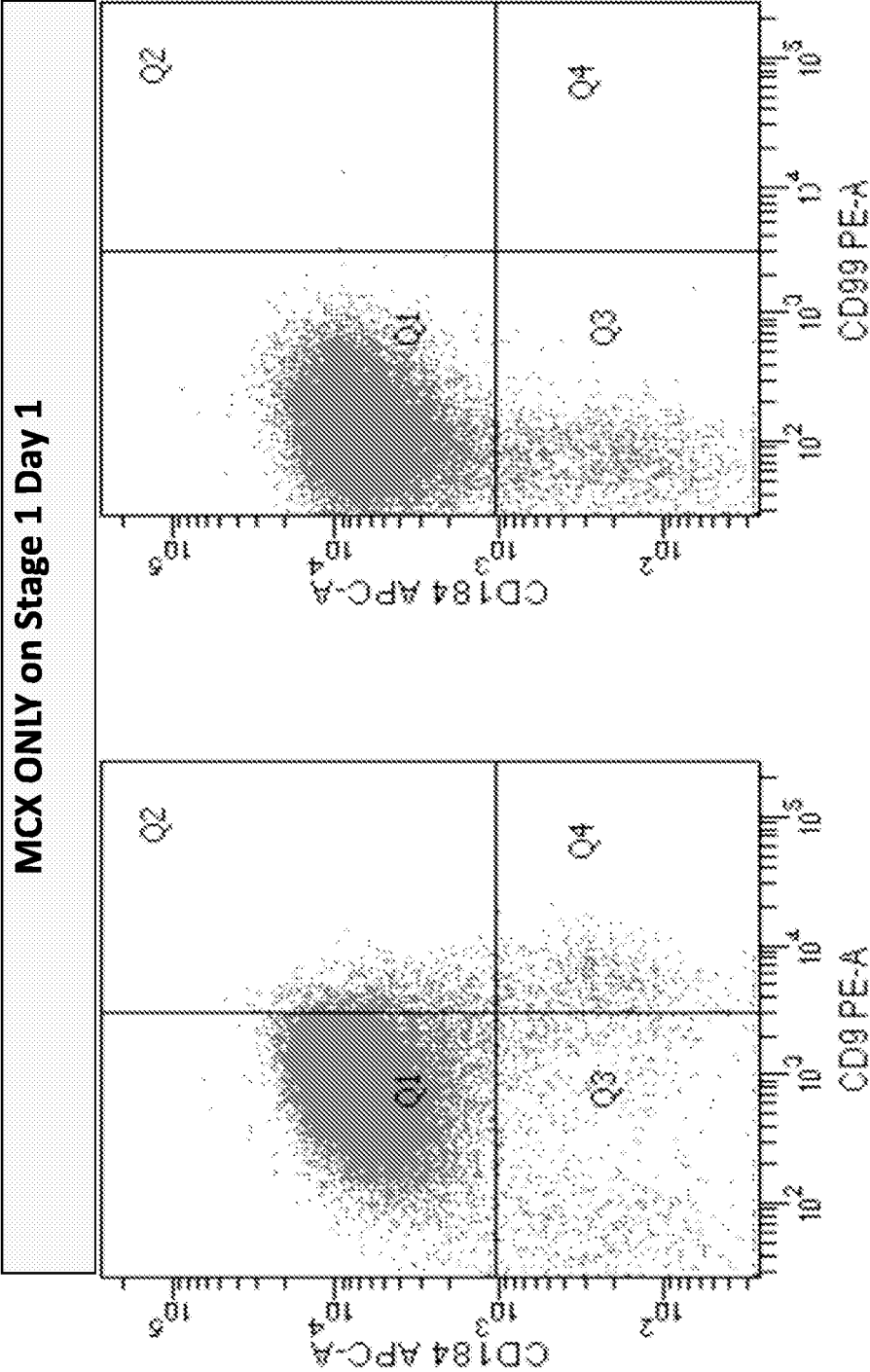


Figure 40C

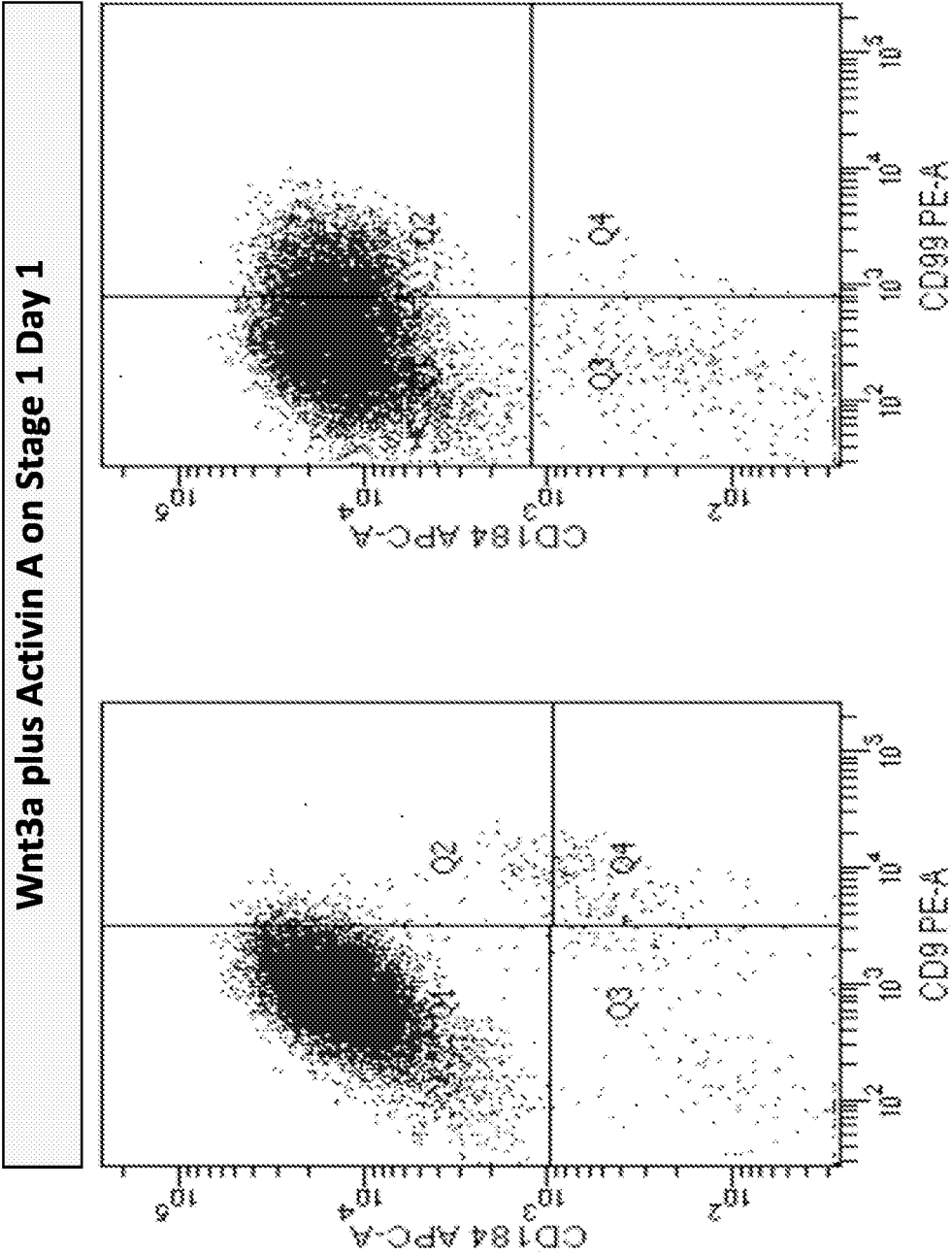
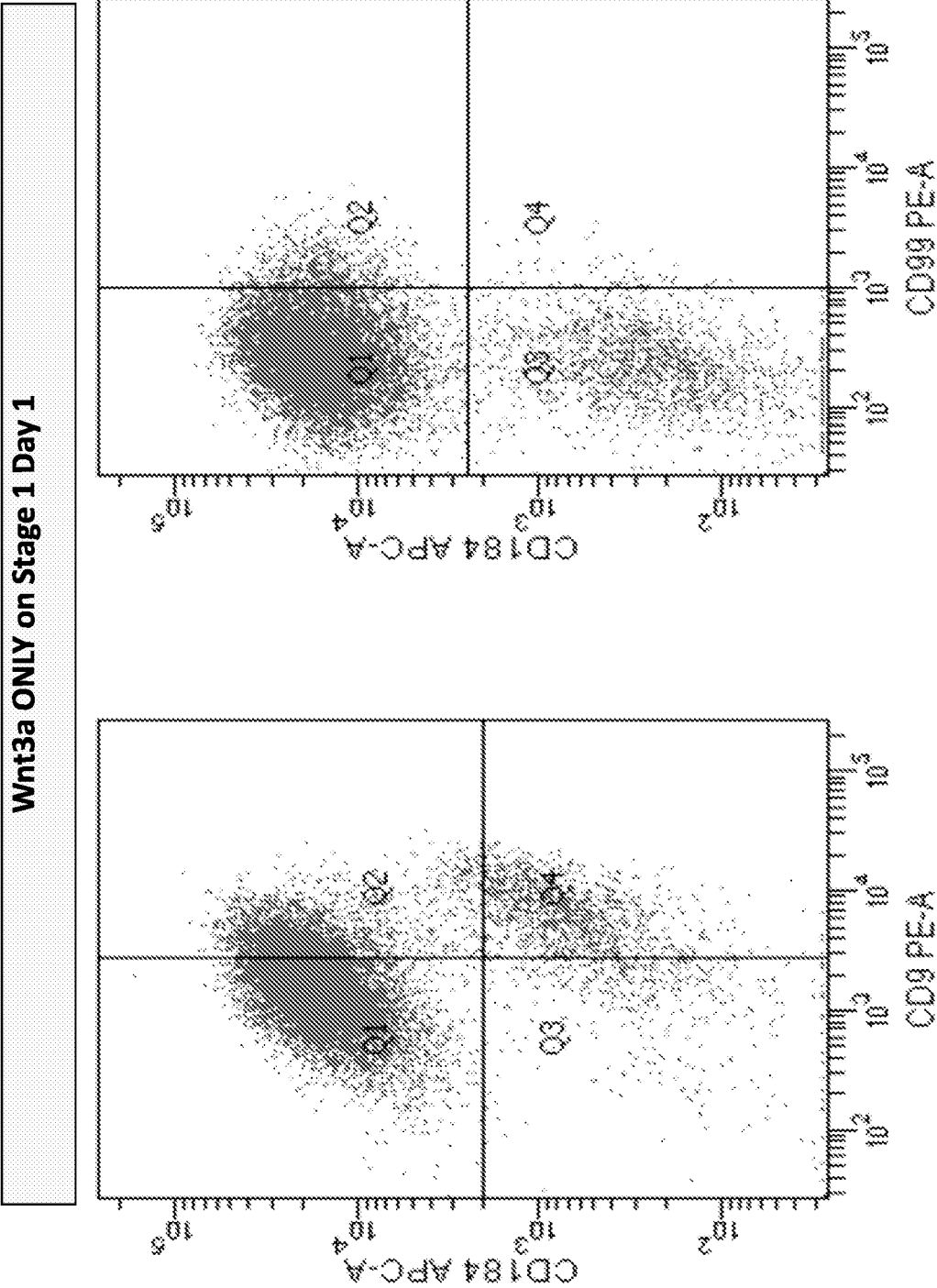


Figure 40D



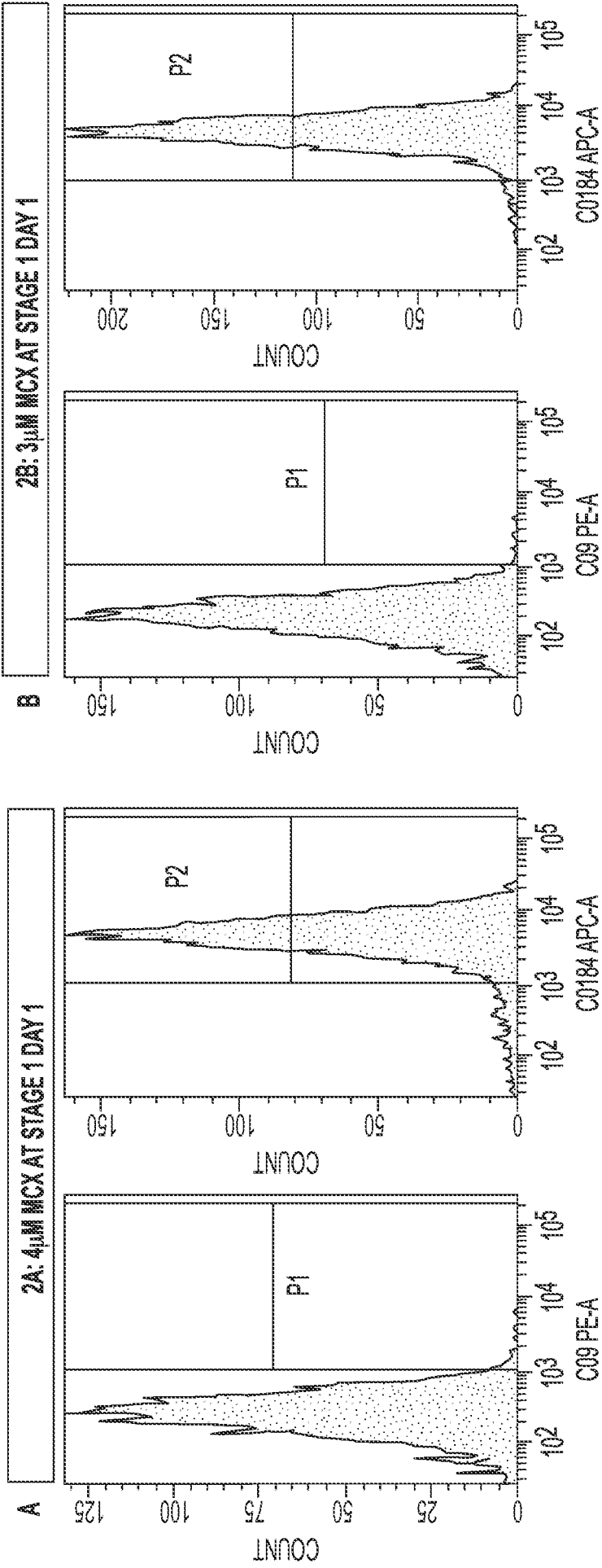


FIG. 41

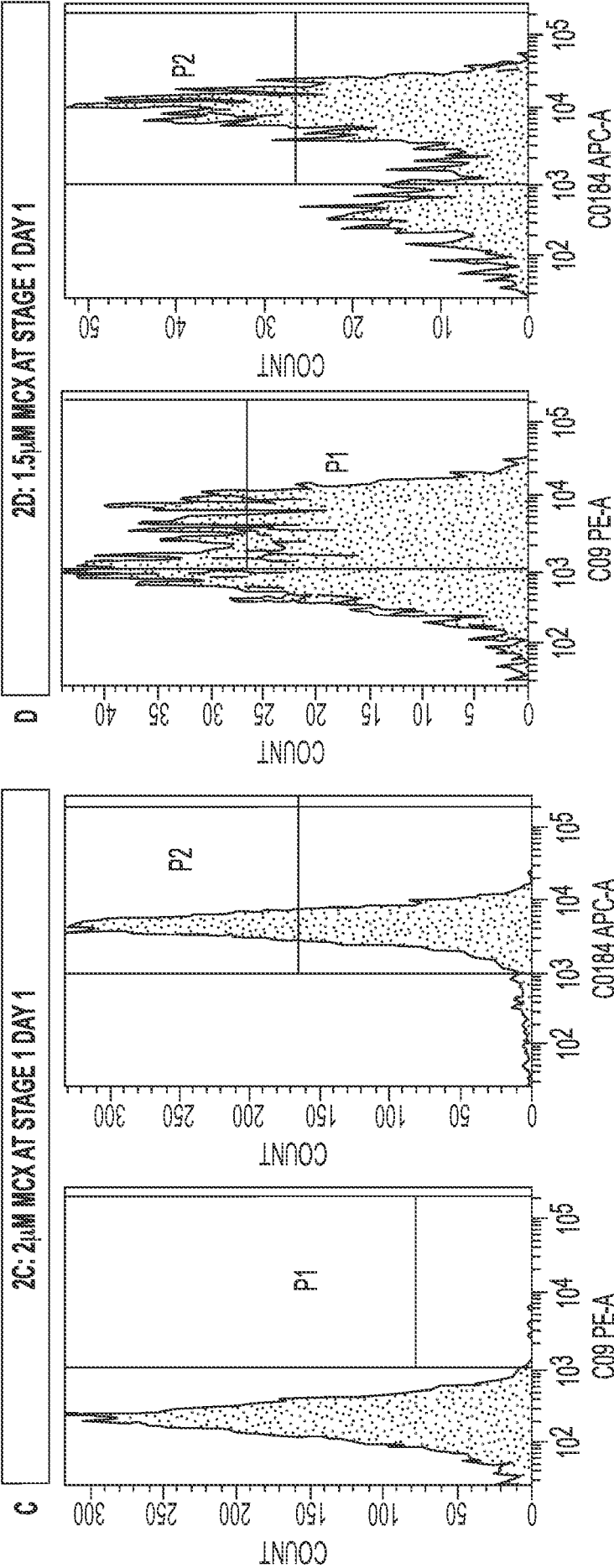


FIG. 41 (Continued)

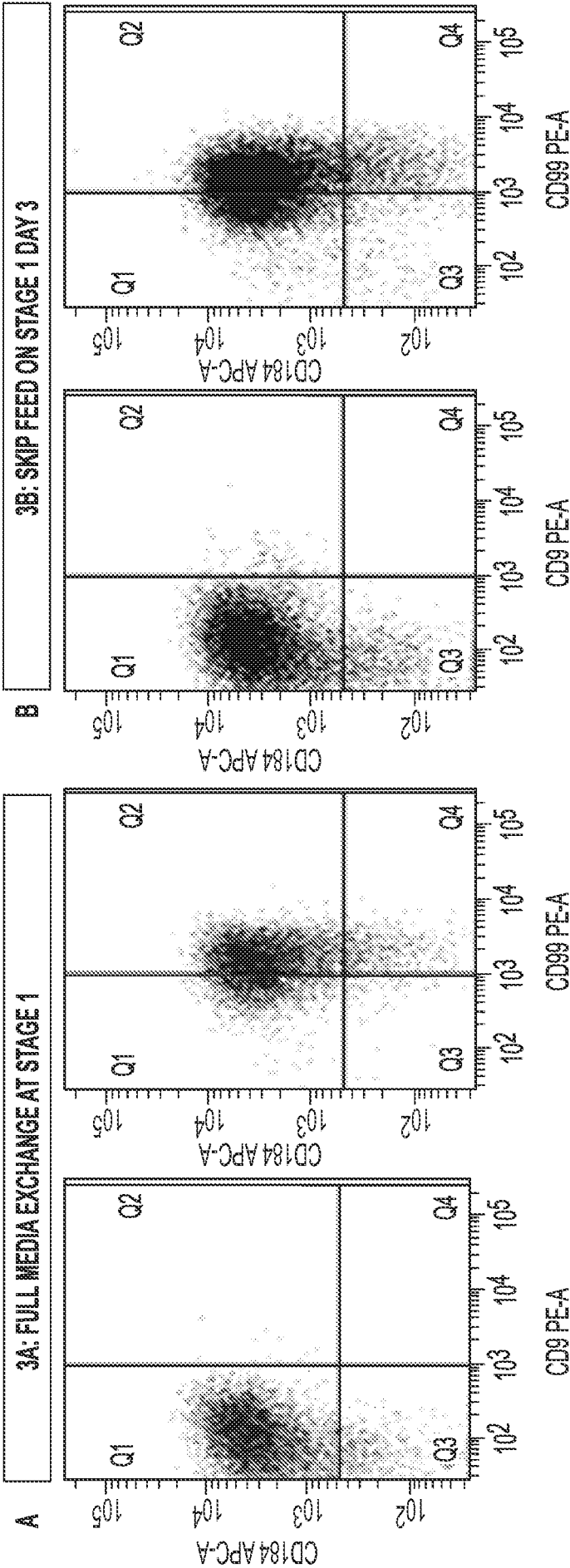


FIG. 42

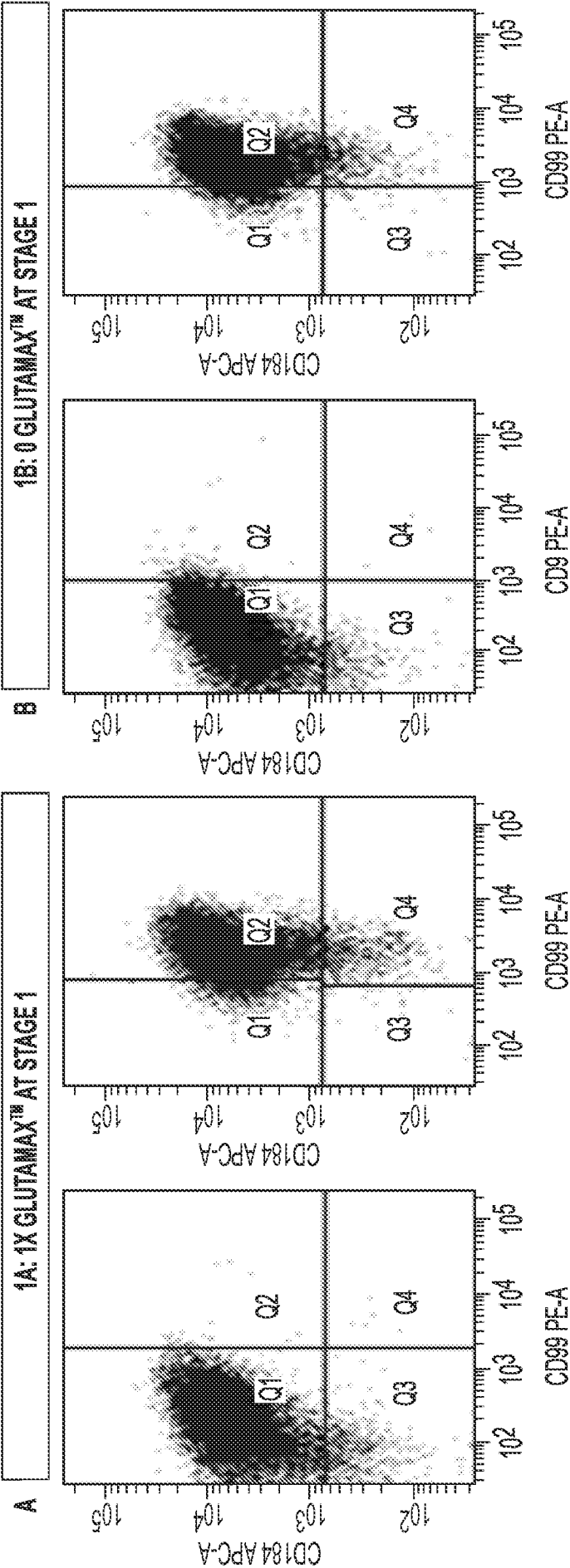


FIG. 43

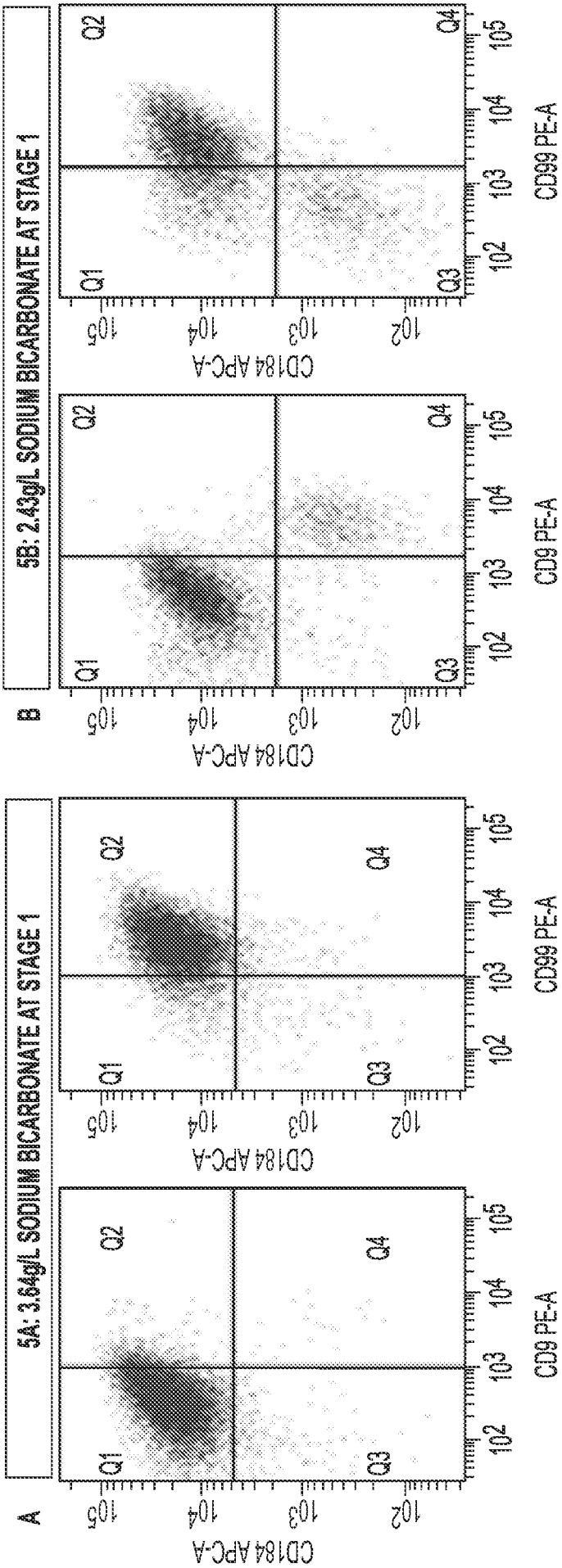


FIG. 44

Figure 44 (continued)

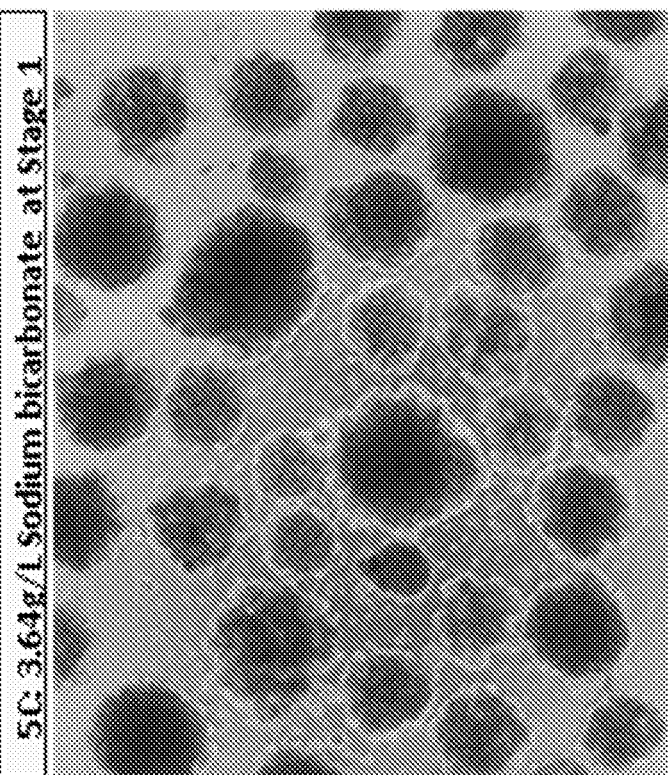
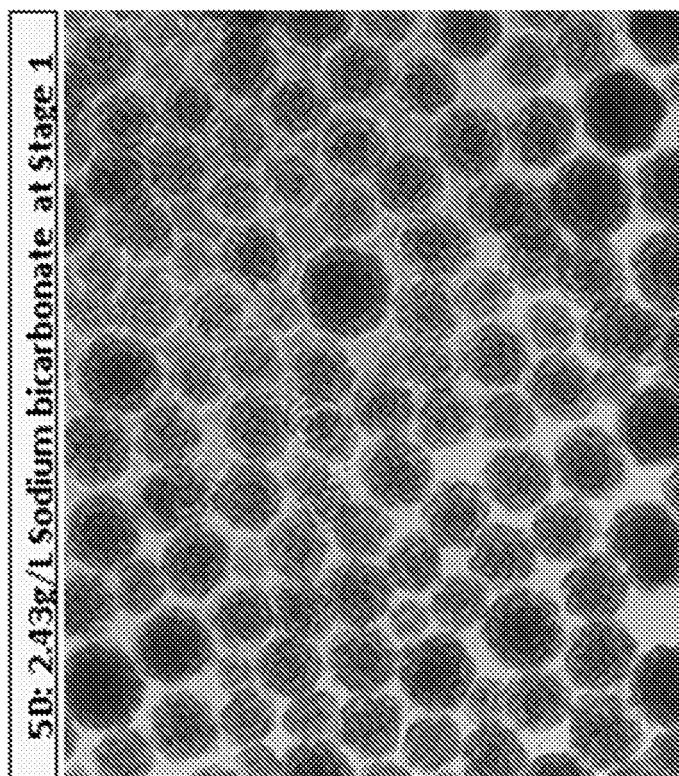
C**D**

Figure 45: Daily Counts for Cell Density

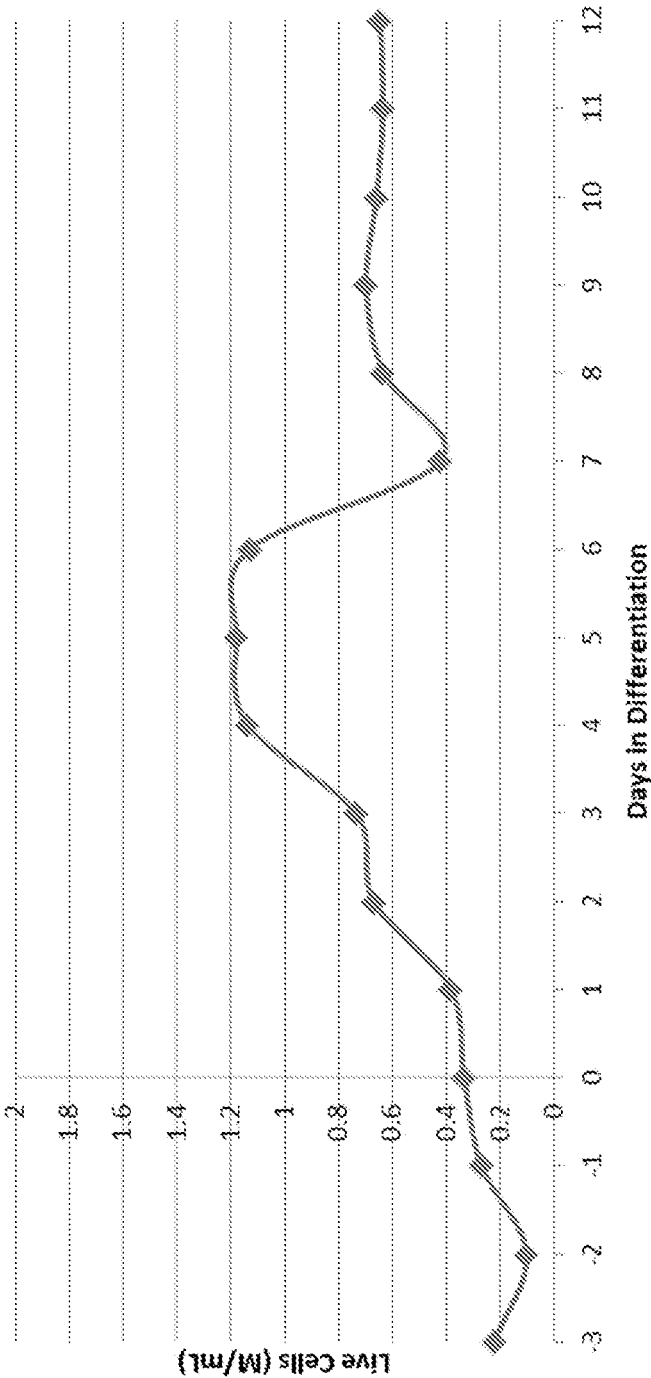


Figure 46: Daily Media Sampling for pH

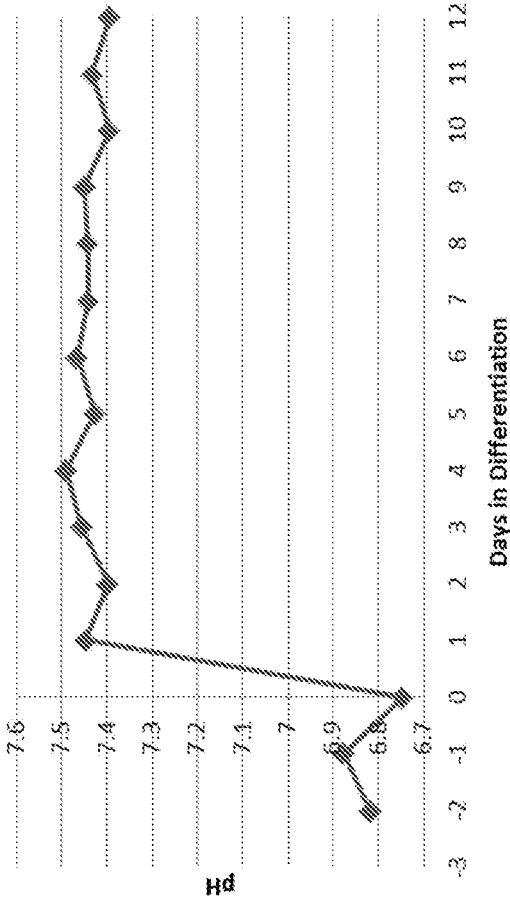


Figure 47: Daily Media Sampling for
glucose (g/L)

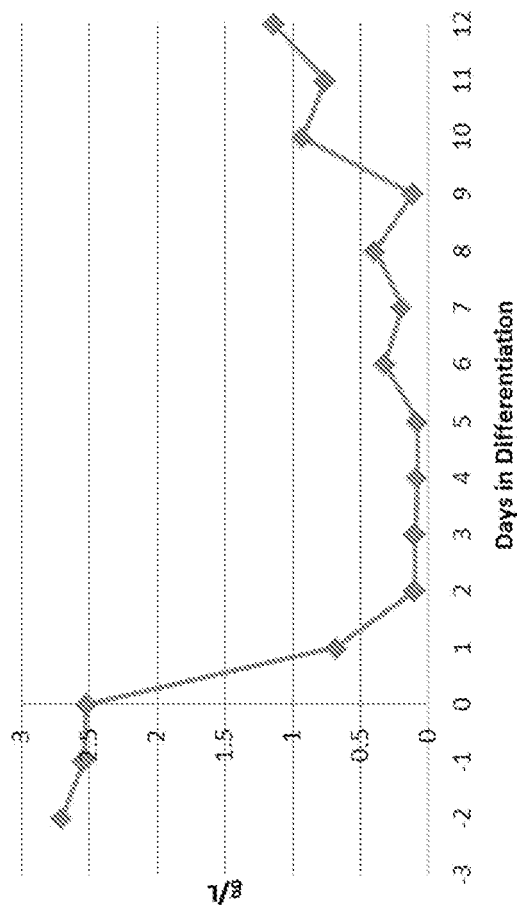


Figure 48: Daily Media Sampling
for lactate (g/L)

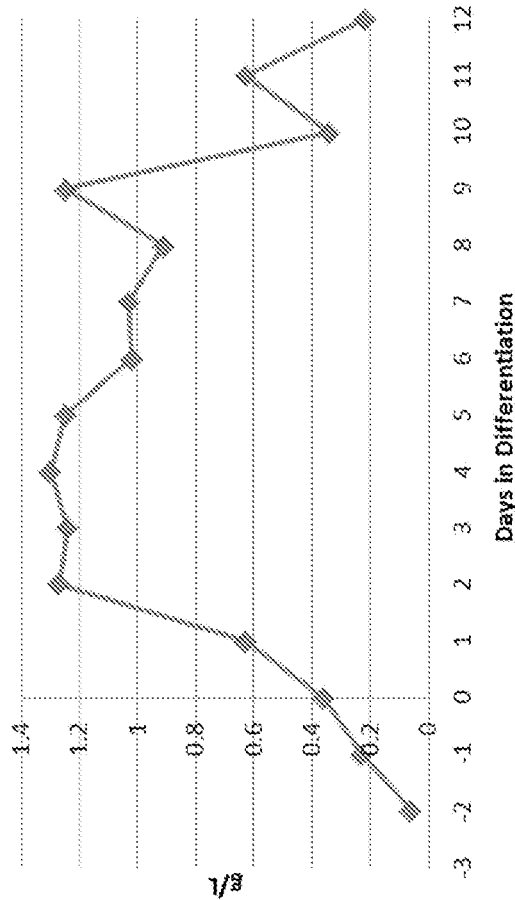


Figure 49: Daily Stage 0 and 1 Expression by qRT-PCR, Pluripotency Array

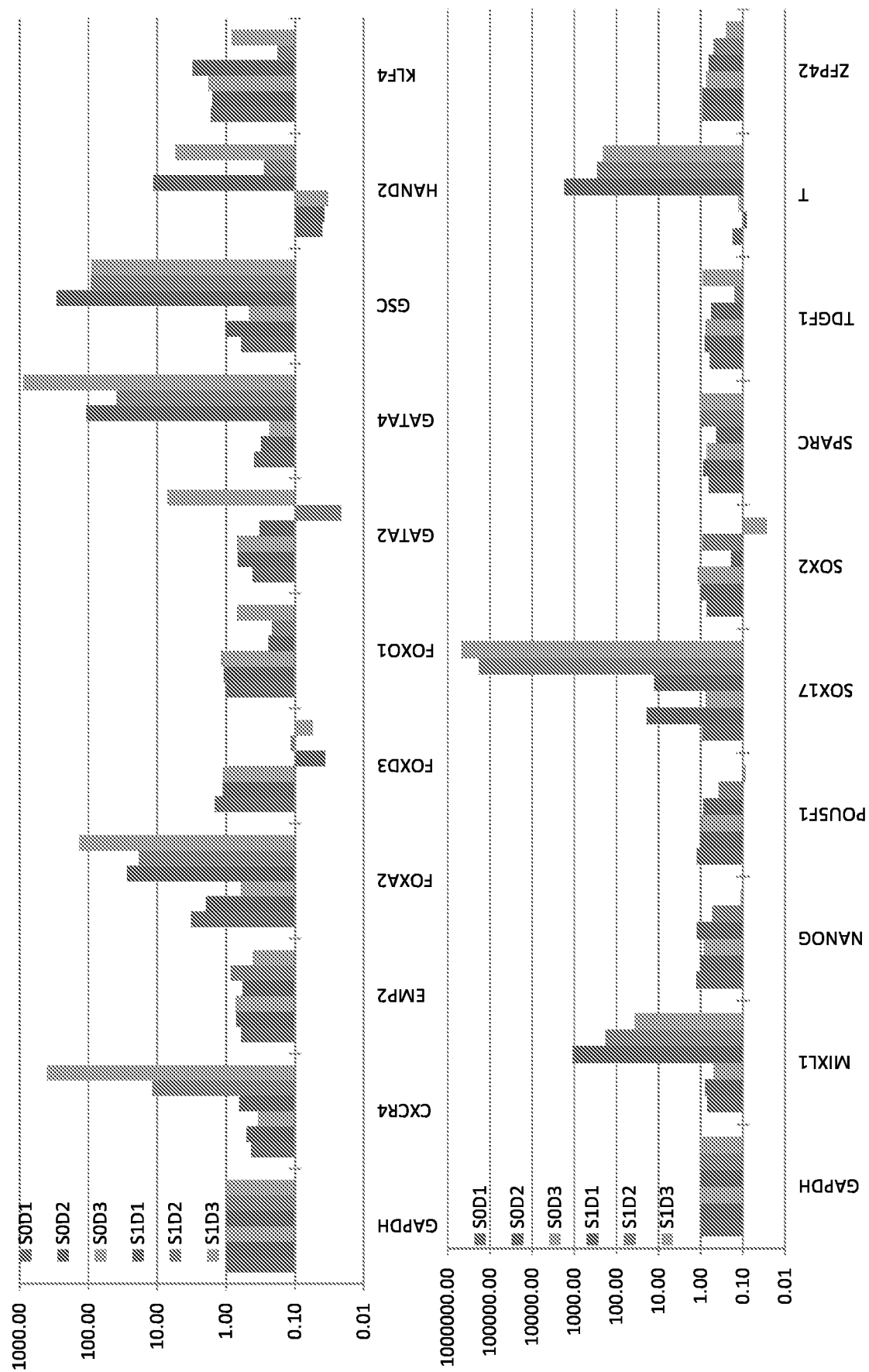


Figure 50: Daily Stage 0, 1, and 2 Expression by qRT-PCR, DE Array

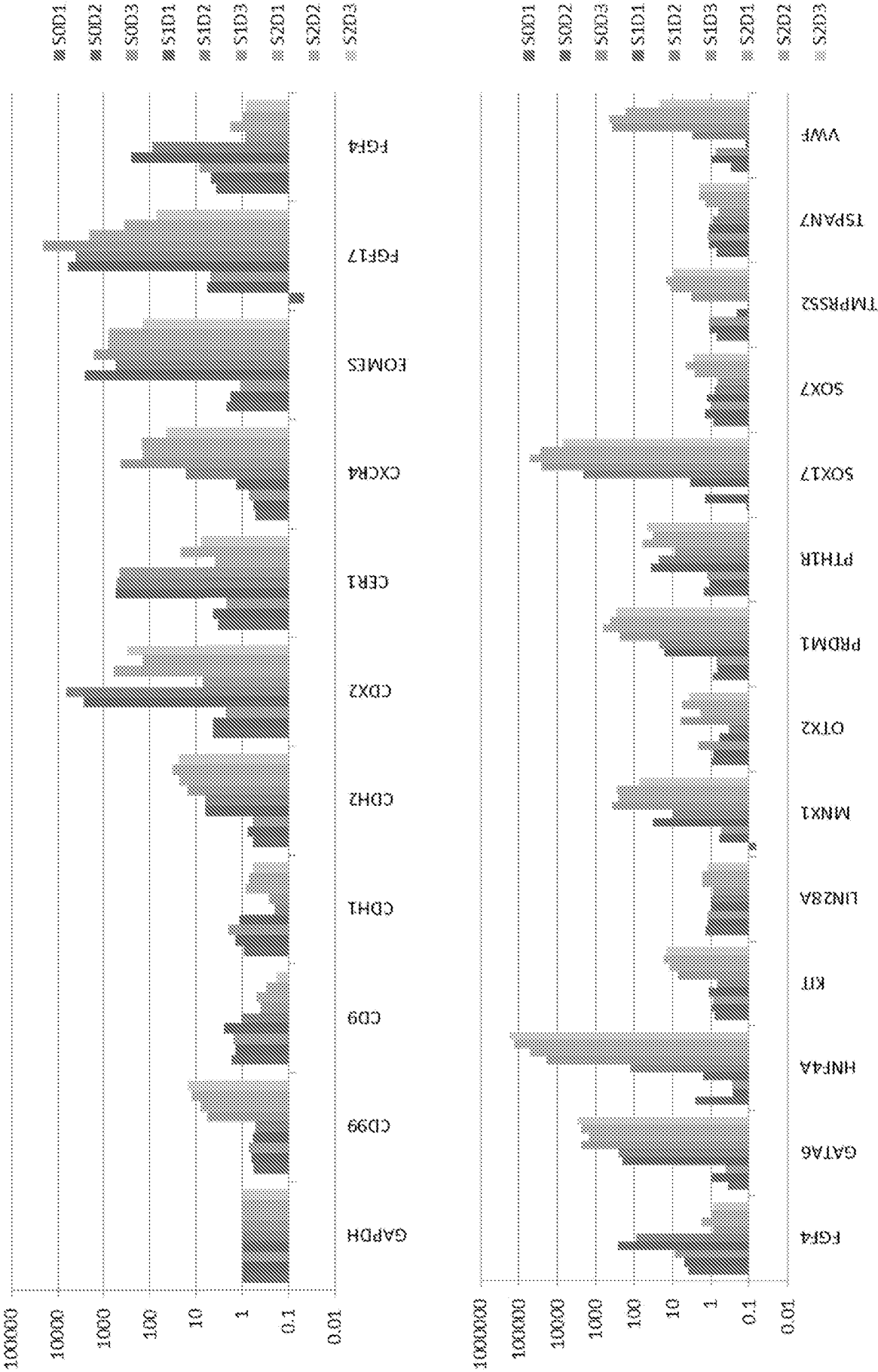


Figure 51: Pluripotent Cell
Expression by FACS

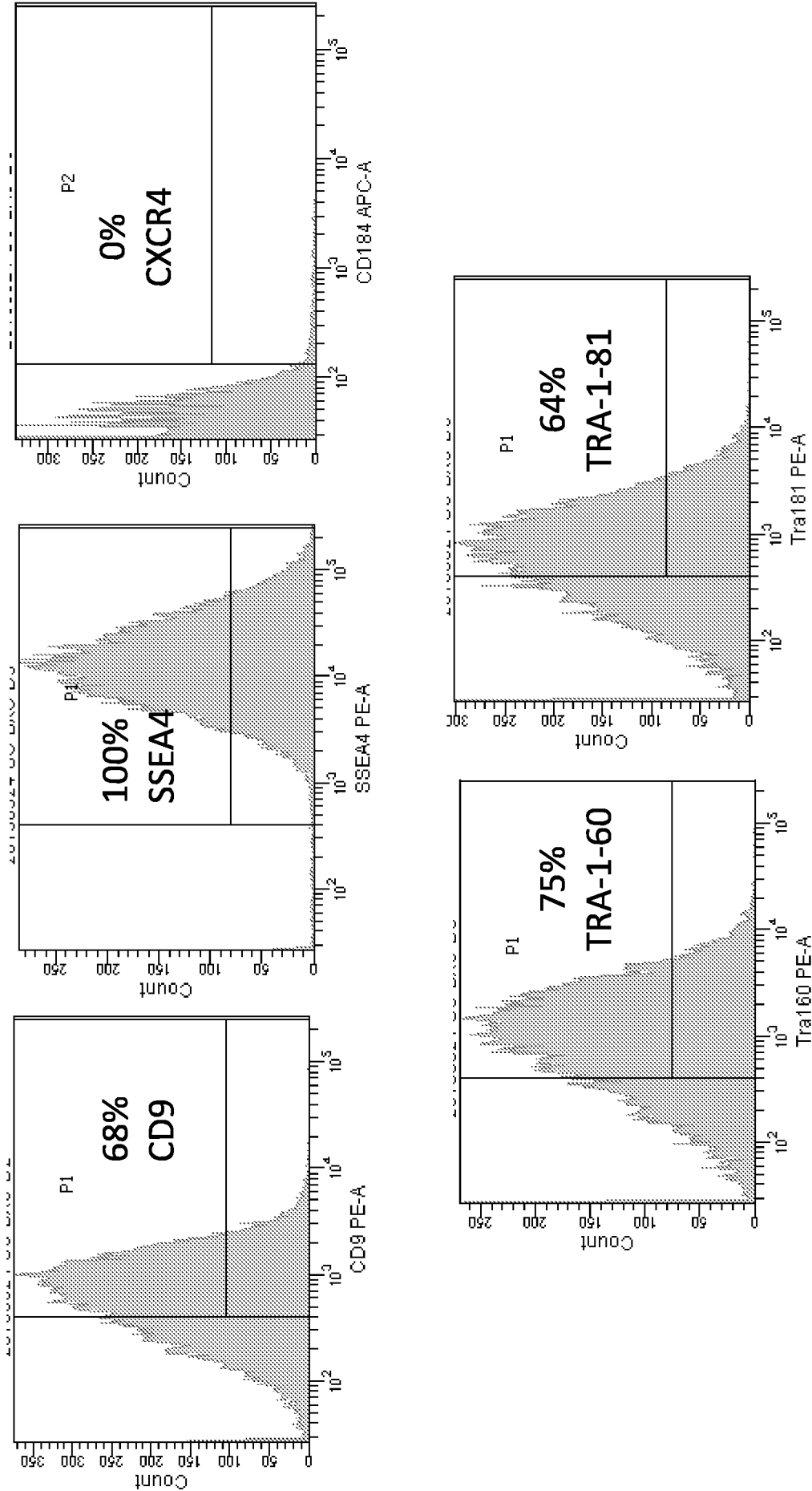


Figure 52: Definitive Endoderm Cell Expression by FACS

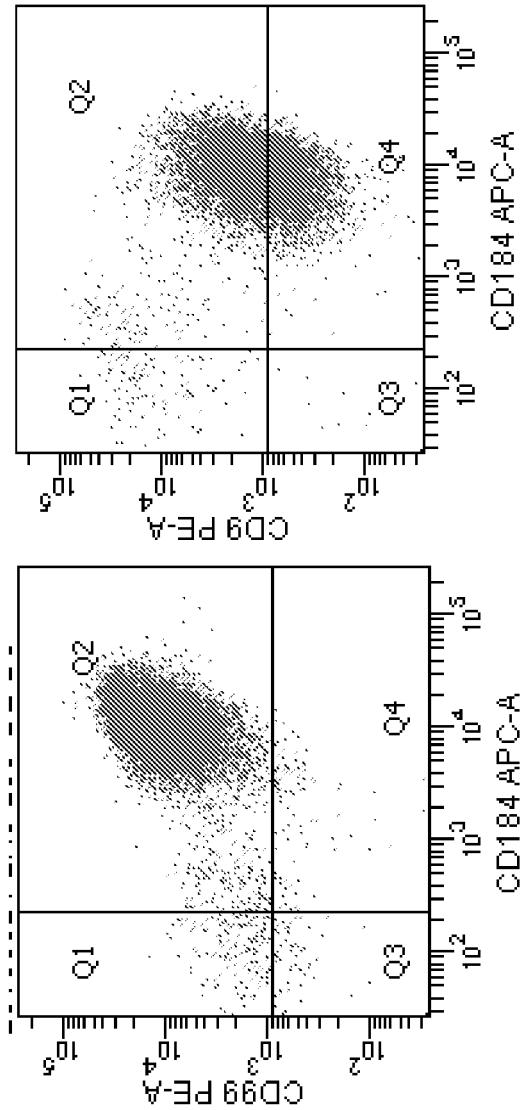


Figure 53: Daily Stage 2
Expression by qRT-PCR

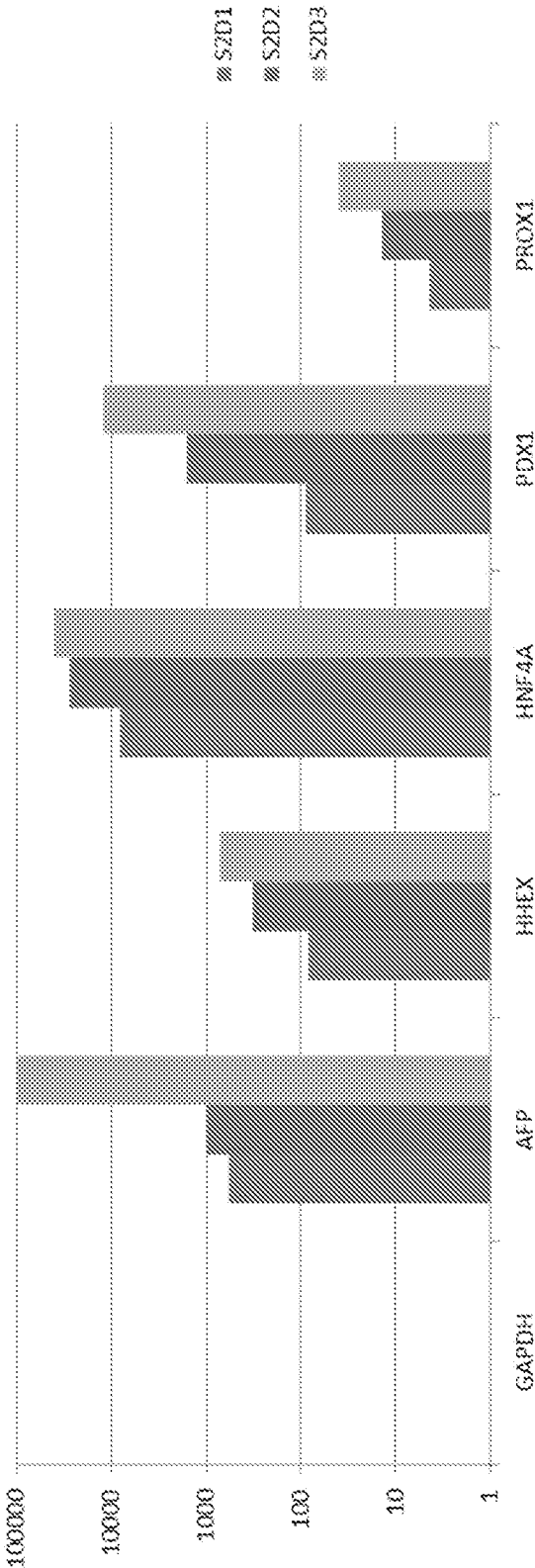


Figure 54: Daily Stage 2 and 3 Expression by qRT-PCR,

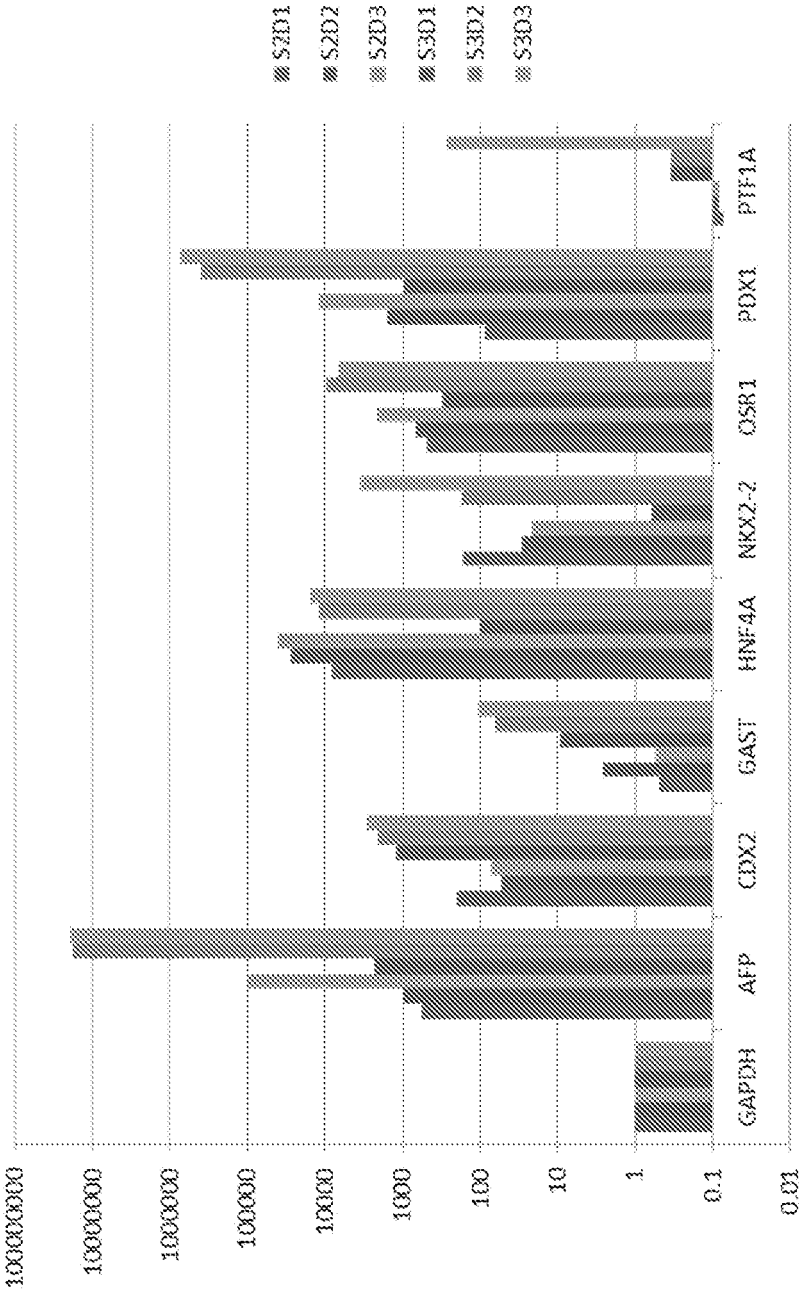


Figure 55: Daily Stage 3 and 4 Expression by qRT-PCR

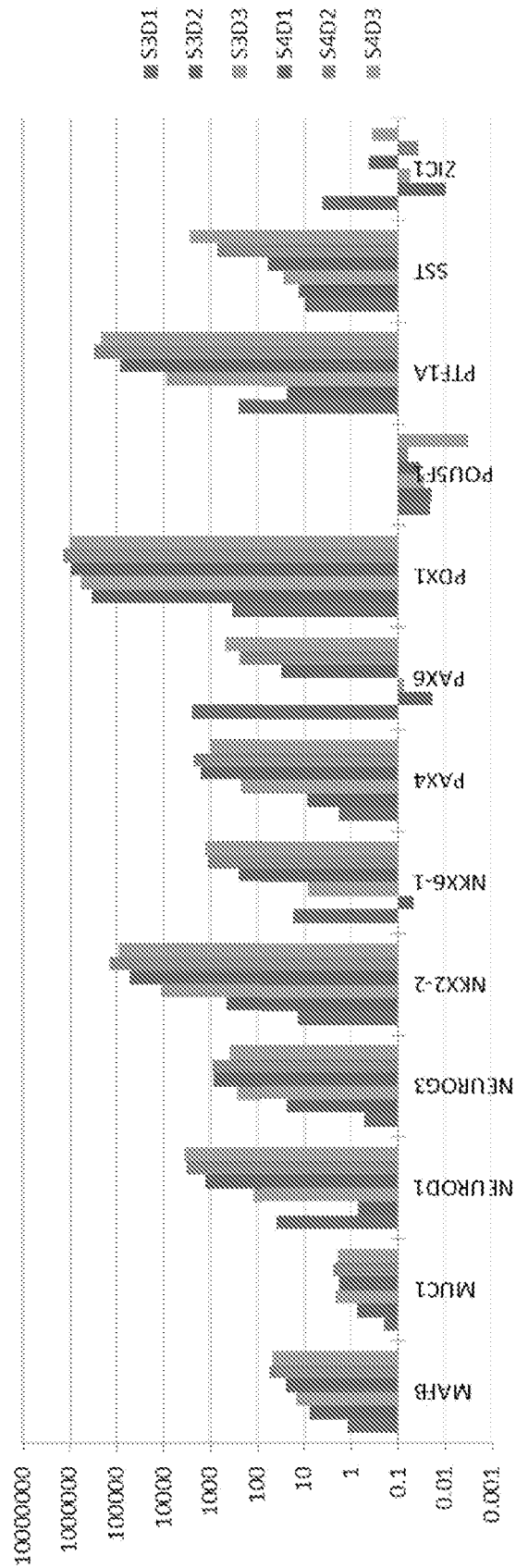
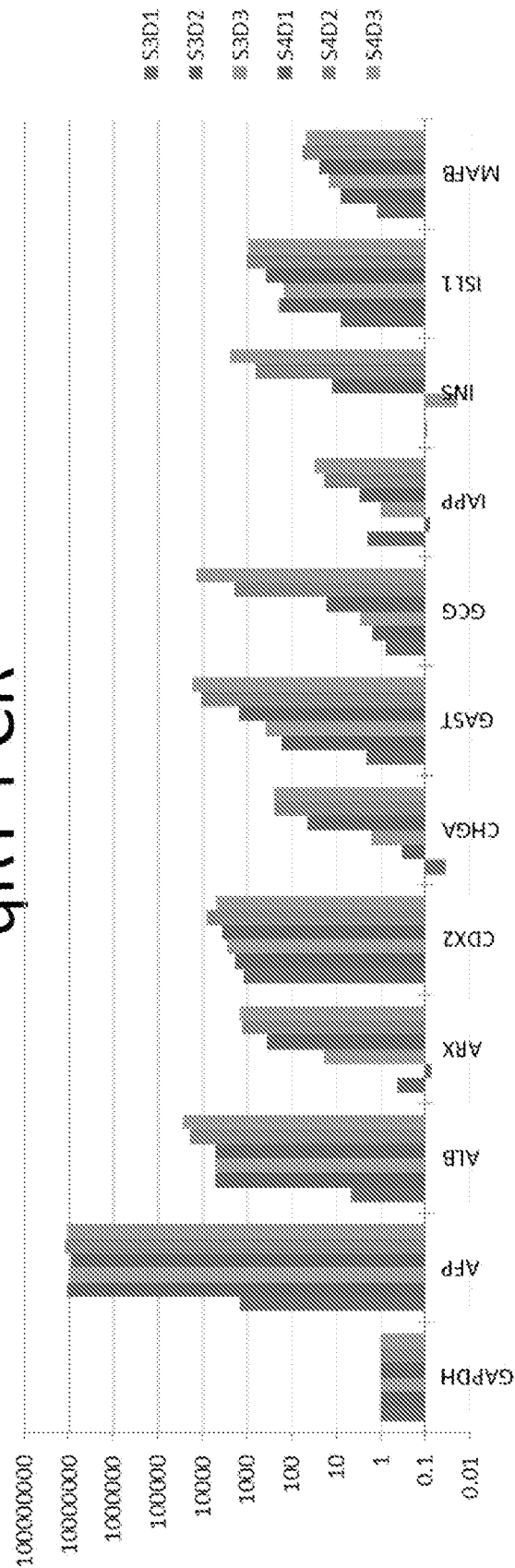
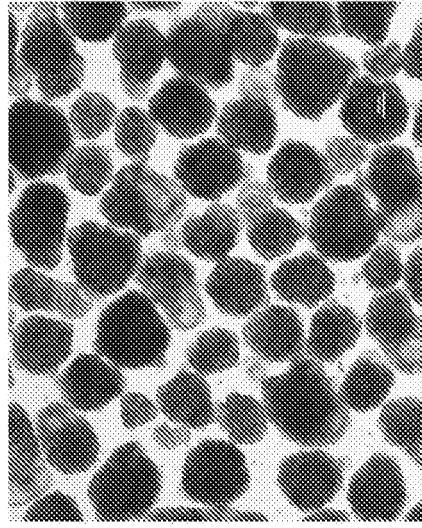
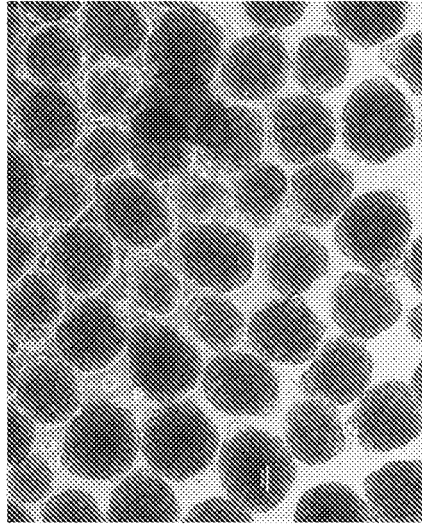


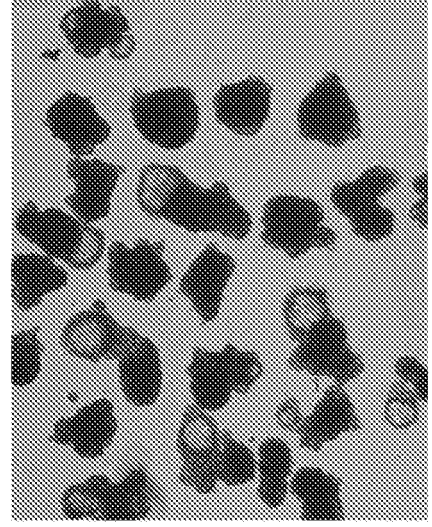
Figure 56: End of Stage
Micrographs of Clusters (4x)



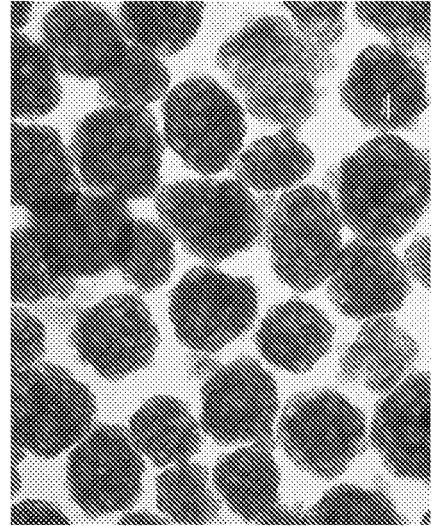
Stage 3



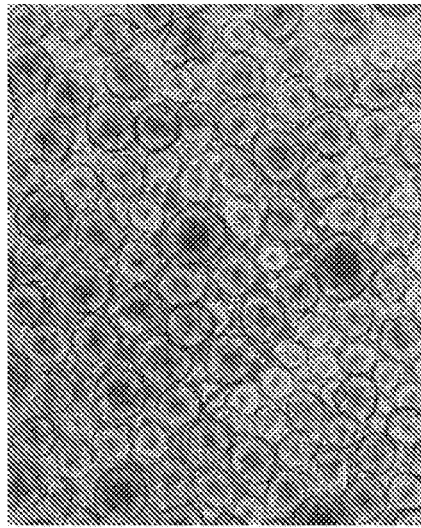
Stage 1



Stage 4



Stage 2



Stage 0

Figure 57

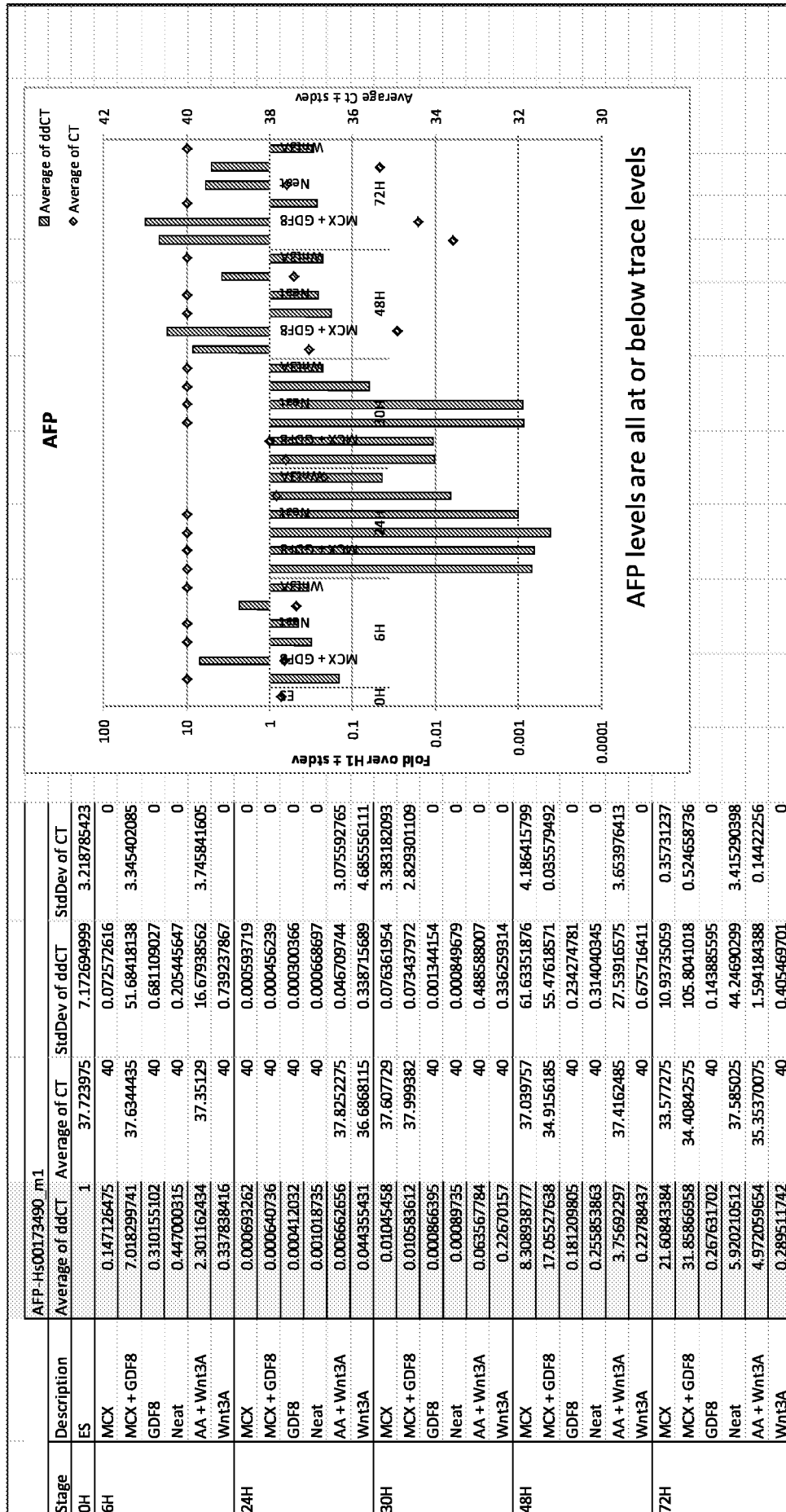


Figure 58

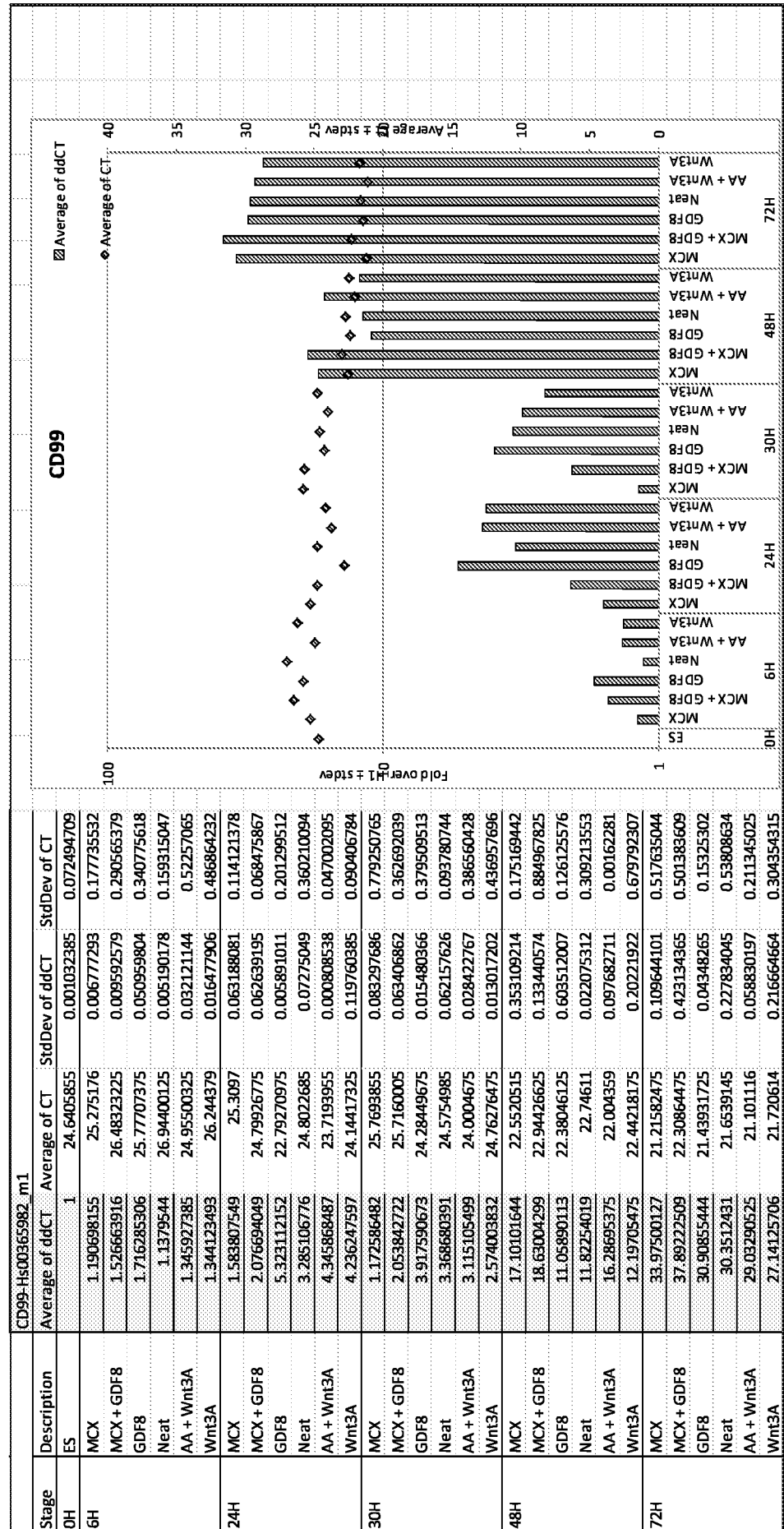


Figure 59

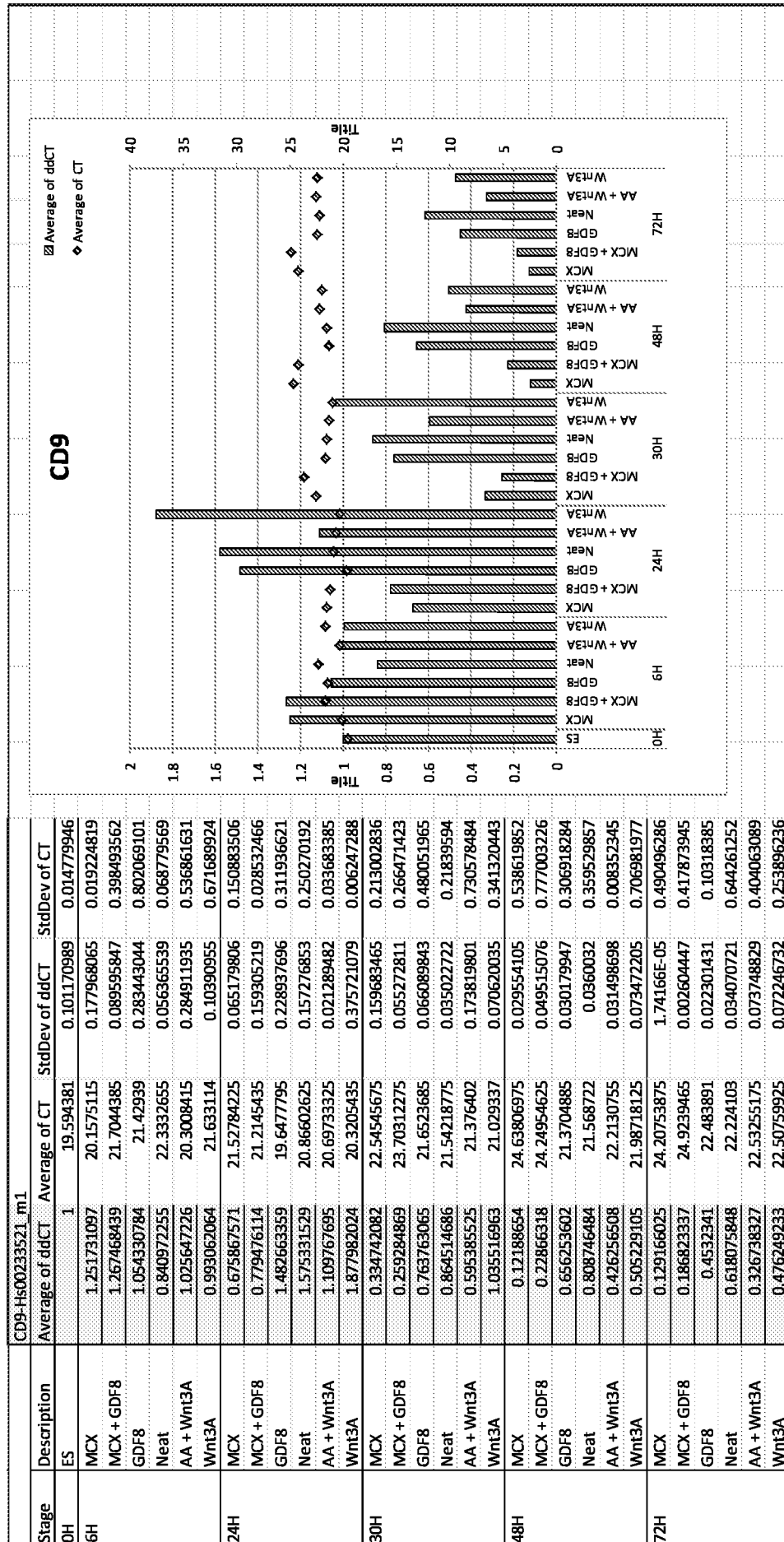


Figure 60

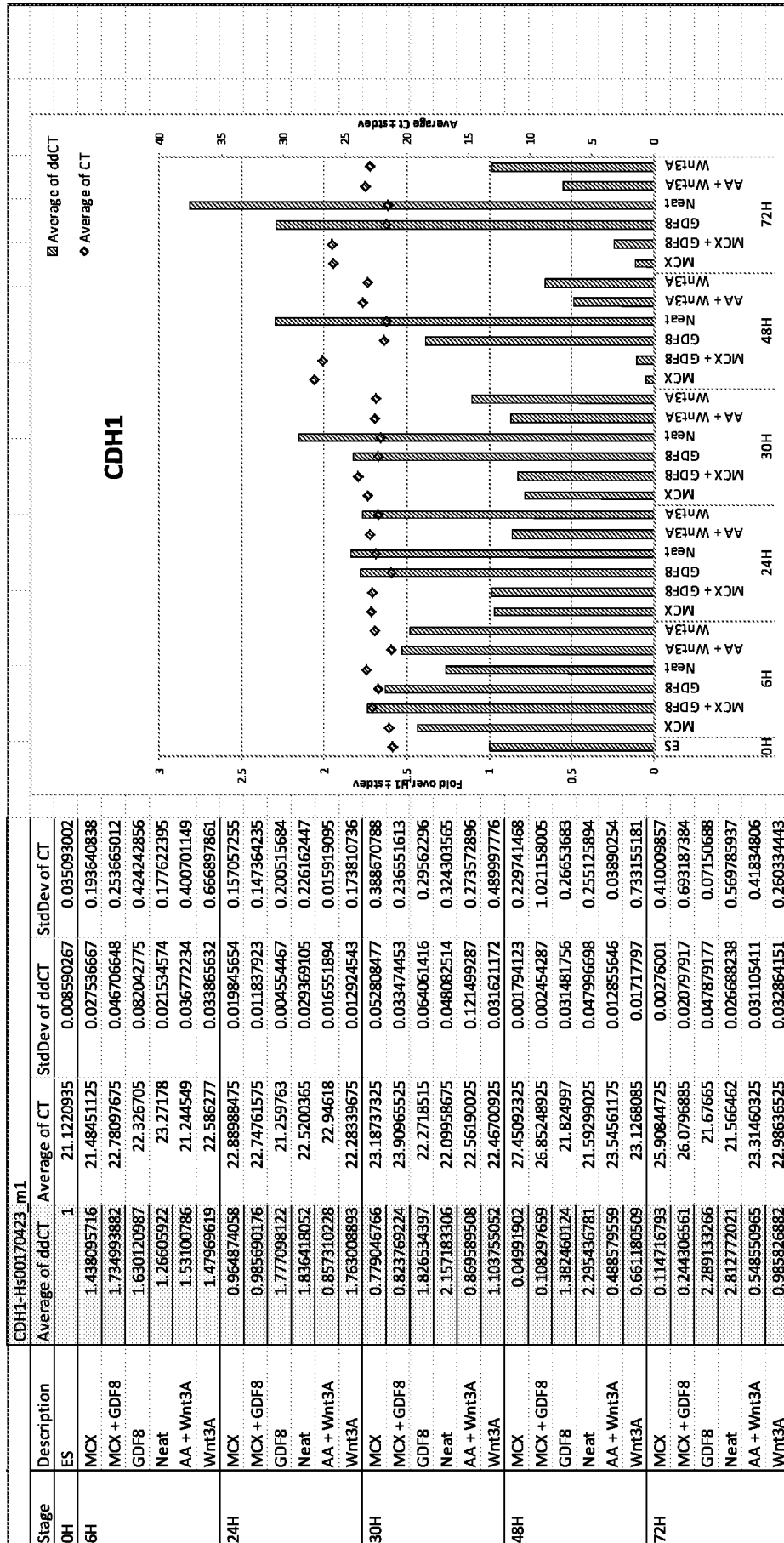


Figure 61

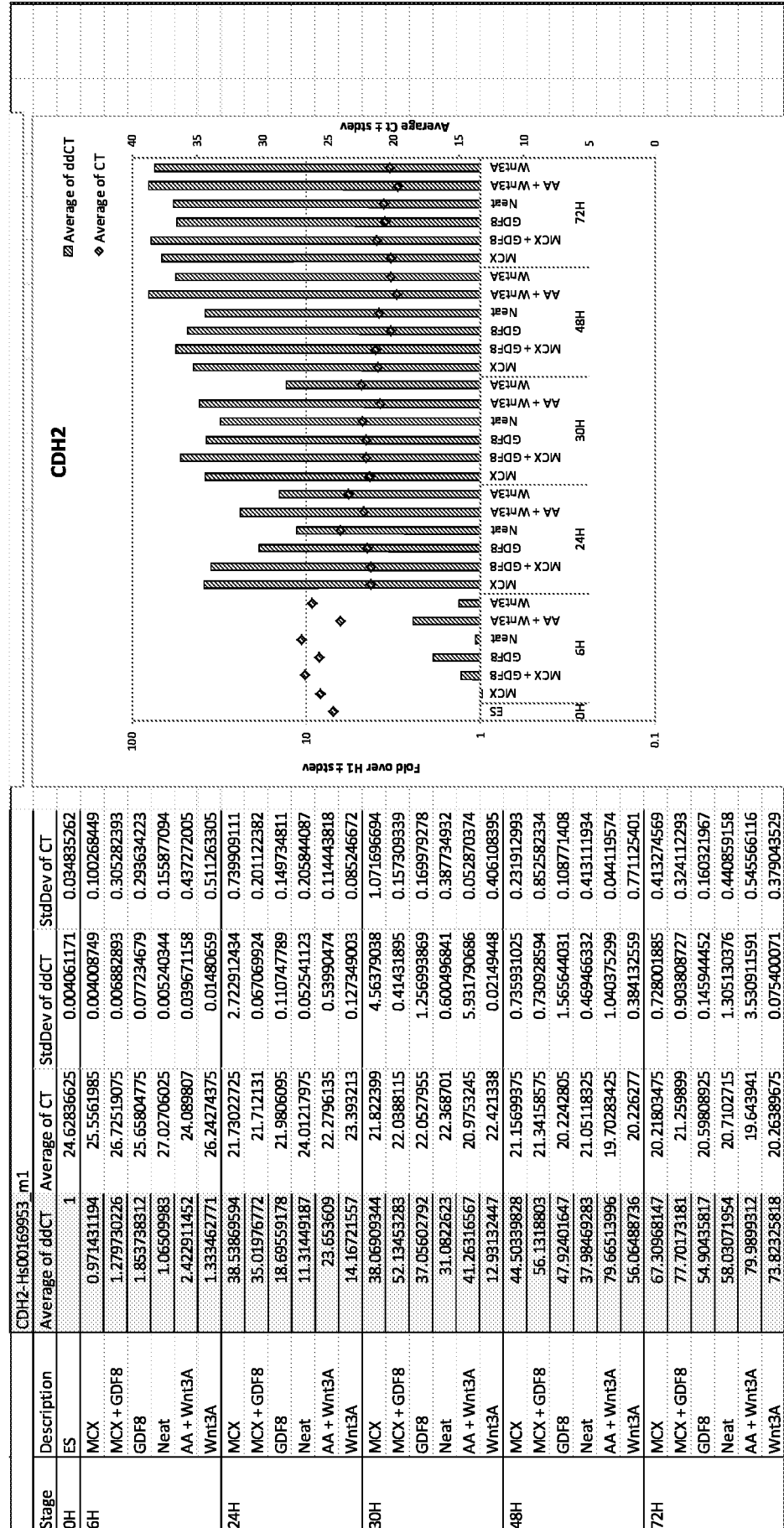


Figure 62

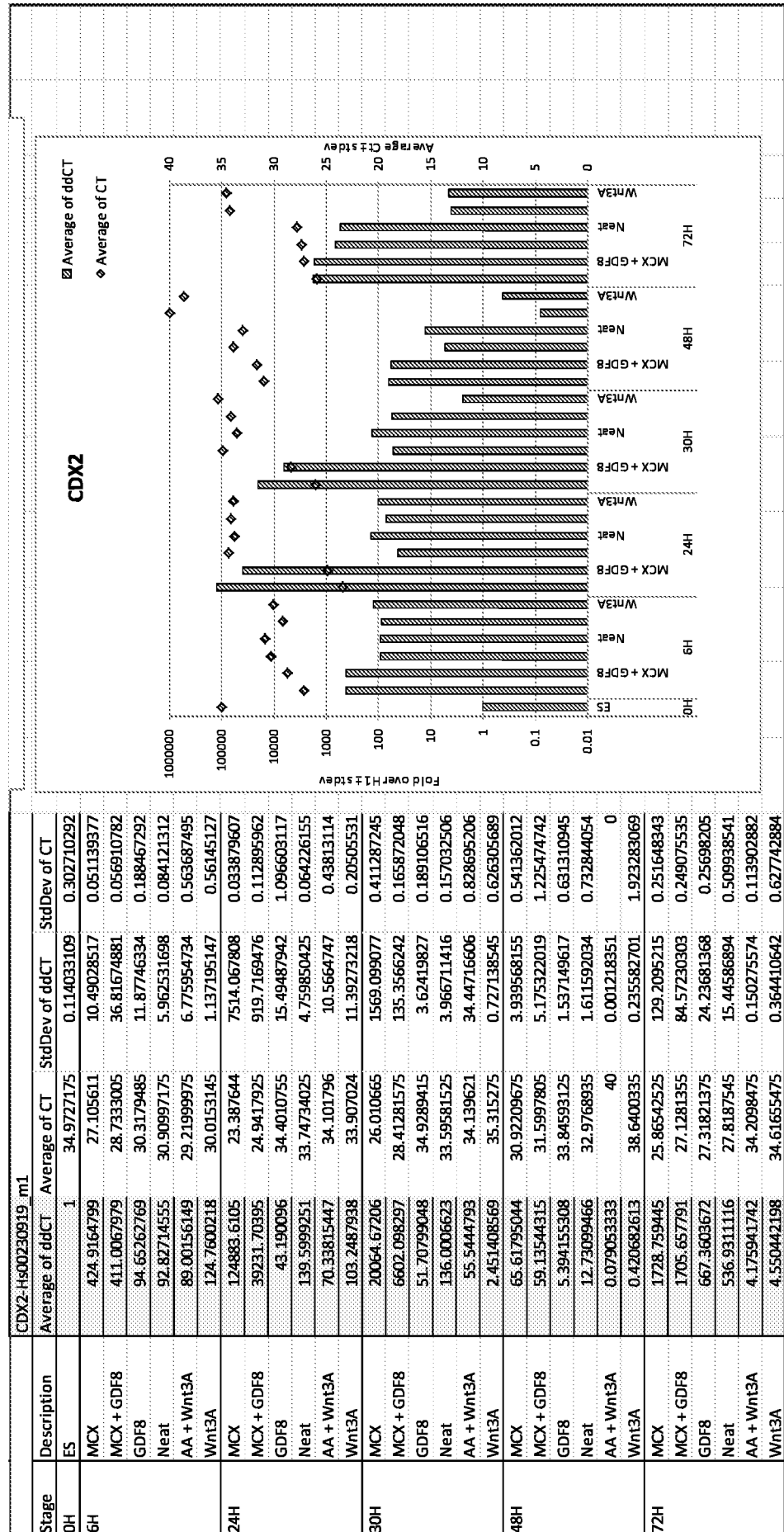


Figure 63

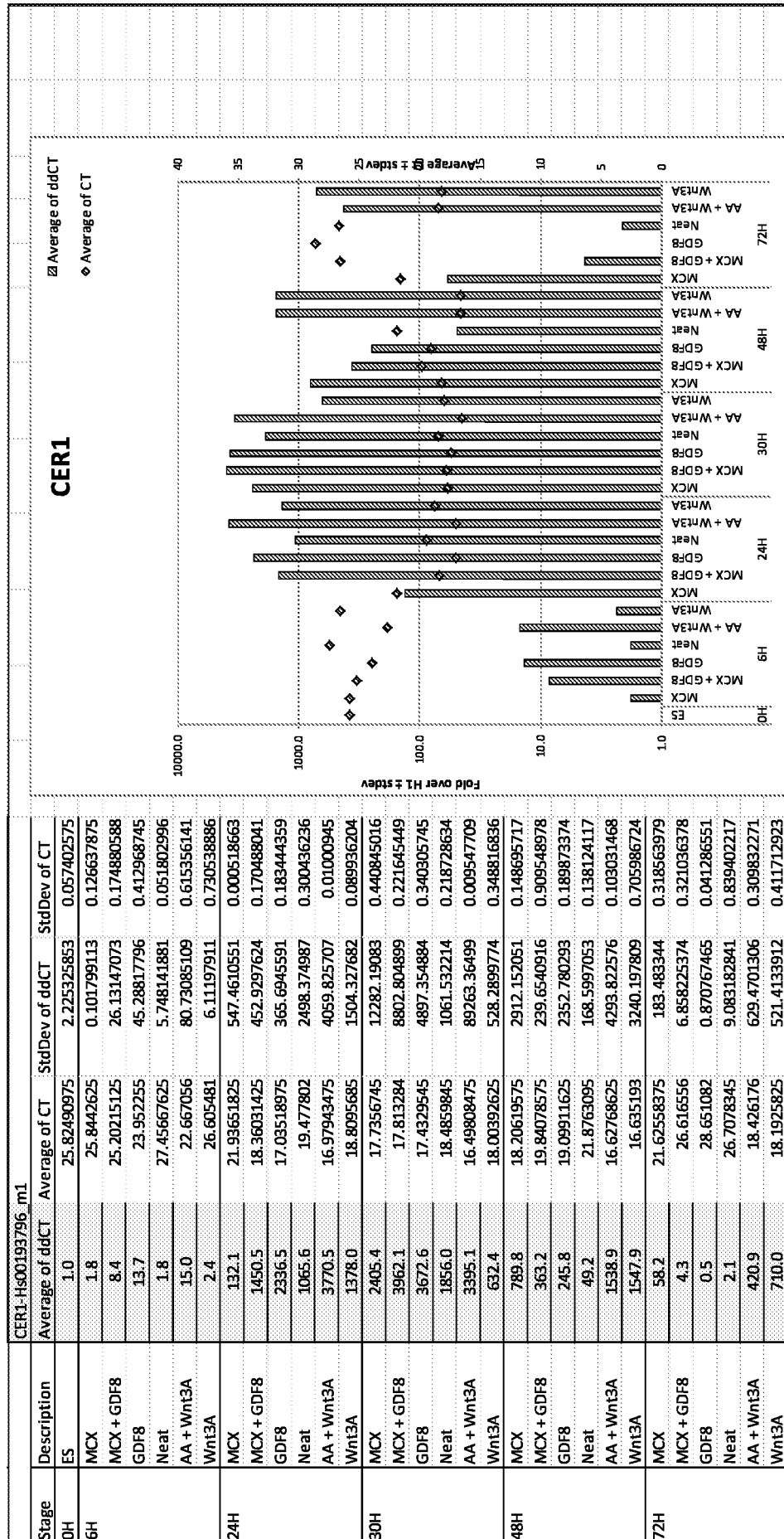


Figure 64

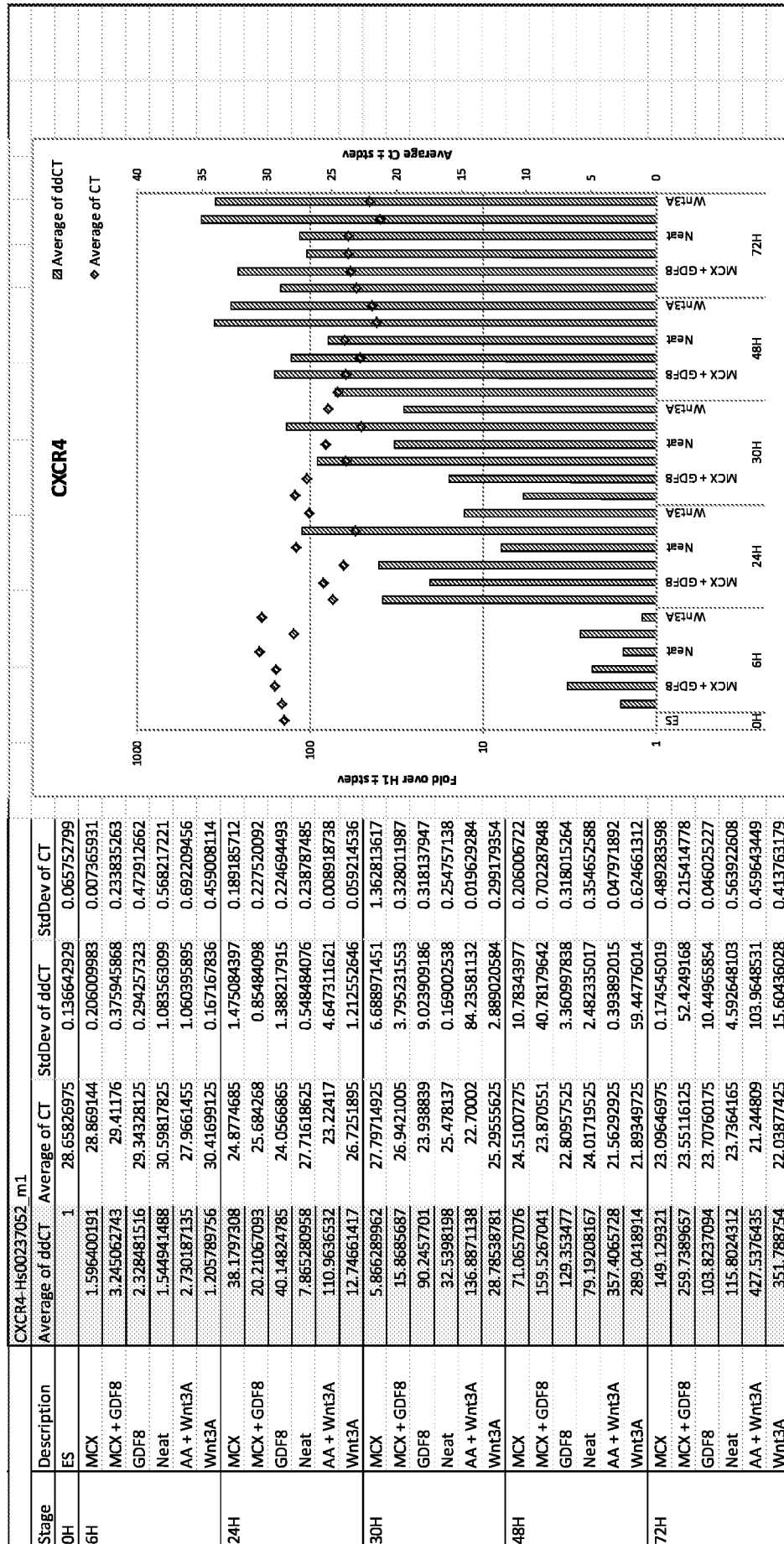


Figure 65

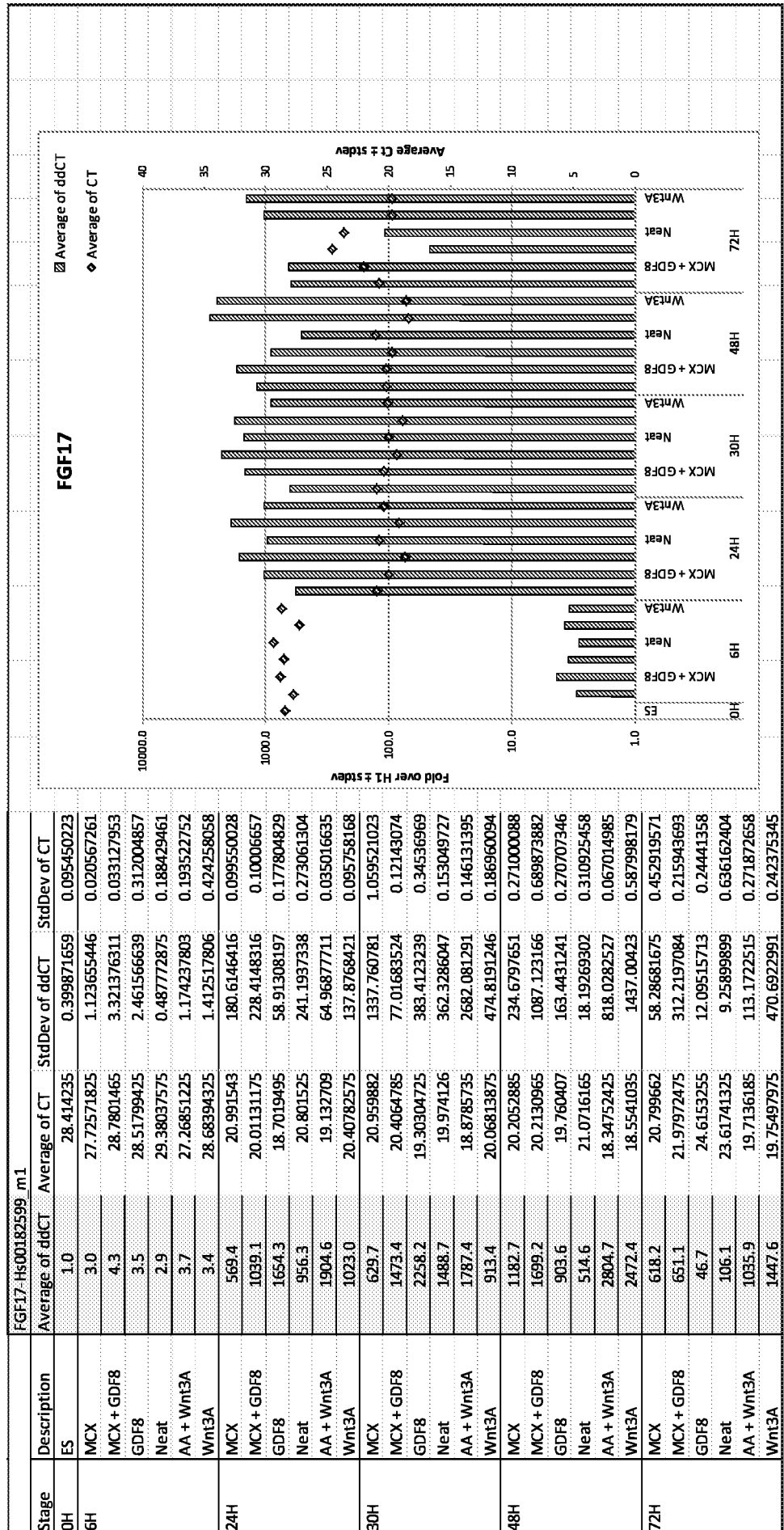


Figure 66

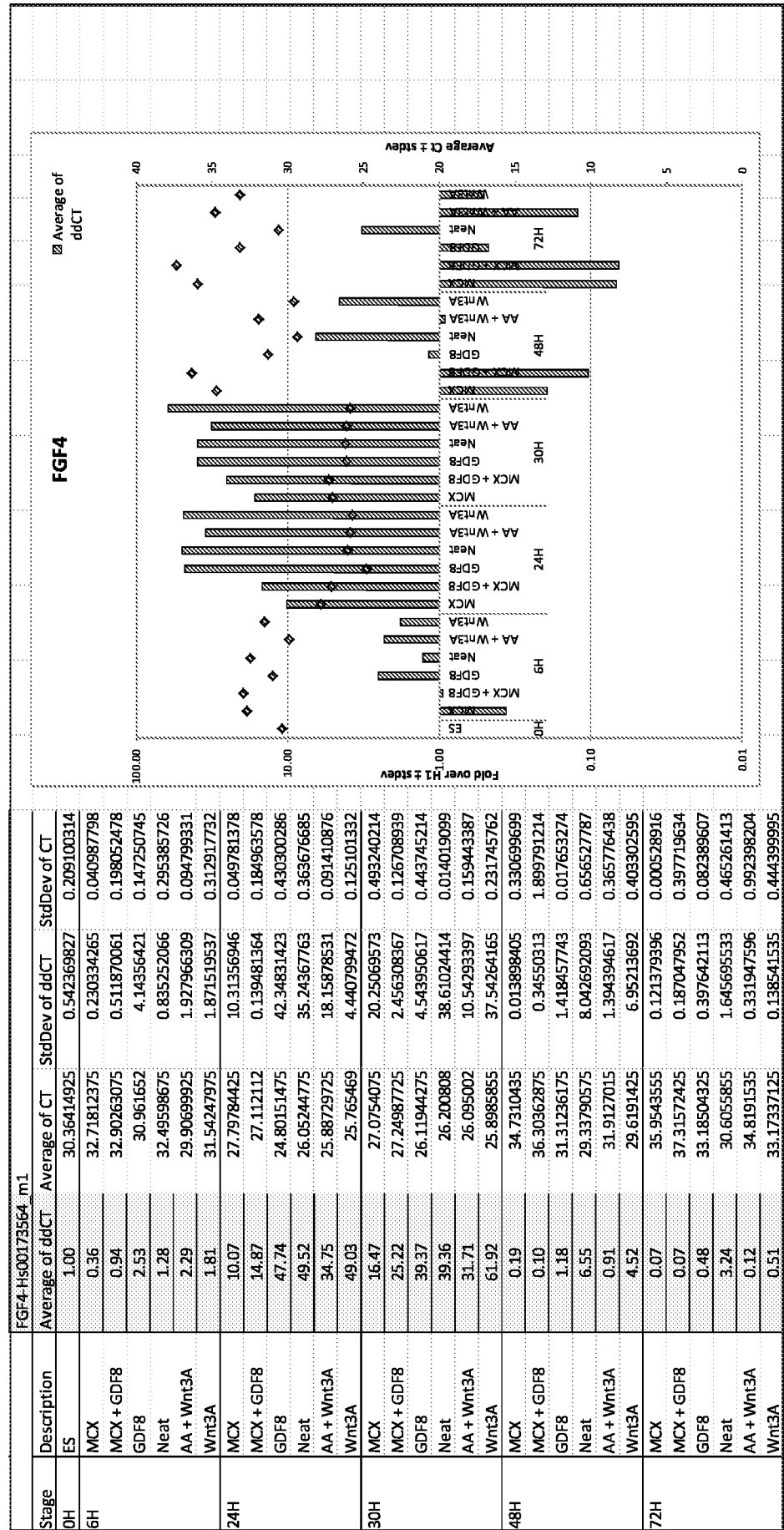


Figure 67

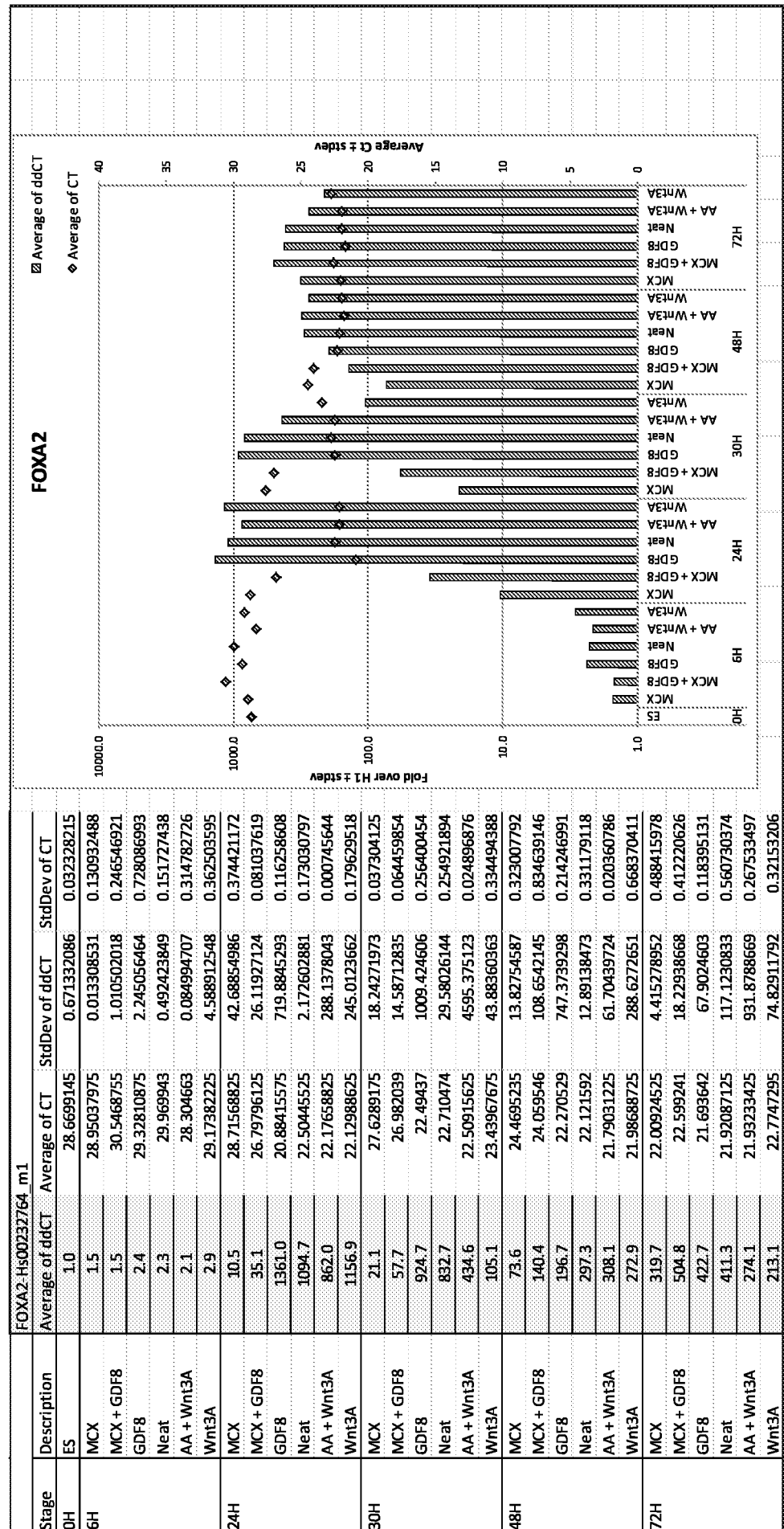


Figure 68

		GAPDH-Hs99999905_m1			
Stage	Description	Average of ddCT	Average of CT	StdDev of ddCT	StdDev of CT
0H	ES	1	16.28166375	0	0.063779971
6H	MCX	1	17.167675	0	0.129679848
	MCX + GDF8	1	18.7342185	0	0.343617126
	GDF8	1	18.18648575	0	0.592686651
	Neat	1	18.7712785	0	0.120809901
	AA + Wnt3A	1	17.017628	0	0.320456551
24H	Wnt3A	1	18.310278	0	0.590436991
	MCX	1	17.57825175	0	0.225765407
	MCX + GDF8	1	17.4673155	0	0.1874731
	GDF8	1	16.830046	0	0.191957571
	Neat	1	18.137209	0	0.172746894
30H	AA + Wnt3A	1	17.464121	0	0.048572579
	Wnt3A	1	17.842105	0	0.149329638
	MCX	1	17.55899375	0	0.161380506
	MCX + GDF8	1	18.367542	0	0.100658065
	GDF8	1	17.879352	0	0.412868336
48H	Neat	1	17.94854725	0	0.249840271
	AA + Wnt3A	1	17.27180625	0	0.452296256
	Wnt3A	1	17.7675545	0	0.394262235
	MCX	1	18.28386925	0	0.349895174
	MCX + GDF8	1	18.804283	0	0.945447728
72H	GDF8	1	17.450945	0	0.342614449
	Neat	1	17.9506265	0	0.32497567
	AA + Wnt3A	1	17.670651	0	0.049015228
	Wnt3A	1	17.688332	0	0.819963852
	MCX	1	17.94318925	0	0.490391634
	MCX + GDF8	1	19.19202475	0	0.40705415
	GDF8	1	18.0303185	0	0.141377516
	Neat	1	18.2179935	0	0.601472099
	AA + Wnt3A	1	17.60177375	0	0.228450291

Figure 69

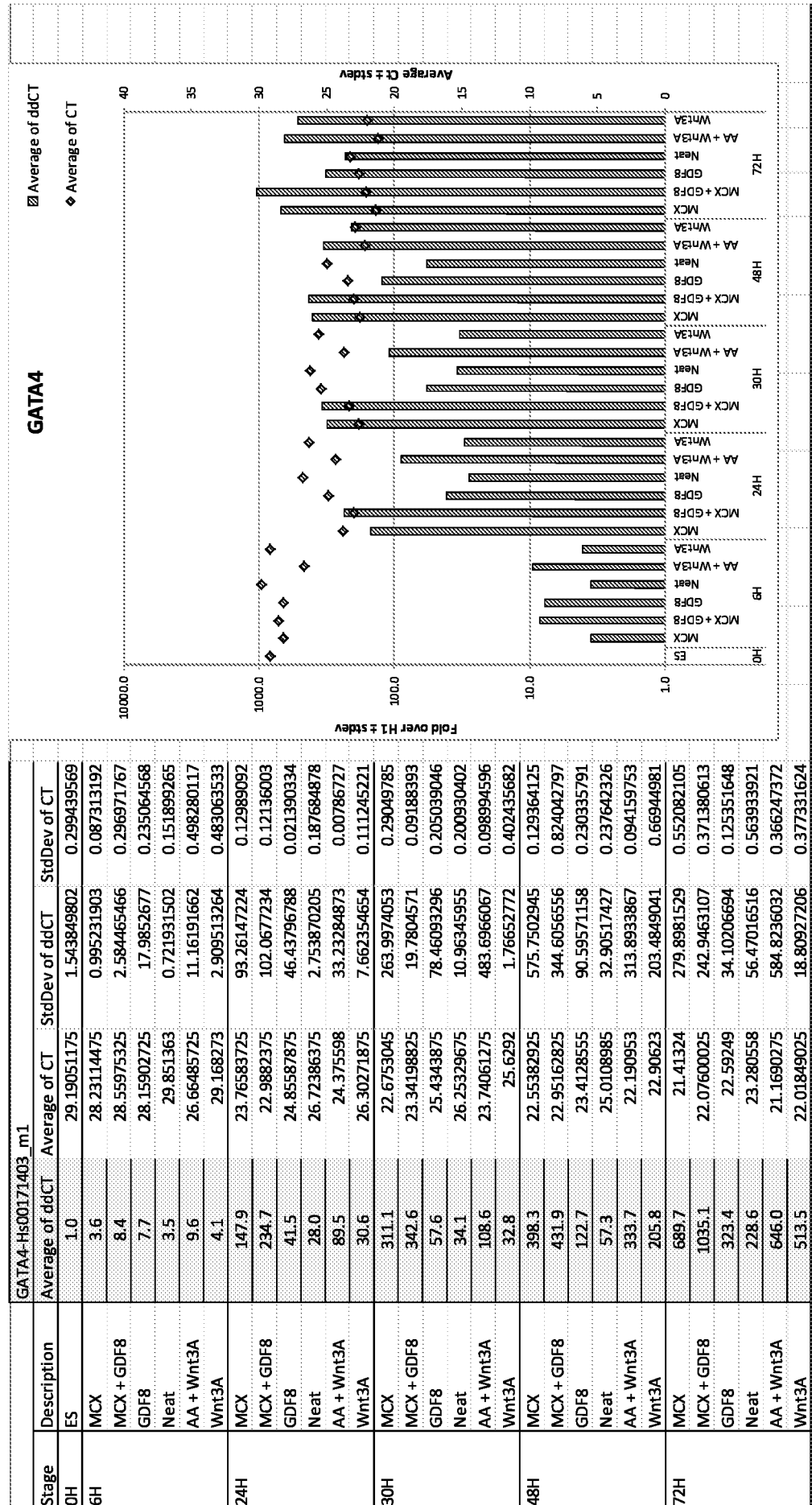


Figure 70

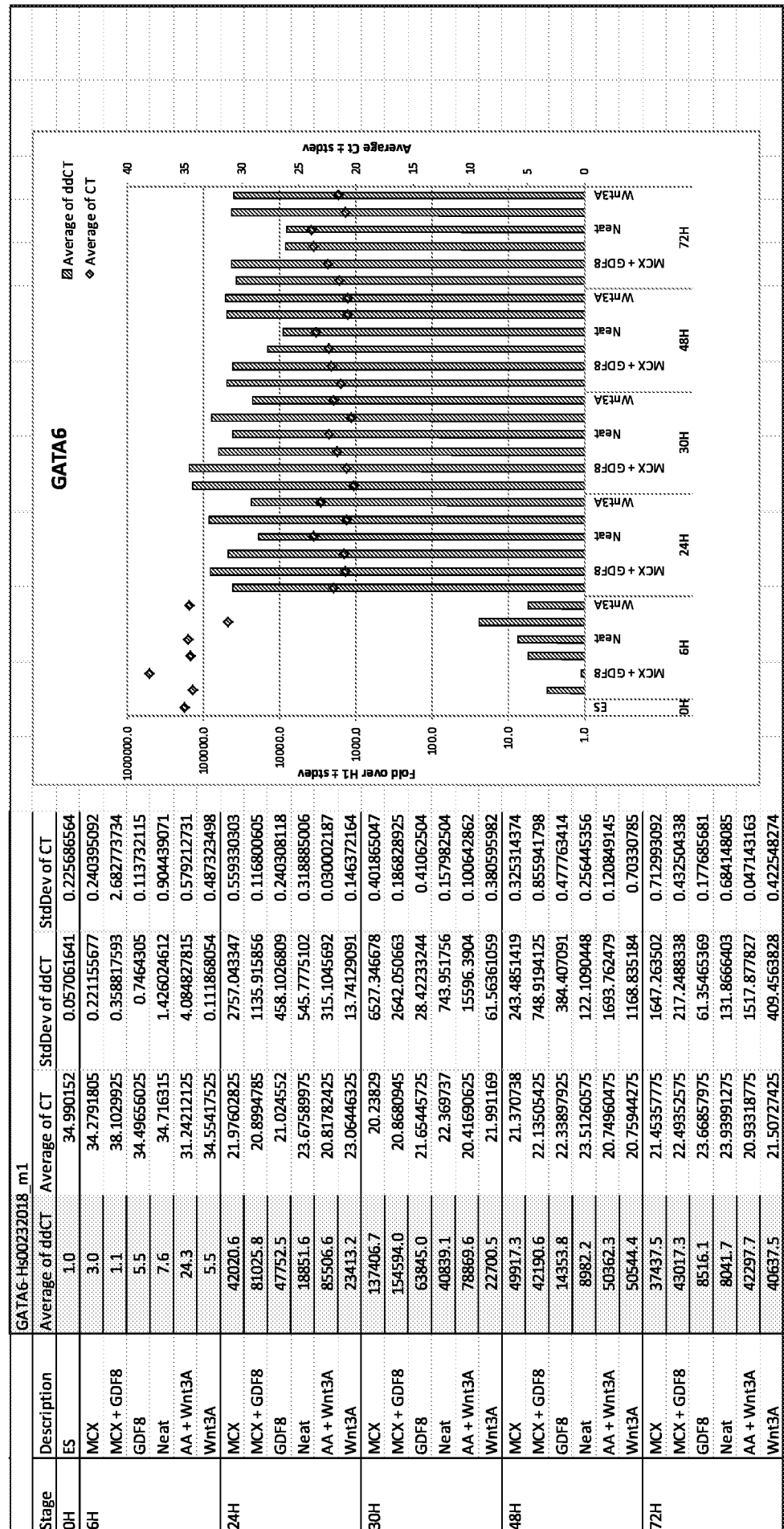


Figure 71

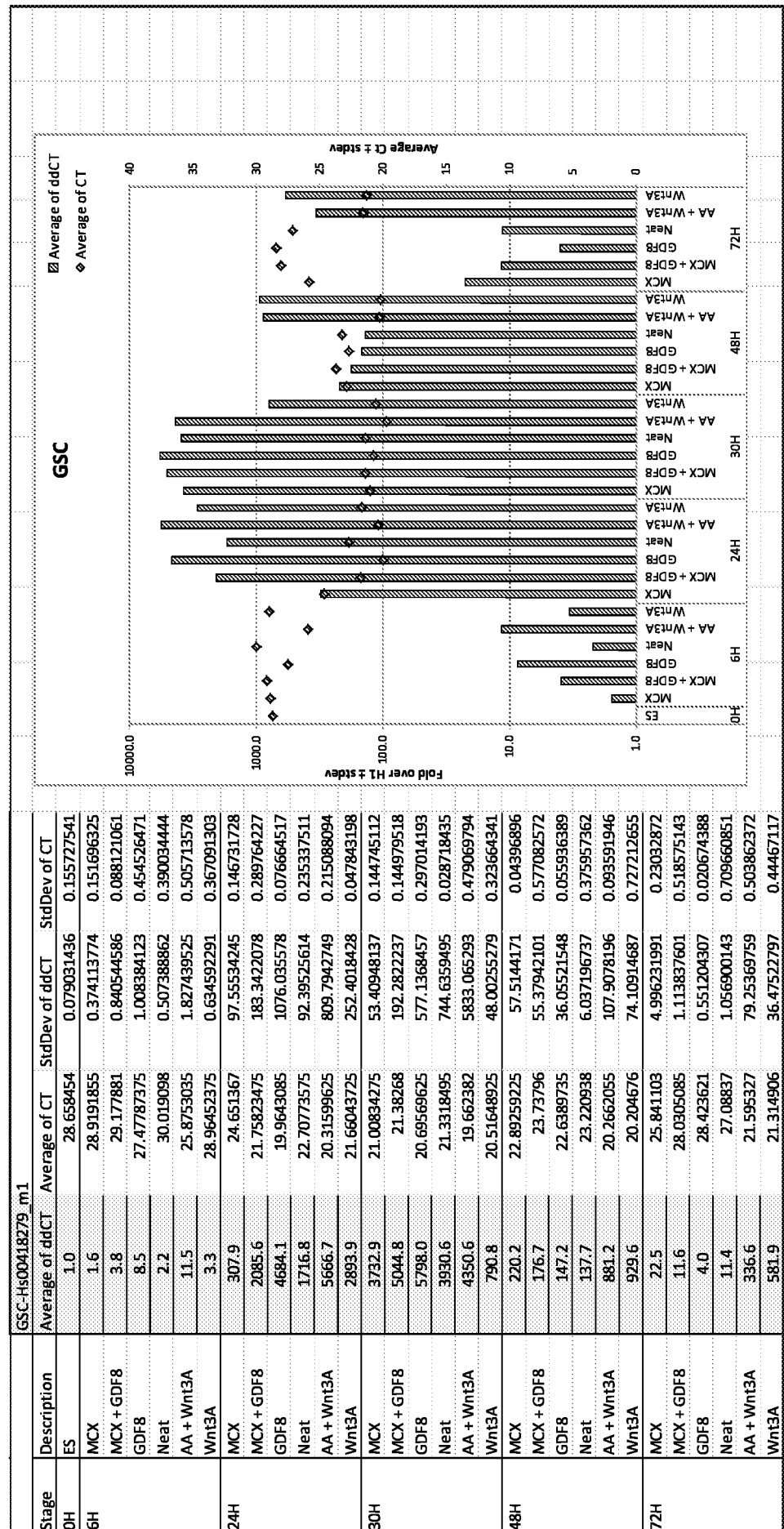


Figure 72

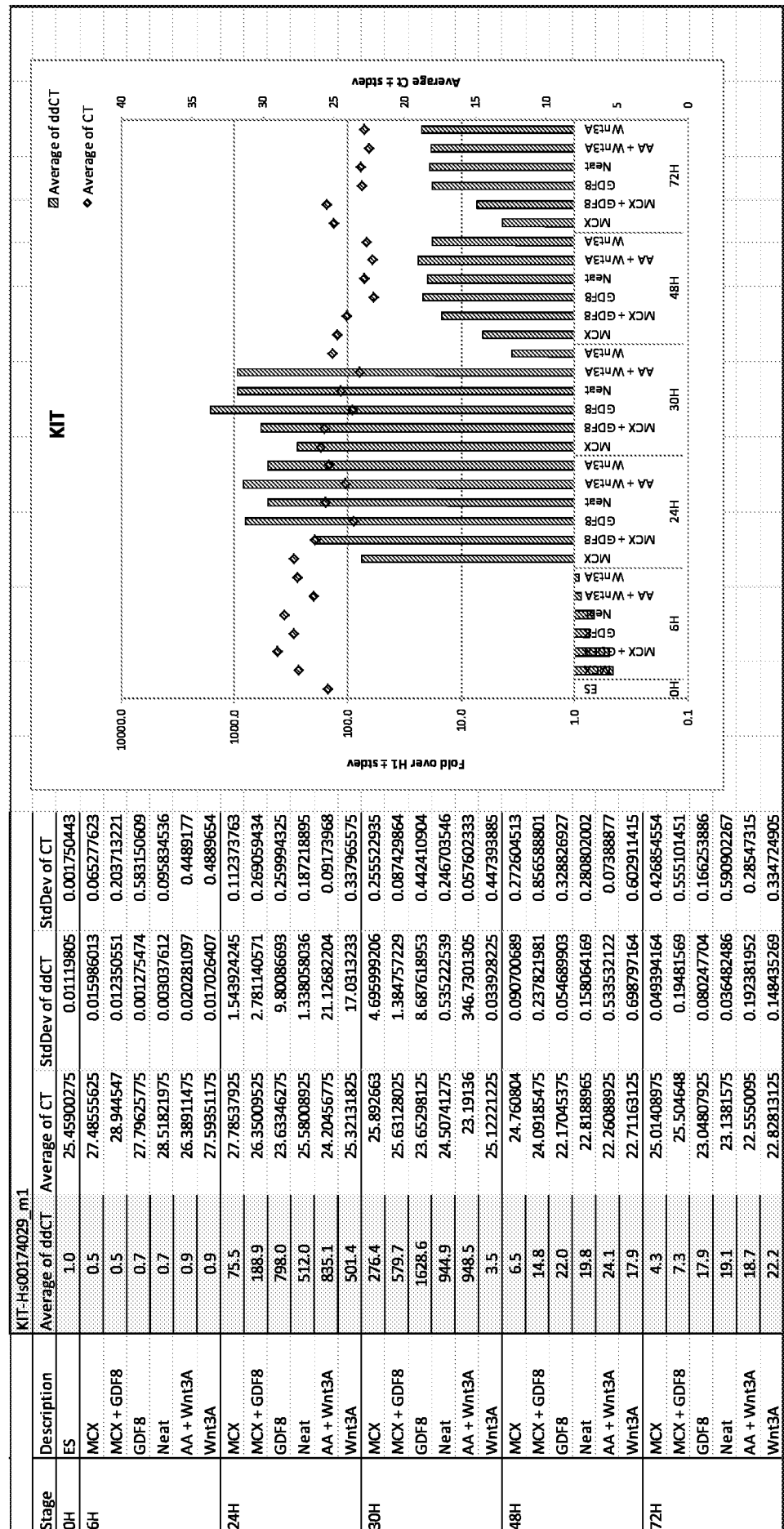


Figure 73

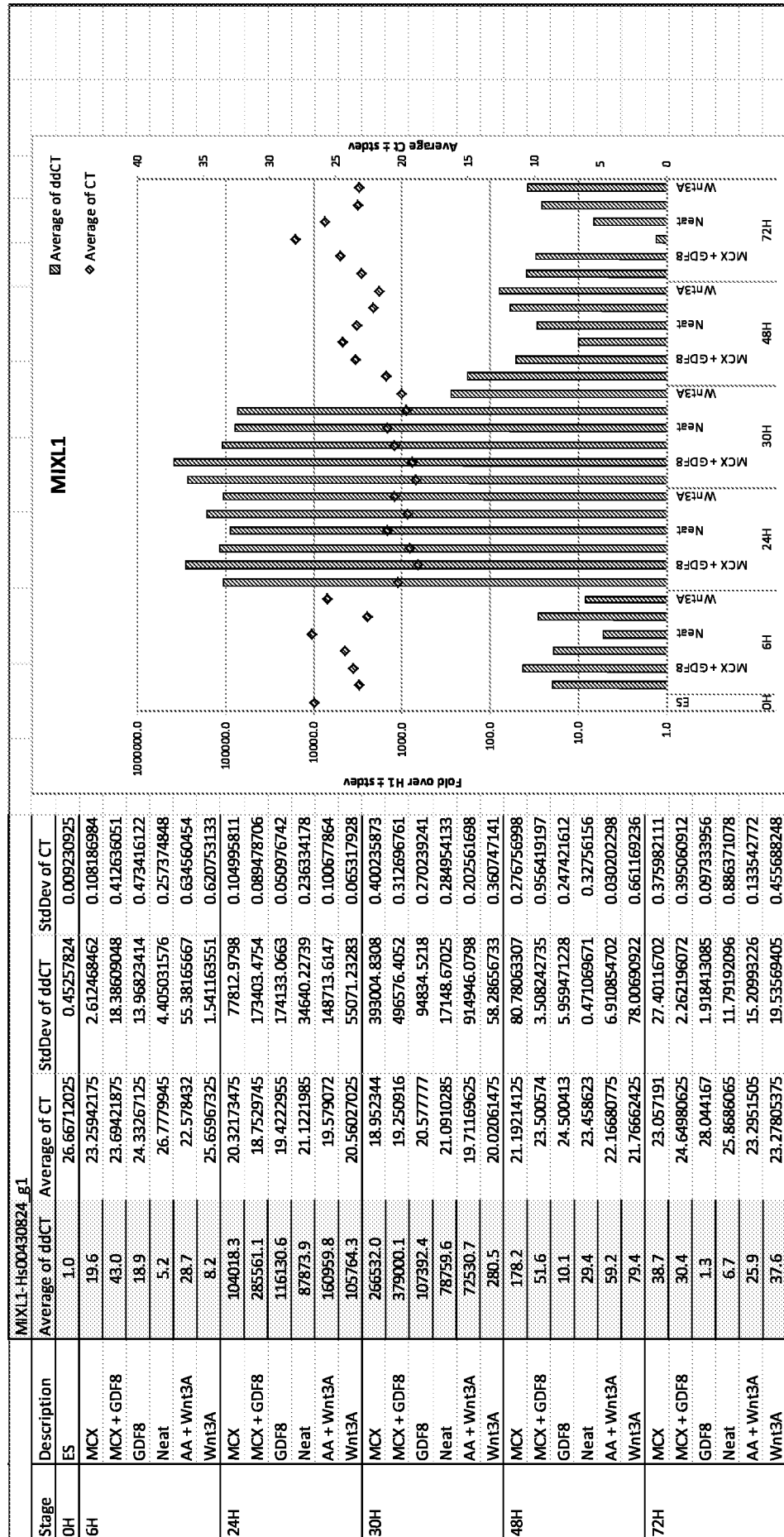


Figure 74

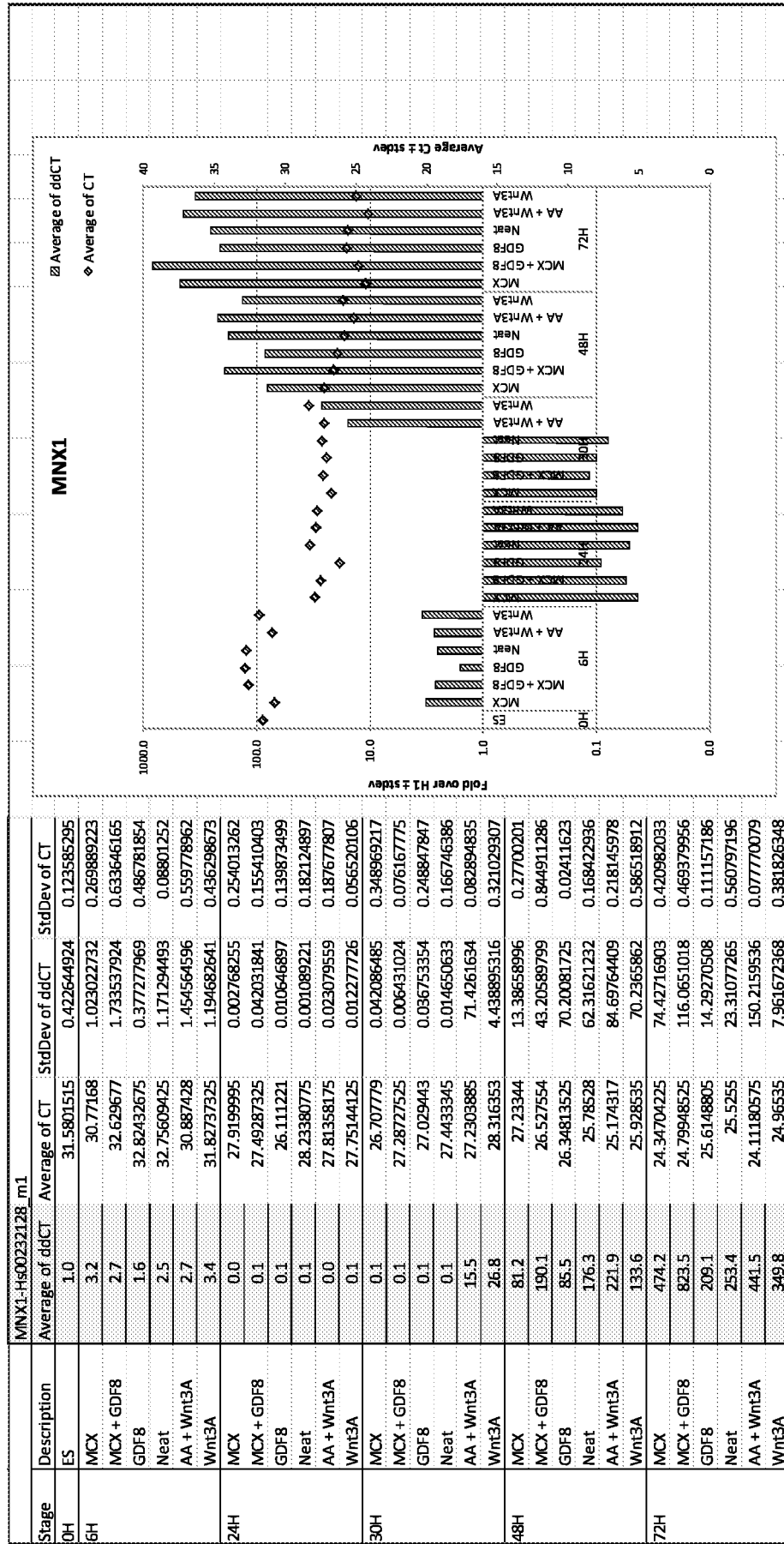


Figure 76

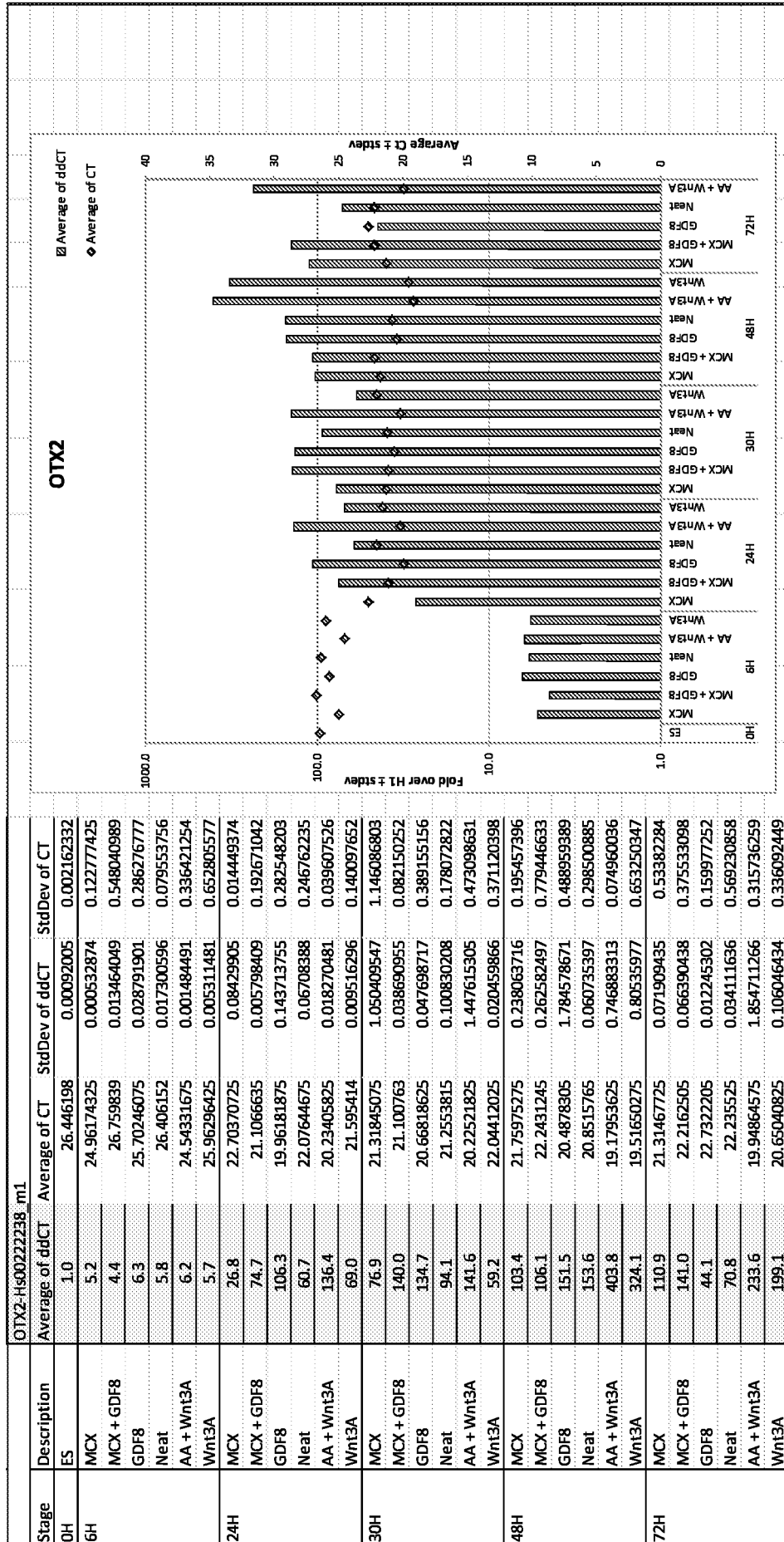


Figure 77

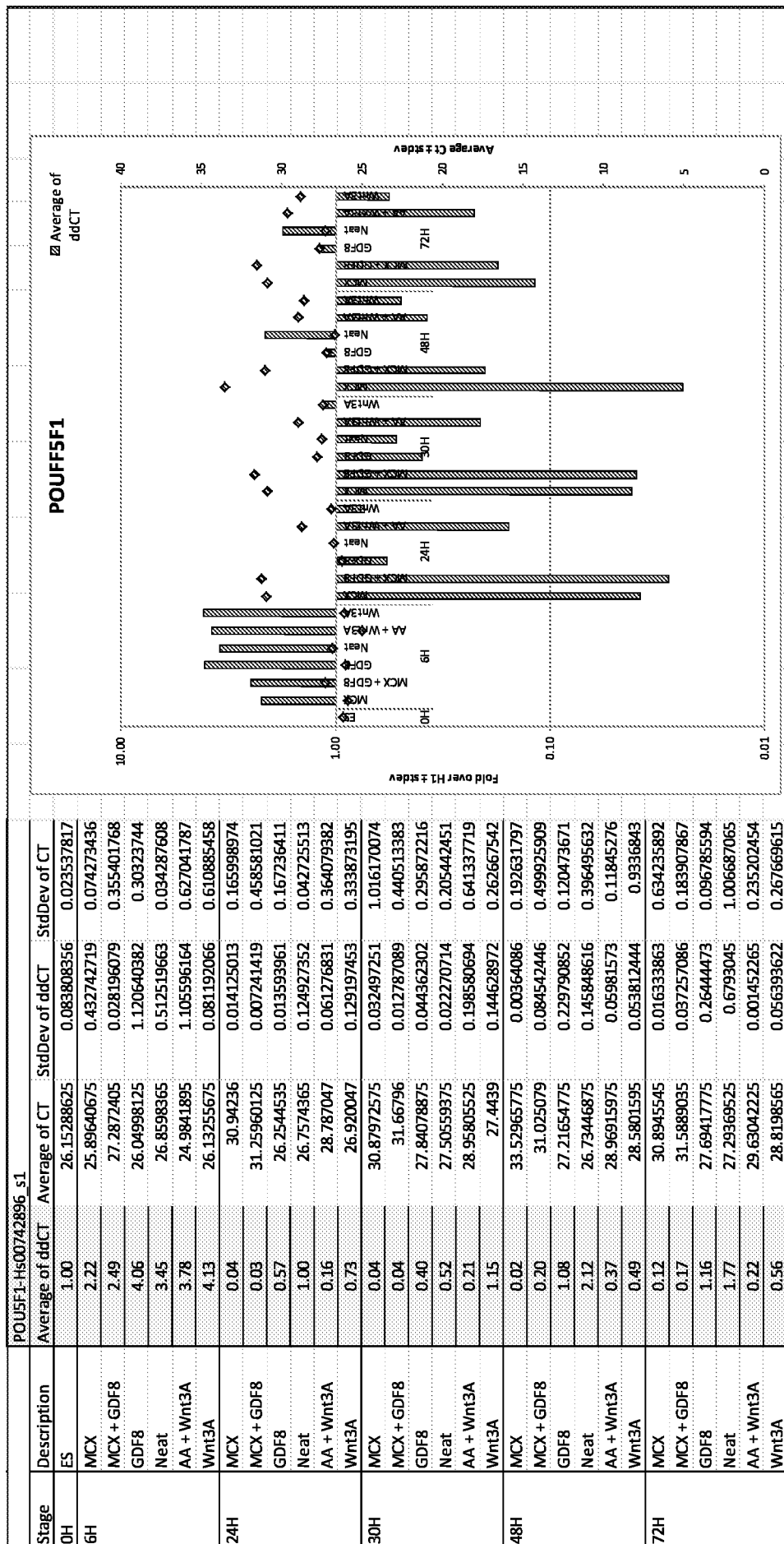


Figure 78

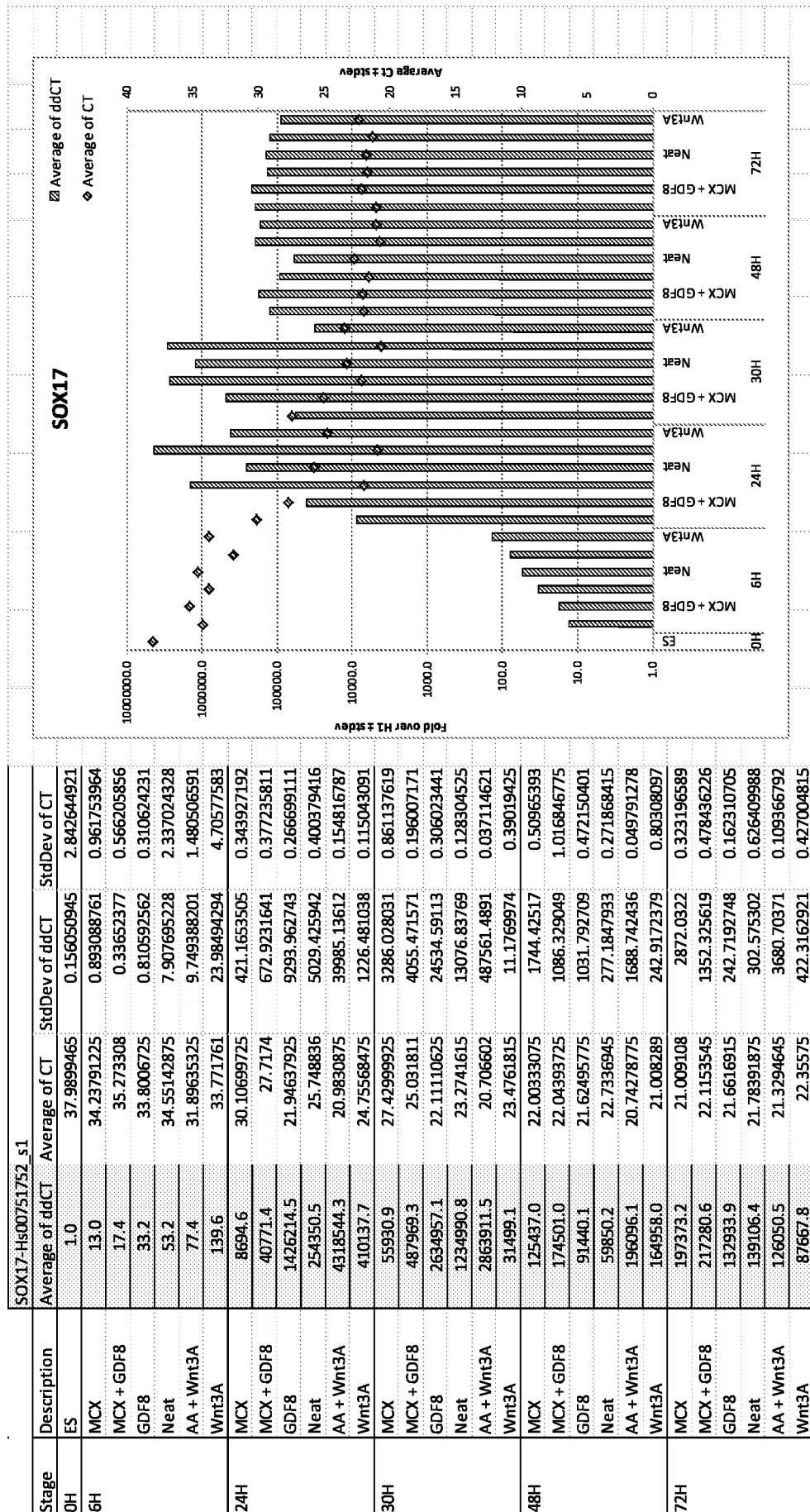


Figure 79

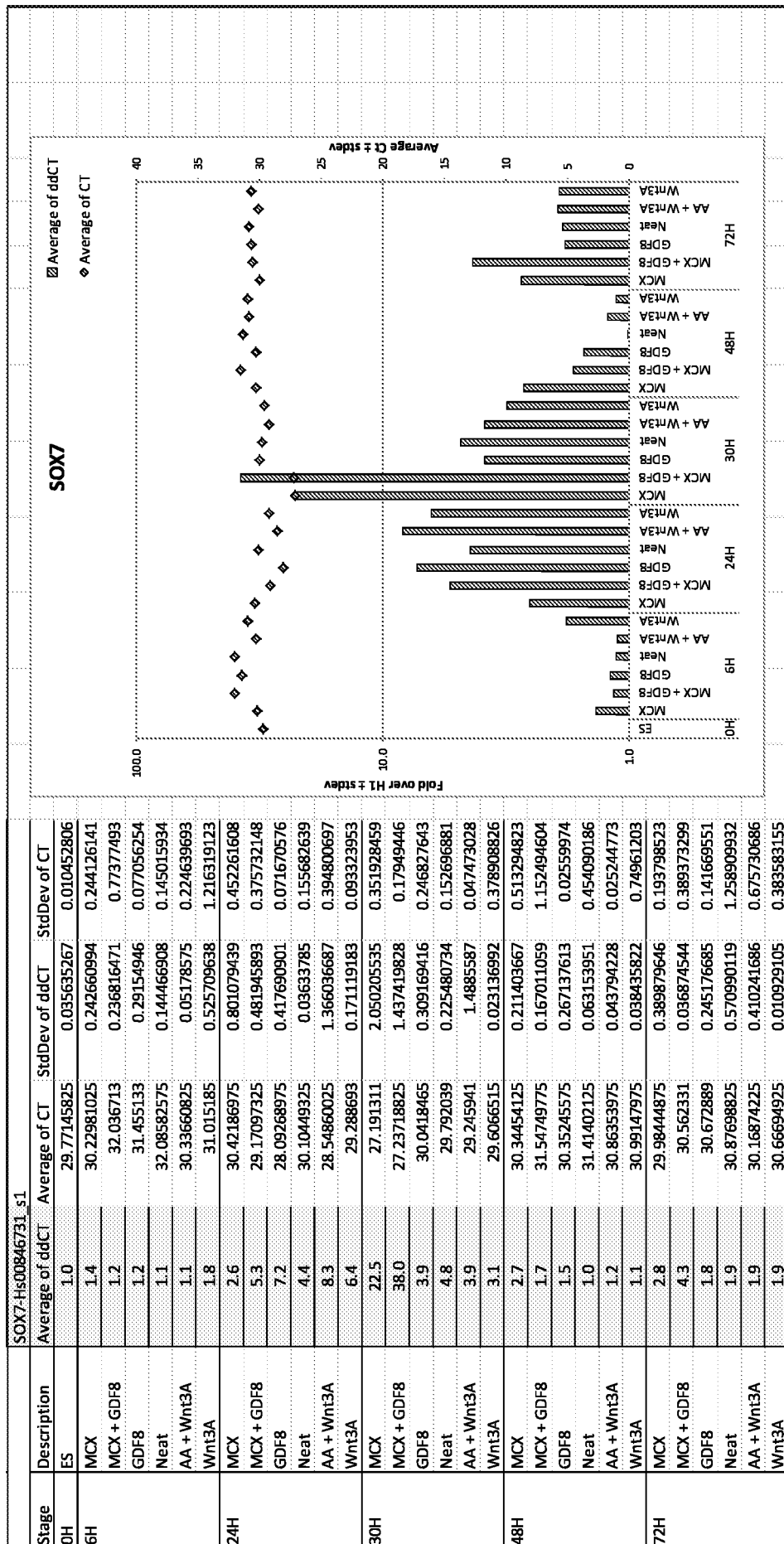


Figure 80

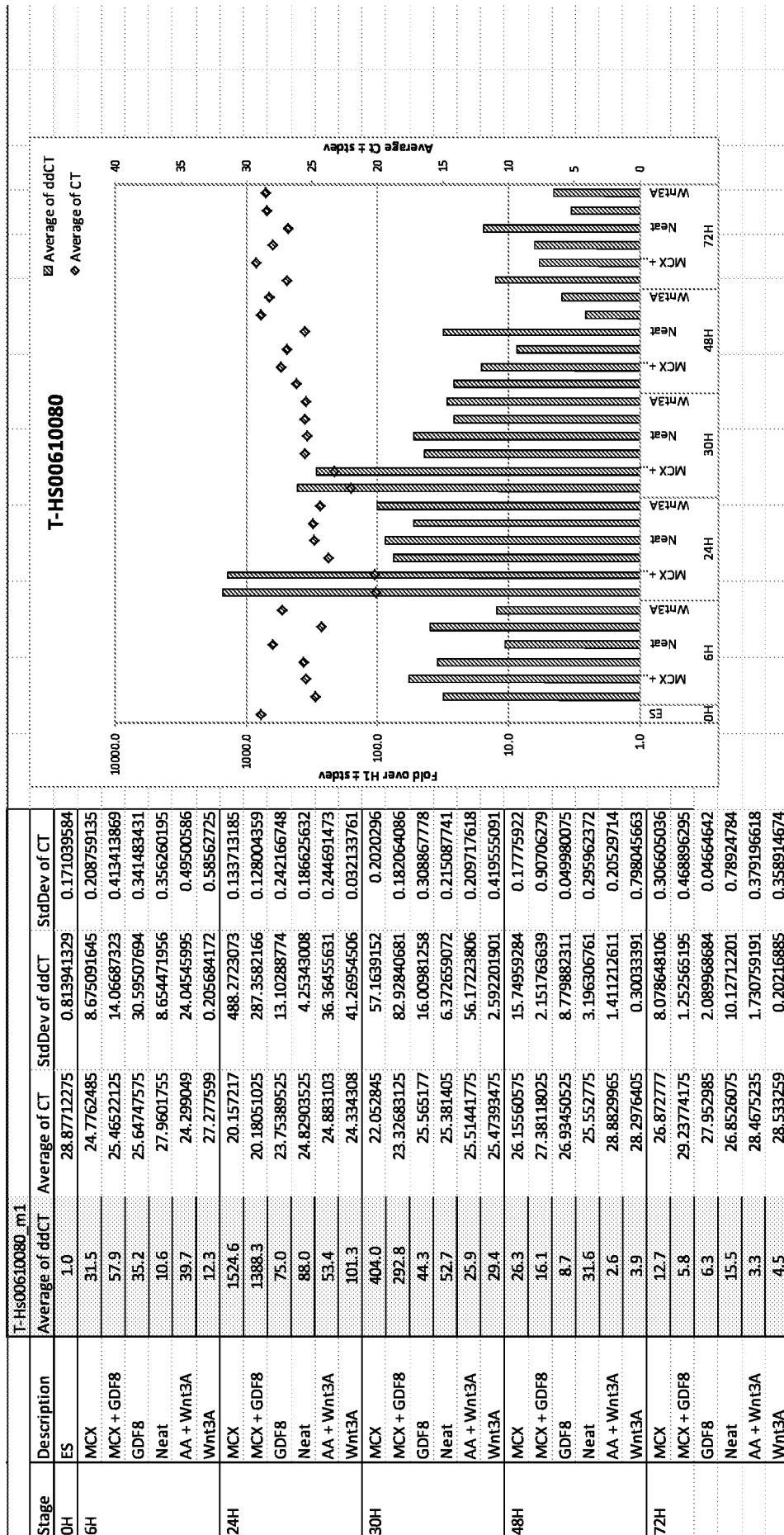


Figure 81

	Time (hours)						
	0	6	24	30	48	72	
G0/G1							
MCX + GDF8	24.6	33.9	33.4	19.2	71.9	40.1	
MCX	24.6	38	34.4	18.6	75.5	35.8	
GDF8	24.6	20.9	35.3	32.7	48.5	36.8	
NEAT	24.6	21.1	33.4	35.6	49	28.7	
WNTA/AA	24.6	23.1	36.8	34.2	57.7	37.1	
WNT only	24.6	20.4	32.7	27.9	55.8	37.1	
S	0	6	24	30	48	72	
MCX + GDF8	39.2	24.4	28.7	48.3	12	23.9	
MCX	39.2	28.3	27.8	55.6	11.8	27.6	
GDF8	39.2	31.3	20.9	41.9	27.7	19.8	
NEAT	39.2	28.8	25.7	40.4	28	20.9	
WNTA/AA	39.2	32.4	25.4	41.6	17.2	27.6	
WNT only	39.2	28.6	16.9	36.1	23.3	31.6	

Figure 81 (continued)

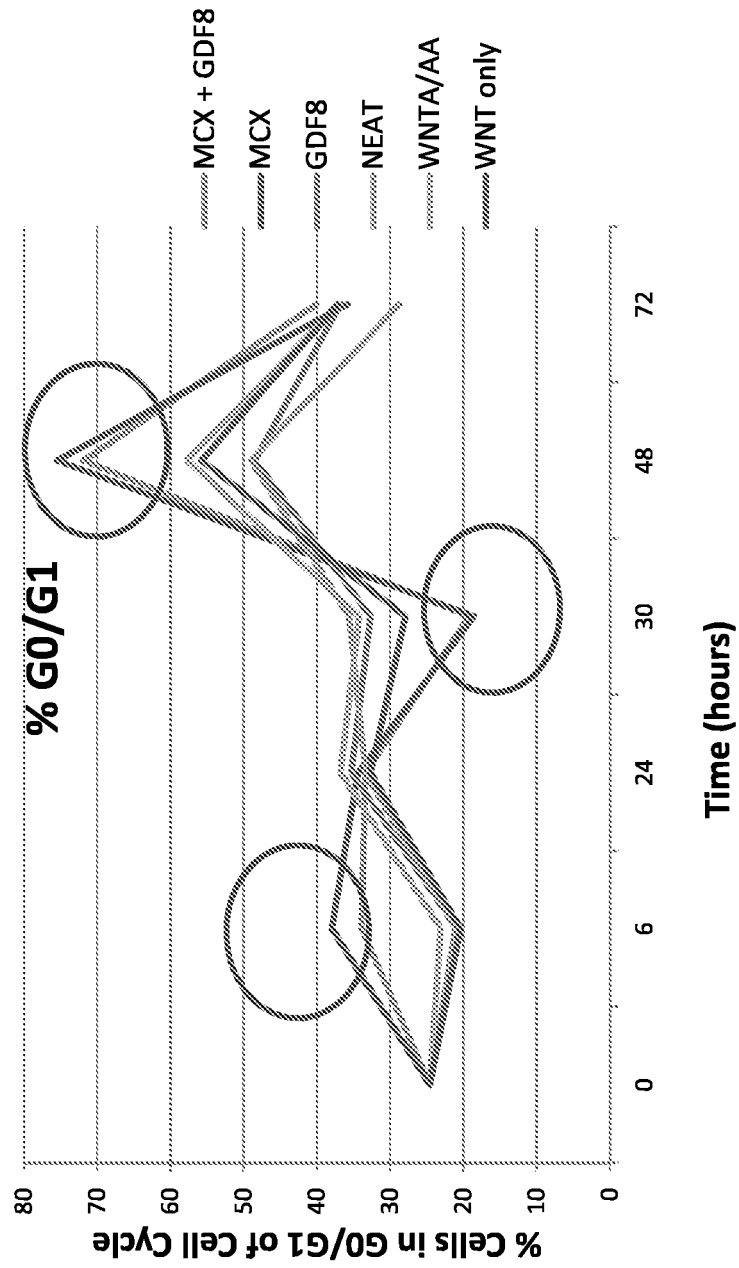


Figure 81 (continued)

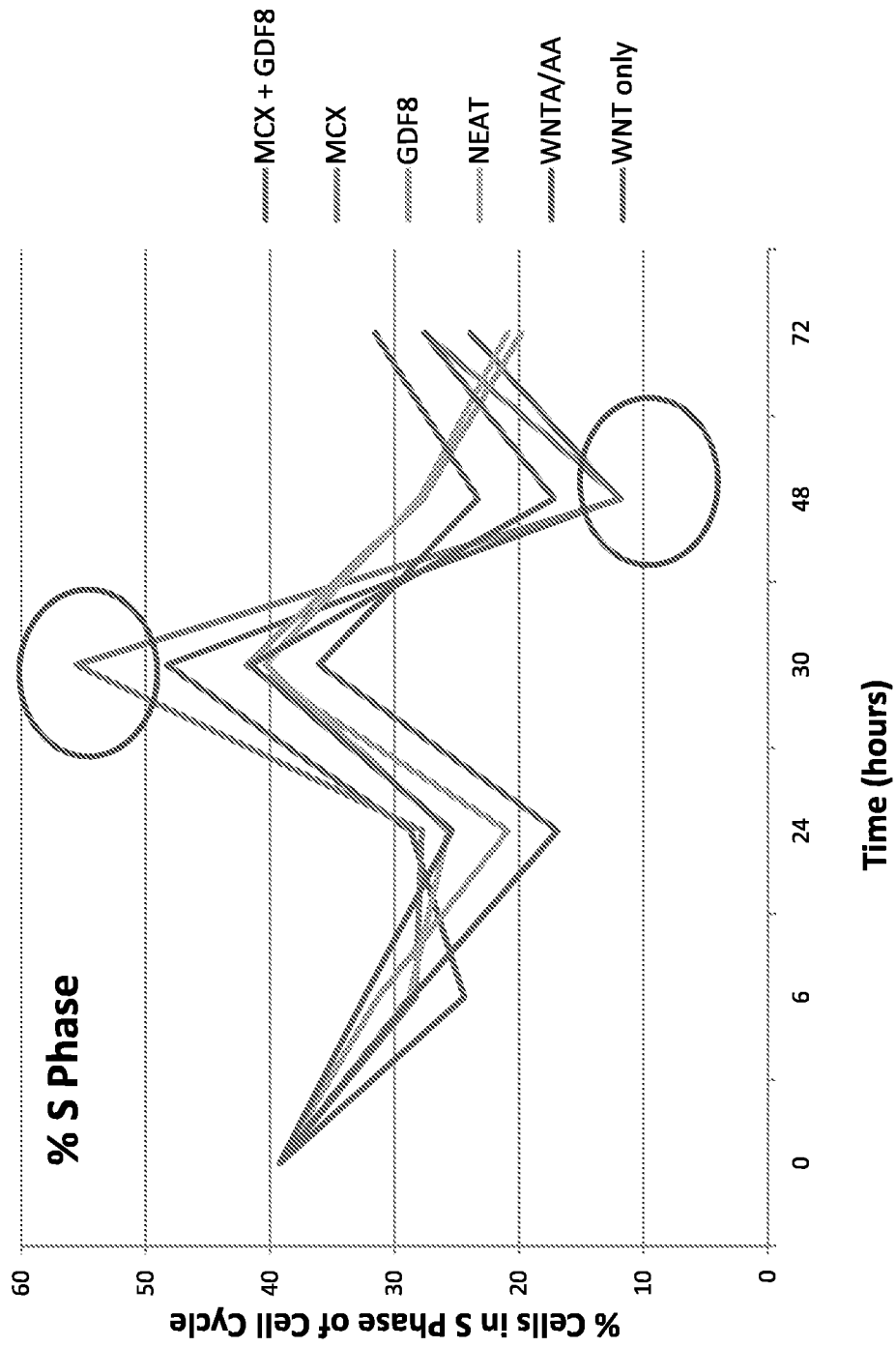


Figure 82

	Time (hours)					
M	0	6	24	30	48	72
MCX + GDF8	17.5	18	14	11.2	9.5	21.2
MCX	17.5	14.4	15.6	10.6	8.9	20.3
GDF8	17.5	17.6	19.2	12.9	12.2	22
NEAT	17.5	18.6	18	11.7	11.7	22.4
WNTA/AA	17.5	17.2	18.4	12.3	12.3	19.5
WNT only	17.5	18.4	18	15.8	12.9	16.8
EDU+	0	6	24	30	48	72
MCX + GDF8	50.4	30	41.7	58.6	12.8	30.4
MCX	50.4	29.2	36.1	62.9	11.2	32.6
GDF8	50.4	49.5	30	46.2	28.7	28
NEAT	50.4	46.7	35.1	47.2	28.9	32.6
WNTA/AA	50.4	48.4	32.5	49	20.3	30
WNT only	50.4	47.9	27.5	48.7	22.2	35.6
DE @ 72hrs	CXCR4	CD99	CD9			
MCX + GDF8	87.4	29.7	0.4			
MCX	96.9	31.7	0.7			
GDF8	95.1	55.8	5.1			
NEAT	90.1	60.2	9.1			
WNTA/AA	98.1	22.1	3.3			
WNT only	87.8	6.2	31.7			

Figure 82 (continued)

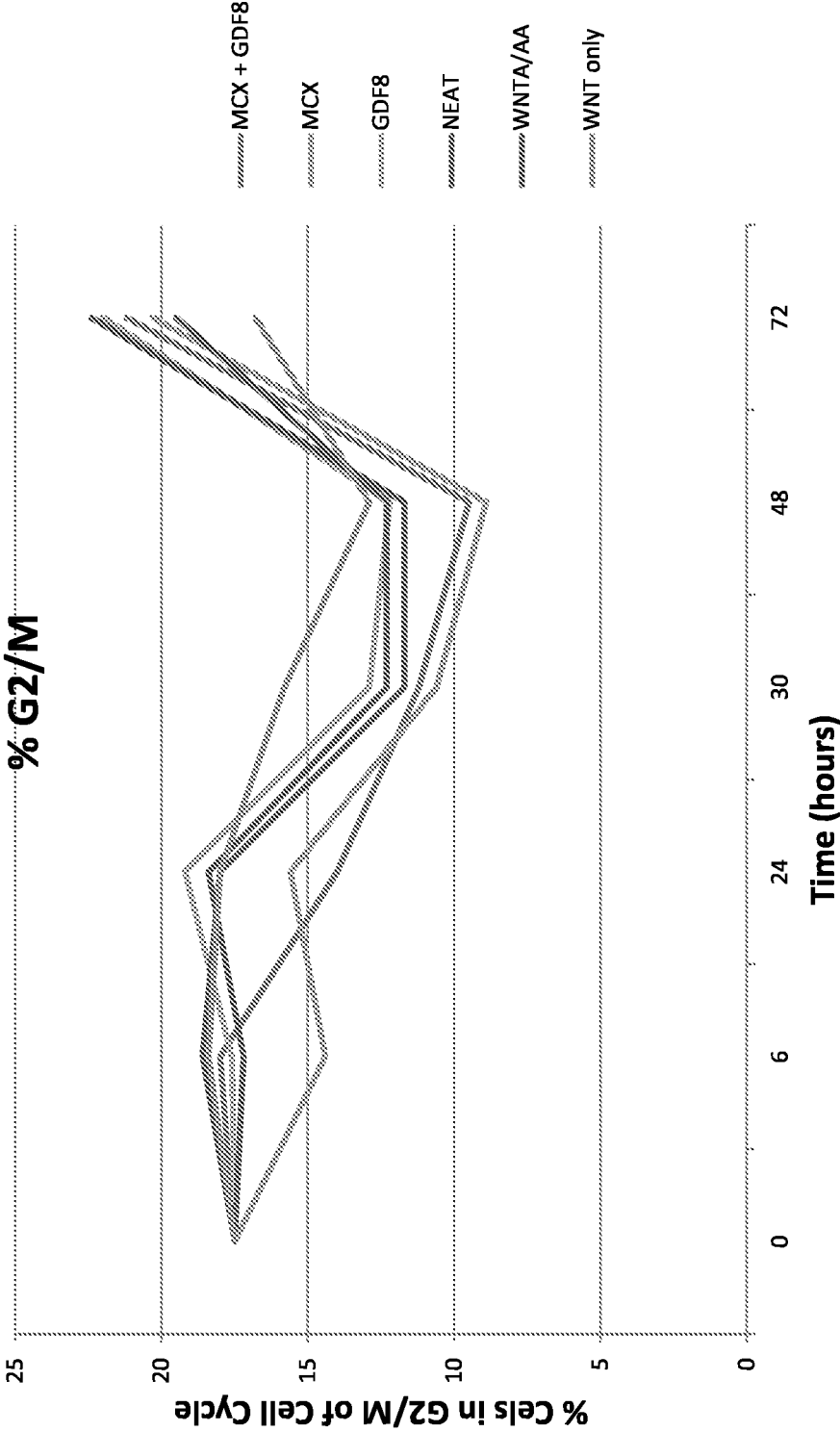


Figure 82 (continued)

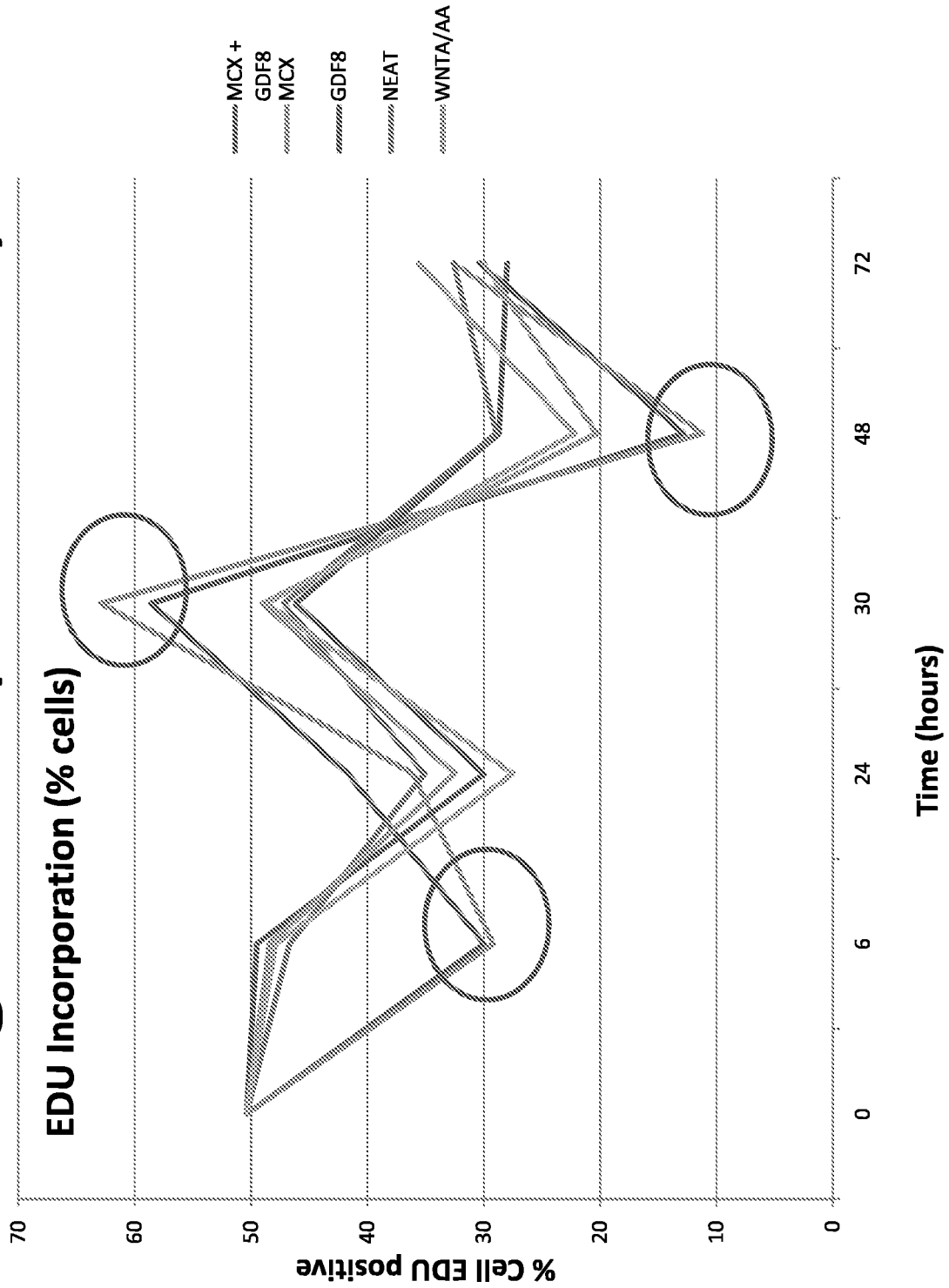


Figure 83

Ca++	Osmolality	Batch ID	O2 Saturat	CO2 Satur	HCO3	Gas/Electr	Nutrient/	Cell Densi	Cell Densi	IgG Flow	IgG Range	Tray	Locat	Mixing Ro	Media Tye	Cell	IgG T1	Operator
1.01	342	061311 MI	100	2.3	39.5	0.92	3.84	1.01				-	-	-	Default		novaservice	
1.01	350	061311 MI	100	2.7	39.4	5.46	3.92	1.01				-	-	-	Default		novaservice	
1.01	356	061311 MI	100	2.7	39.4	5.49	3.92	1.01				-	-	-	Default		novaservice	
1.04	356	061311 MI	100	2.5	40.7	5.431	3.92	1.01				-	-	-	Default		novaservice	
1.04	350	061311 MI	100	3.9	44.2	5.541	3.801	1.01				-	-	-	Default		novaservice	
1	1	061311 MI	100	1.5	33.3	5.441	3.721	1.01				-	-	-	Default		novaservice	
1	343	061311 MI	100	2.5	34.1	5.49	3.881	1.01				-	-	-	Default		novaservice	
0.99	061311 MI	100	1.7	29.6	5.46	3.88	1.01					-	-	-	Default		novaservice	
1	337	061311 MI	100	1.9	33.4	5.46	3.801	1.01				-	-	-	Default		novaservice	
1.08	061311 N	100	2.9	27.9	5.56	3.92	1.01					-	-	-	Default		novaservice	
1.08	061311 MI	100	2.6	25.3	5.5	3.92	1.01					-	-	-	Default		novaservice	
1.08	061311 MI	100	3.1	24.8	5.461	3.92	1.01					-	-	-	Default		novaservice	
1.09	061311 MI	100	3.6	28	5.44	3.88	1.01					-	-	-	Default		novaservice	
1.09	061311 N	100	3.7	29.1	5.48	4	1.01					-	-	-	Default		novaservice	
1.07	061311 N	100	3.3	13.2	5.46	3.881	1.01					-	-	-	Default		novaservice	
1.07	061311 N	100	3.6	13.4	5.44	3.96	1.01					-	-	-	Default		novaservice	
1.1	061311 N	100	4.3	27.8	5.44	3.88	1.01					-	-	-	Default		novaservice	
1.11	061311 N	100	3.5	30	5.5	3.8	1.01					-	-	-	Default		novaservice	
1.08	061311 N	100	3.3	15.6	5.44	3.84	1.01					-	-	-	Default		novaservice	
1.09	061311 N	100	3.4	16.2	5.5	3.84	1.01					-	-	-	Default		novaservice	
1.1	061311 N	100	3.2	28.3	5.52	3.88	1.01					-	-	-	Default		novaservice	
Ca++	Osmolality	Batch ID	O2 Saturat	CO2 Satur	HCO3	Gas/Electr	Nutrient/	Cell Densi	Cell Densi	IgG Flow	IgG Range	Tray	Locat	Mixing Ro	Media Tye	Cell	IgG T1	Operator
1.01	350	061311 MI	100	2.3	39.5	5.46	3.92	1.01				-	-	-	Default		novaservice	
1	061311 MI	100	1.5	33.3	5.441	3.721	1.01					-	-	-	Default		novaservice	
1.08	061311 N	100	2.9	27.9	5.56	3.92	1.01					-	-	-	Default		novaservice	
1.09	061311 N	100	3.7	29.1	5.48	4	1.01					-	-	-	Default		novaservice	
1.11	061311 N	100	3.5	30	5.5	3.8	1.01					-	-	-	Default		novaservice	
1.01	356	061311 MI	100	2.7	39.4	5.49	3.92	1.01				-	-	-	Default		novaservice	
1	343	061311 MI	100	2.5	34.1	5.49	3.881	1.01				-	-	-	Default		novaservice	
1.08	061311 MI	100	2.6	25.3	5.5	3.92	1.01					-	-	-	Default		novaservice	
1.07	061311 N	100	3.3	13.2	5.46	3.881	1.01					-	-	-	Default		novaservice	
1.08	061311 N	100	3.3	15.6	5.44	3.84	1.01					-	-	-	Default		novaservice	
1.01	356	061311 MI	100	2.5	40.7	5.431	3.92	1.01				-	-	-	Default		novaservice	
0.99	061311 MI	100	1.7	29.6	5.46	3.88	1.01					-	-	-	Default		novaservice	
1.08	061311 MI	100	3.1	24.8	5.461	3.92	1.01					-	-	-	Default		novaservice	
1.07	061311 N	100	3.6	13.4	5.44	3.96	1.01					-	-	-	Default		novaservice	
1.09	061311 N	100	3.4	16.2	5.5	3.84	1.01					-	-	-	Default		novaservice	
1.04	350	061311 MI	100	3.9	44.2	5.541	3.801	1.01				-	-	-	Default		novaservice	
1	337	061311 MI	100	1.9	33.4	5.46	3.801	1.01				-	-	-	Default		novaservice	
1.09	061311 MI	100	3.6	28	5.44	3.88	1.01					-	-	-	Default		novaservice	
1.1	061311 N	100	4.3	27.8	5.44	3.88	1.01					-	-	-	Default		novaservice	
1.1	061311 N	100	3.2	28.3	5.52	3.88	1.01					-	-	-	Default		novaservice	

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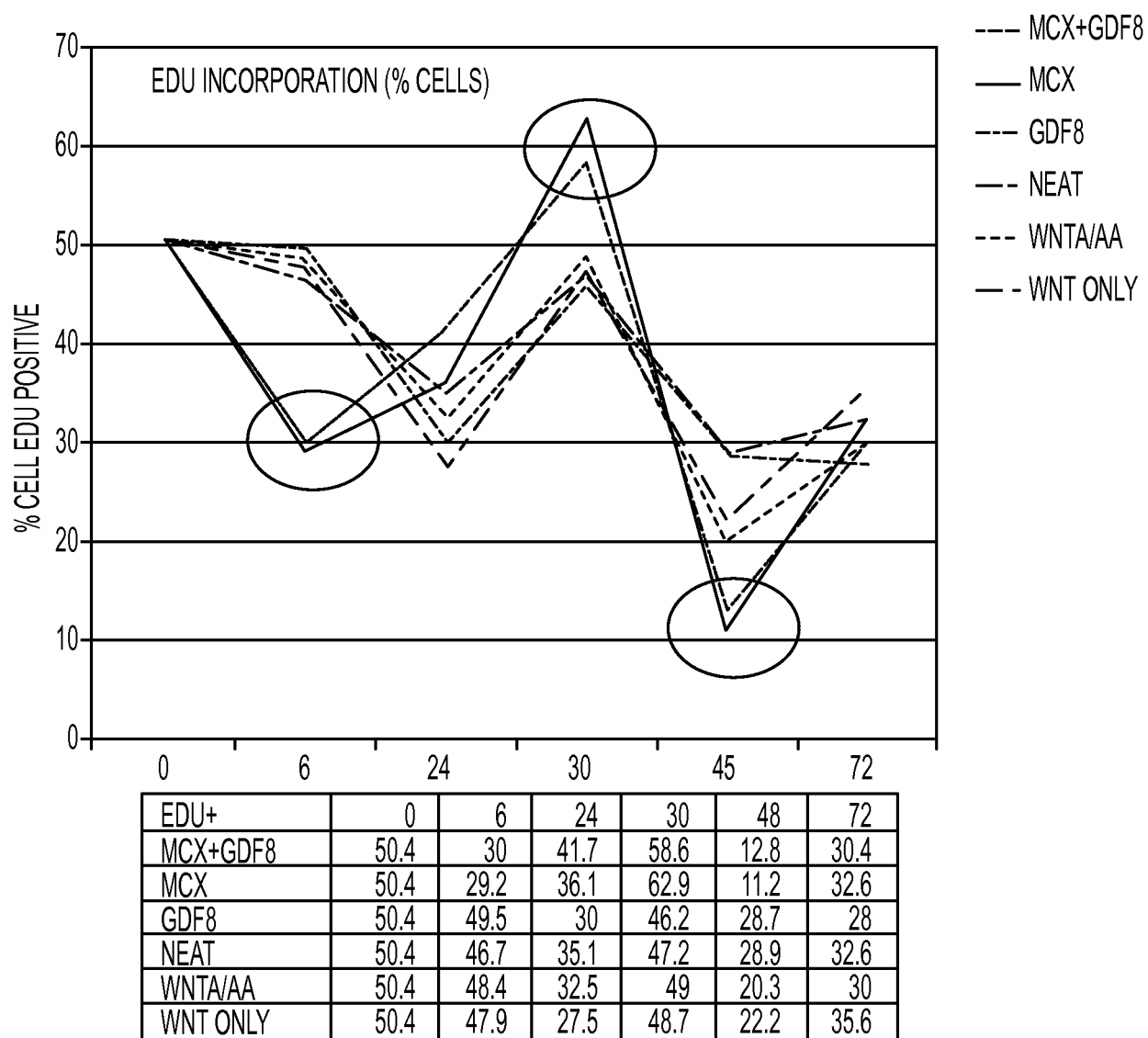


FIG. 84

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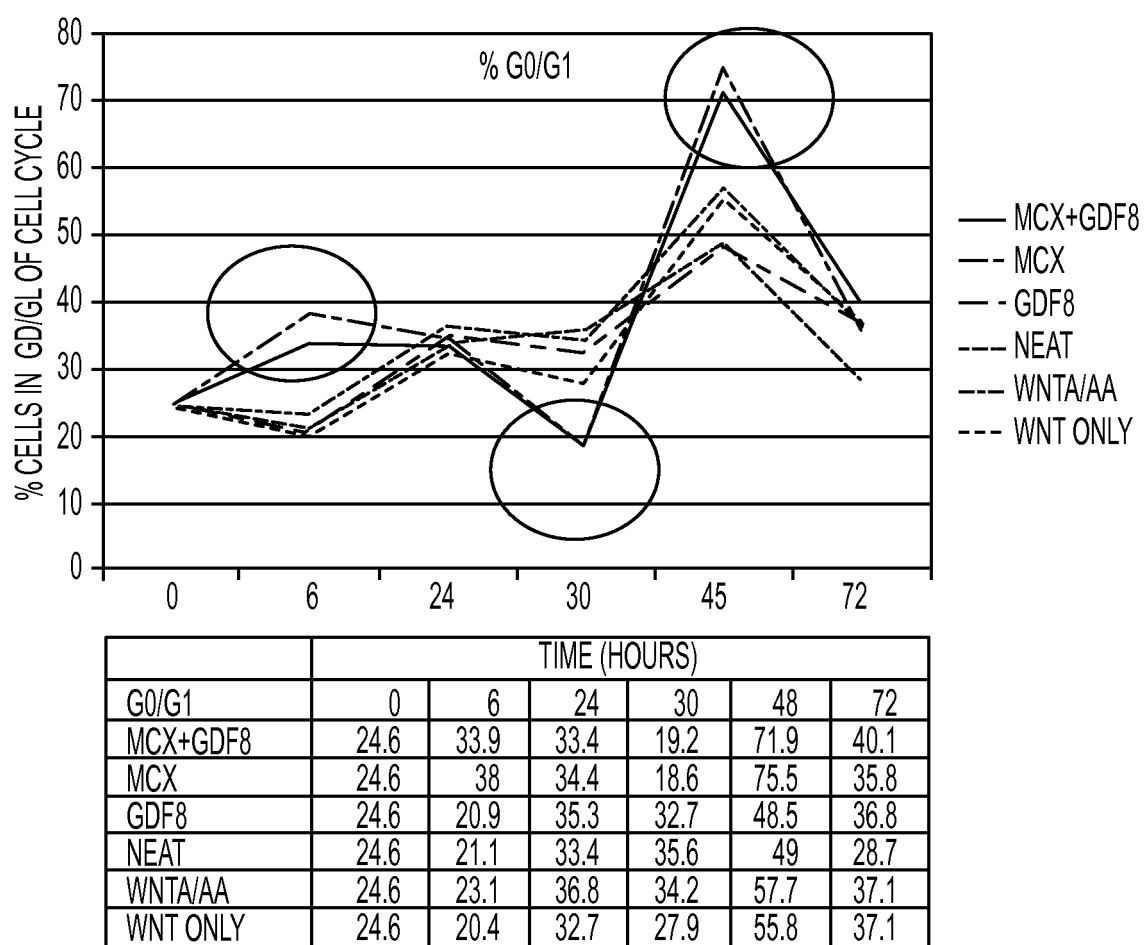
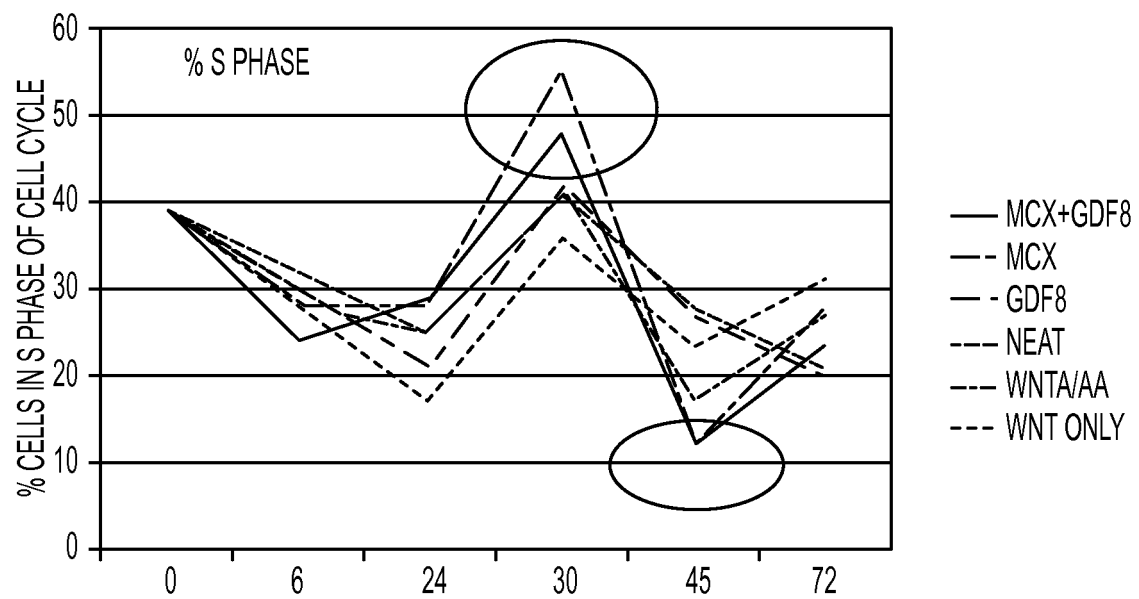


FIG. 85

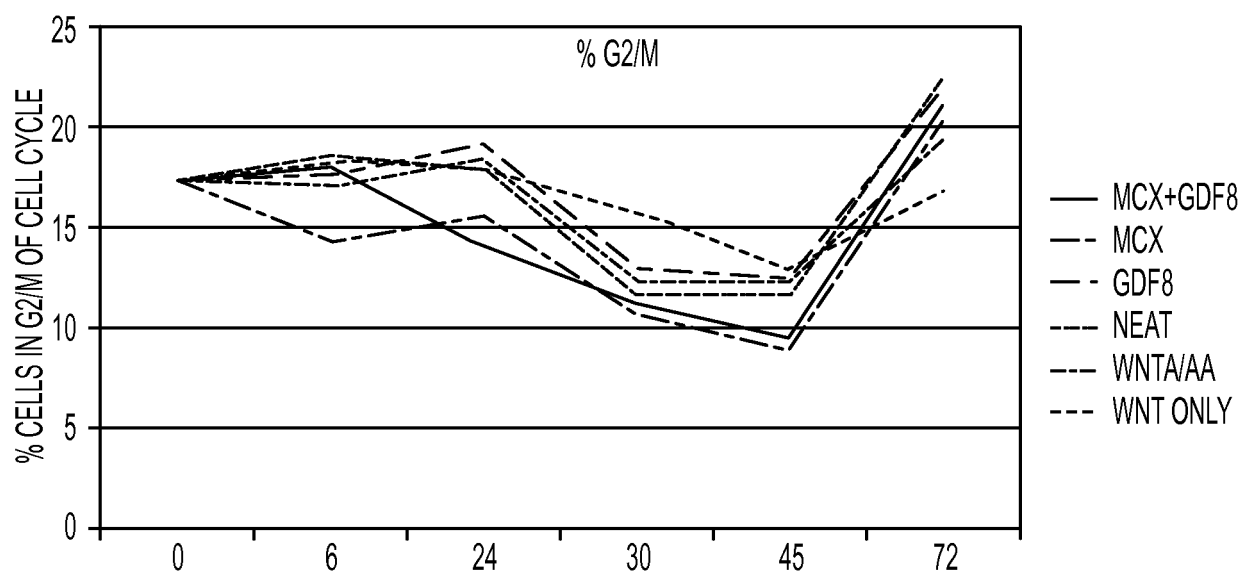
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S	0	6	24	30	48	72
MCX+GDF8	39.2	24.4	28.7	48.3	12	23.9
MCX	39.2	28.3	27.8	55.6	11.8	27.6
GDF8	39.2	31.3	20.9	41.9	27.7	19.8
NEAT	39.2	28.8	25.7	40.4	28	20.9
WNTA/AA	39.2	32.4	25.4	41.6	17.2	27.6
WNT ONLY	39.2	28.6	16.9	36.1	23.3	31.6

FIG. 86

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G2/M	0	6	24	30	45	72
MCX+GDF8	17.5	15	14	11.2	9.5	21.2
MCX	17.5	14.4	15.6	10.6	8.9	20.5
GDF8	17.5	17.6	19.2	12.9	12.2	22
NEAT	17.5	15.6	15	11.7	11.7	22.4
WNTA/AA	17.5	17.2	15.4	12.5	12.5	19.5
WNT ONLY	17.5	18.4	15	15.5	12.9	16.5

FIG. 87

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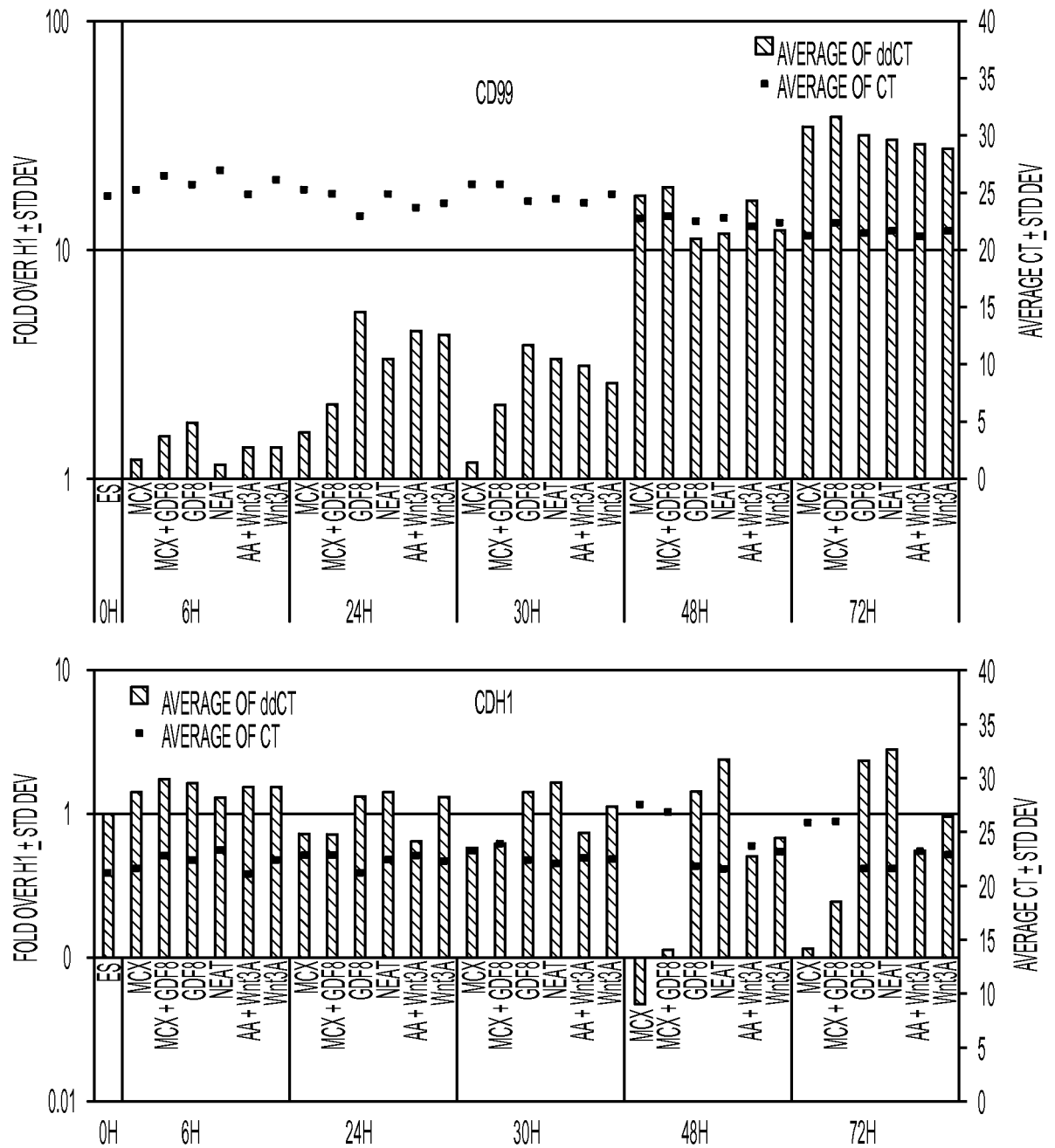


FIG. 88a

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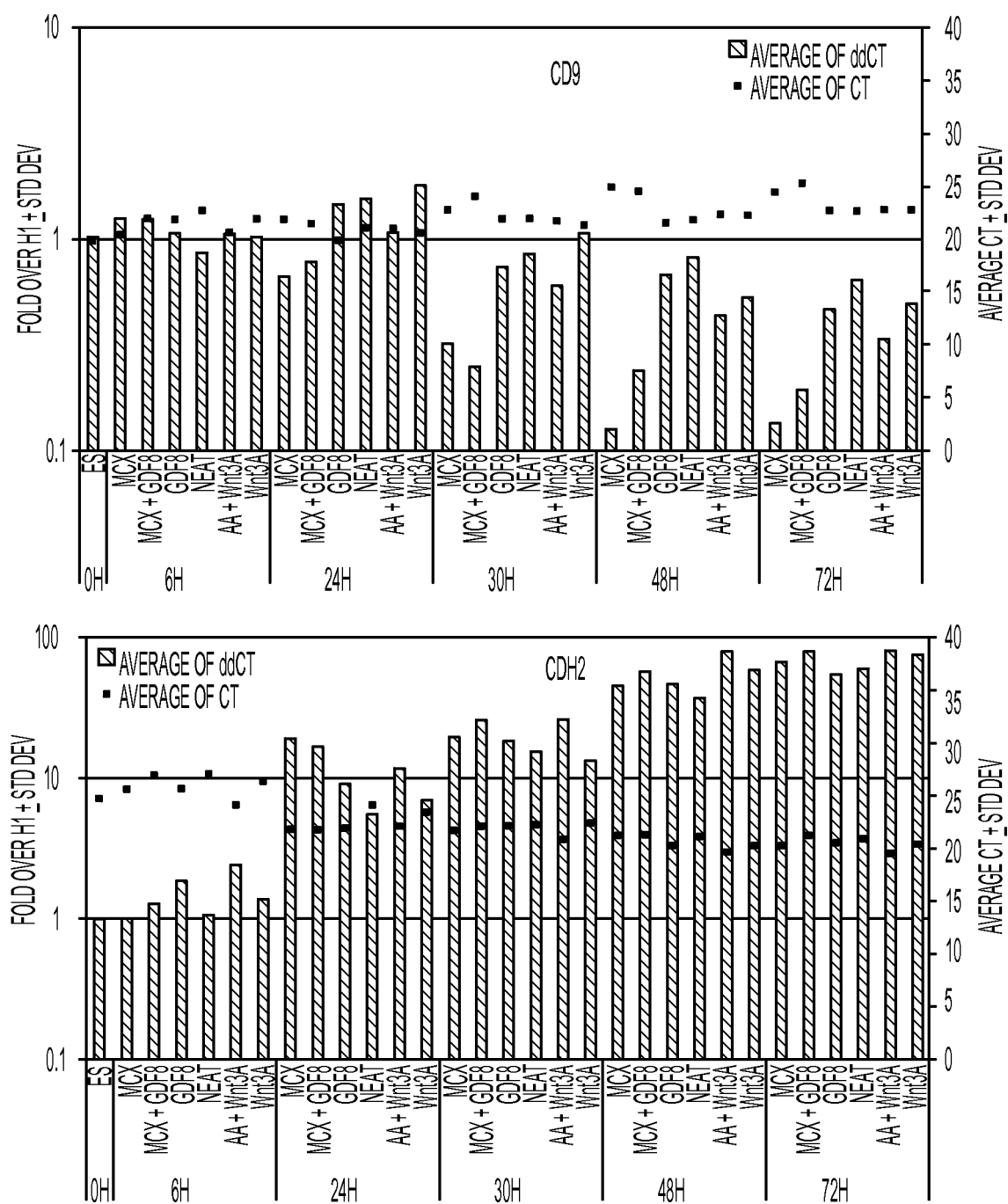


FIG. 88a
CONTINUED

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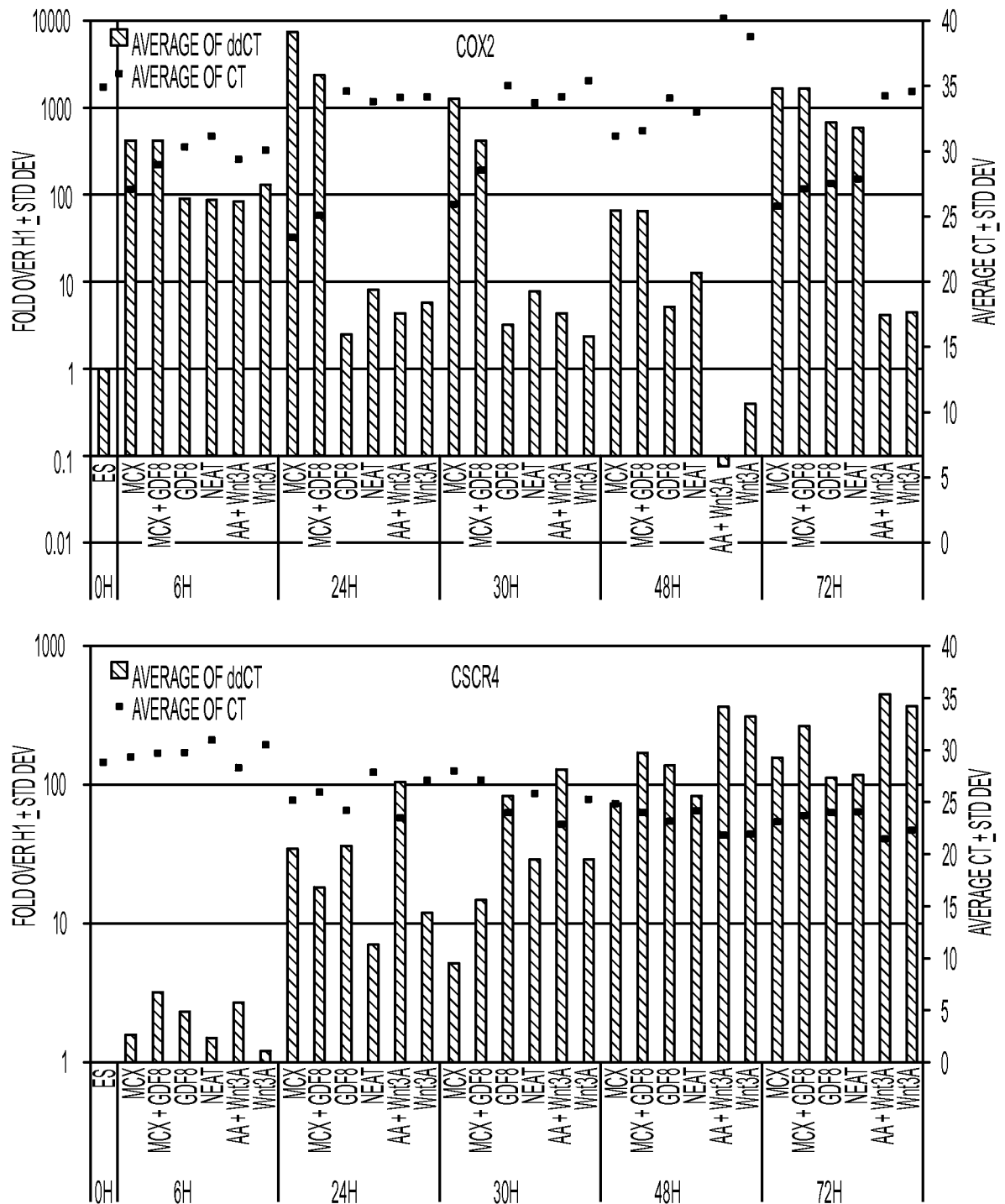
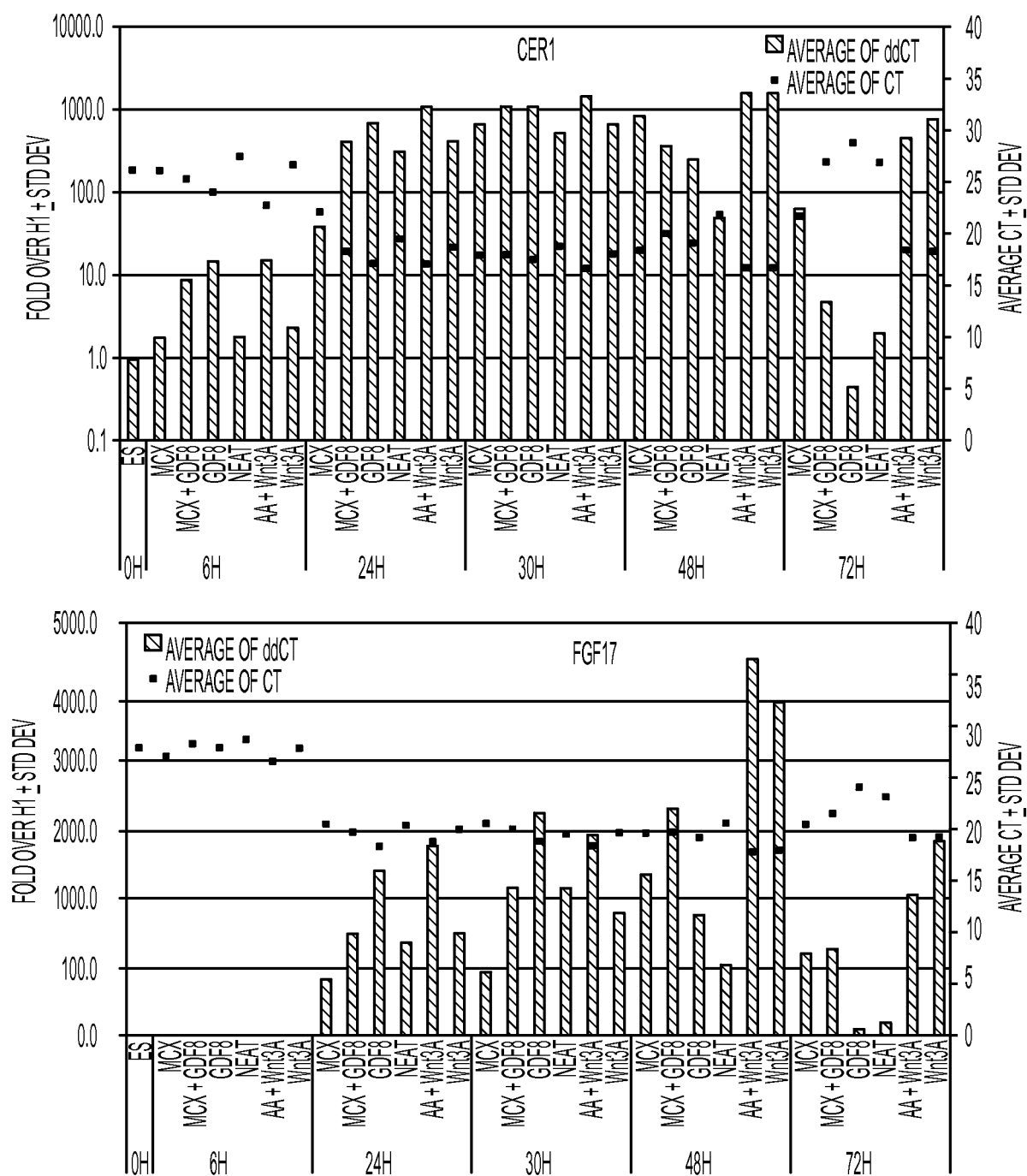


FIG. 88b

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FIG. 88b
CONTINUED

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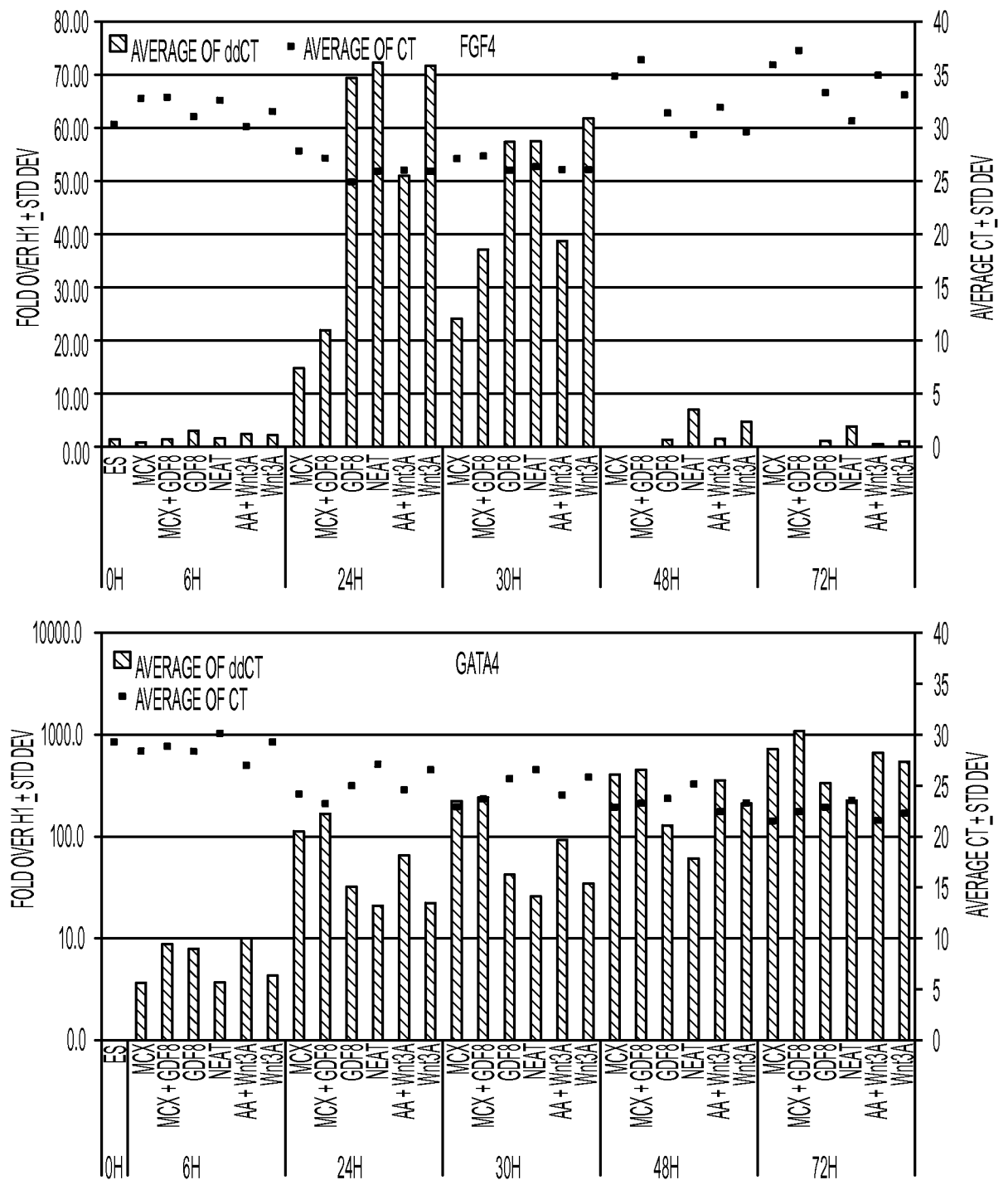
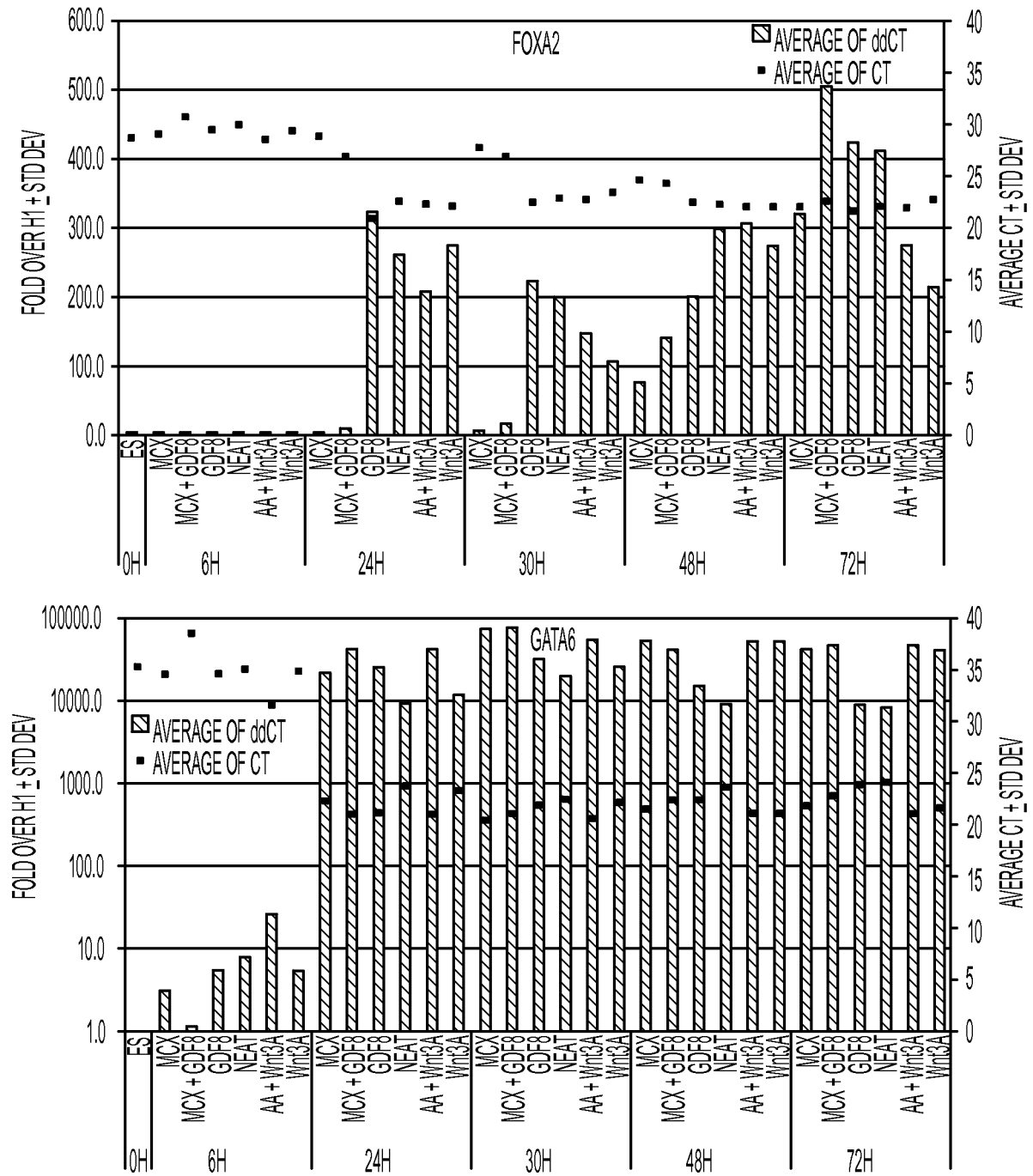


FIG. 88c

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FIG. 88c
CONTINUED

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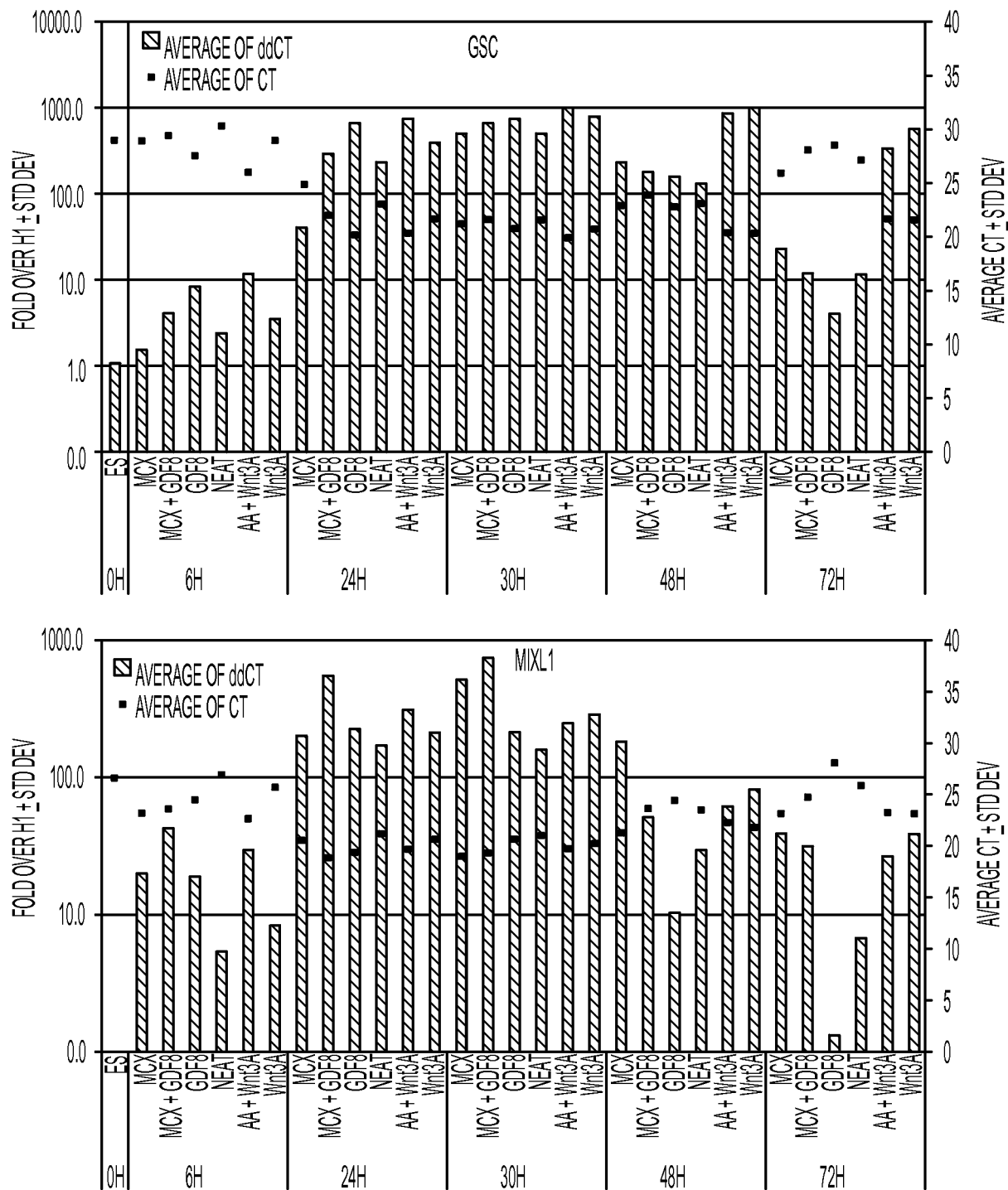


FIG. 88d

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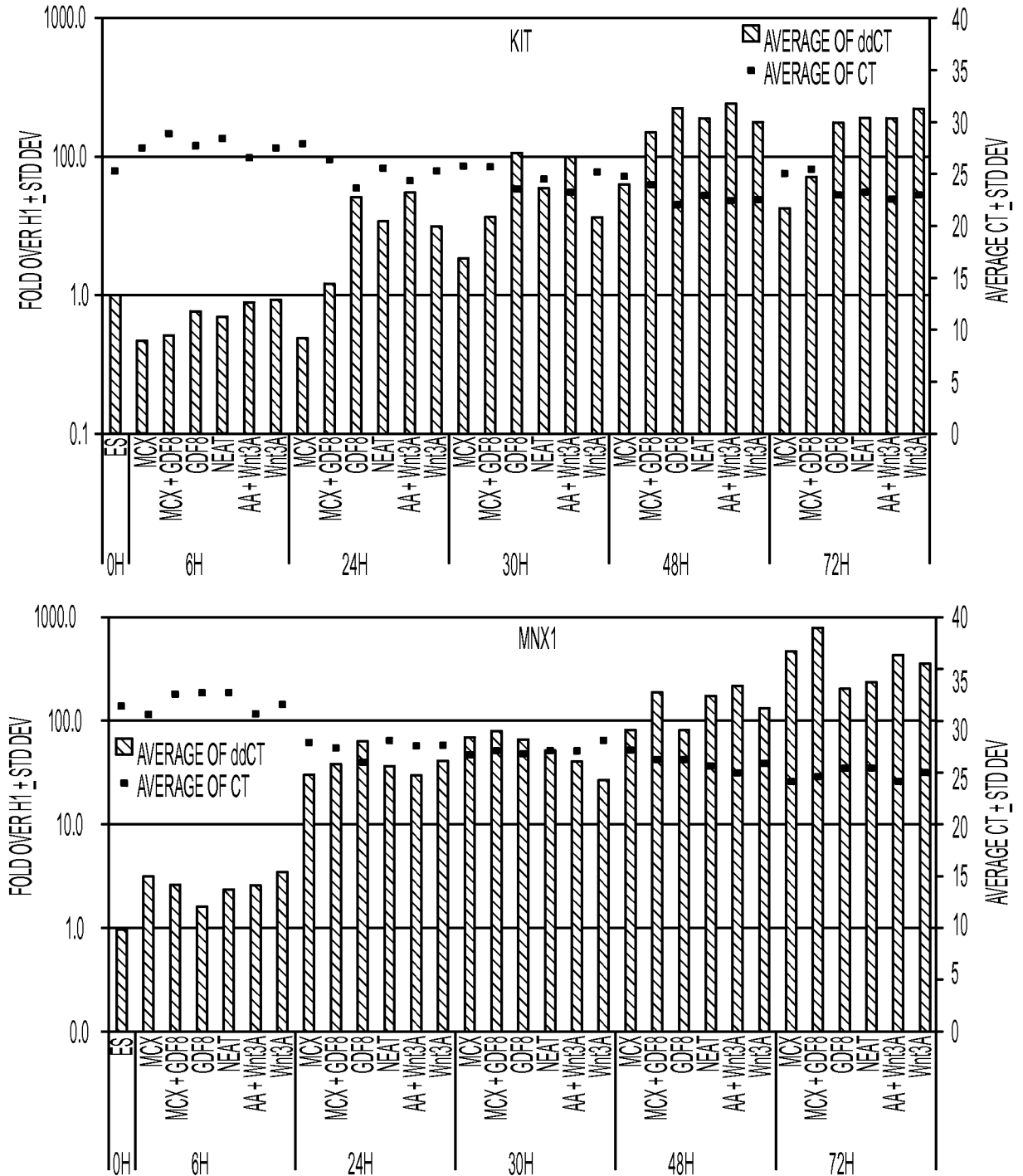


FIG. 88d
CONTINUED

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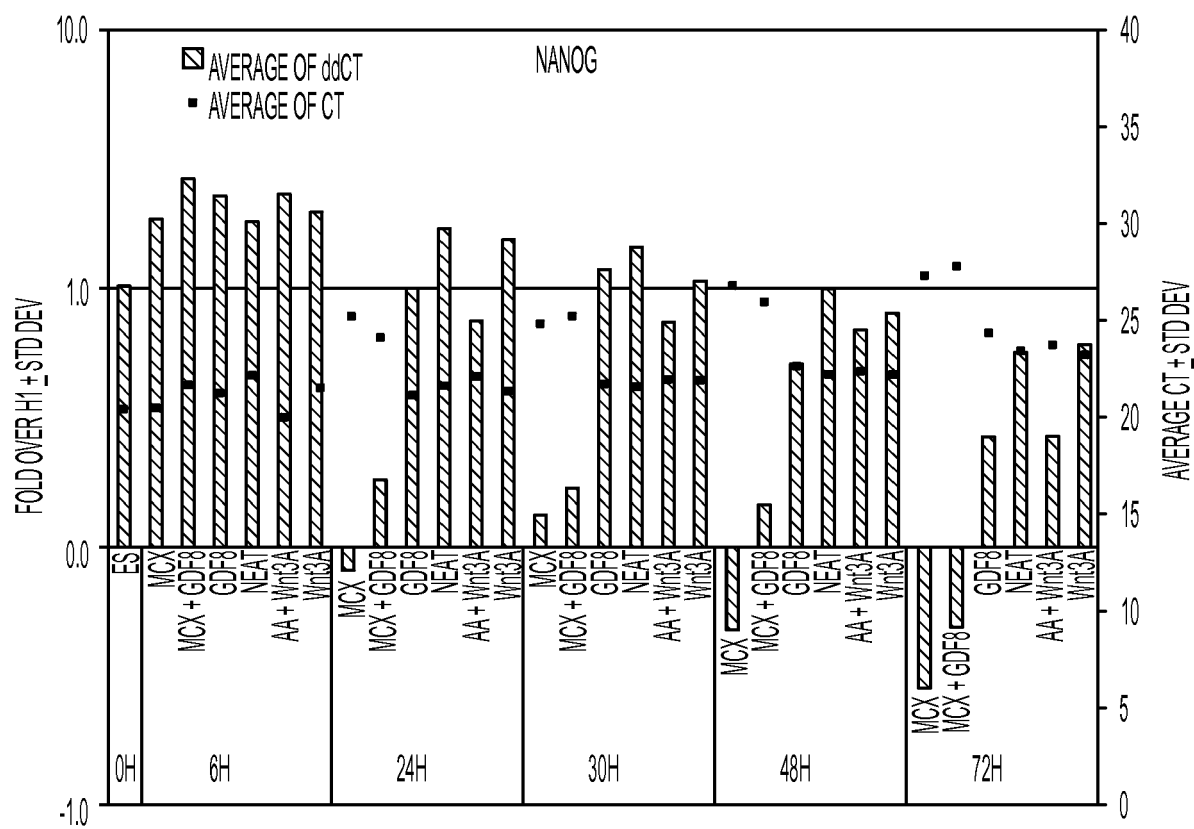


FIG. 88e

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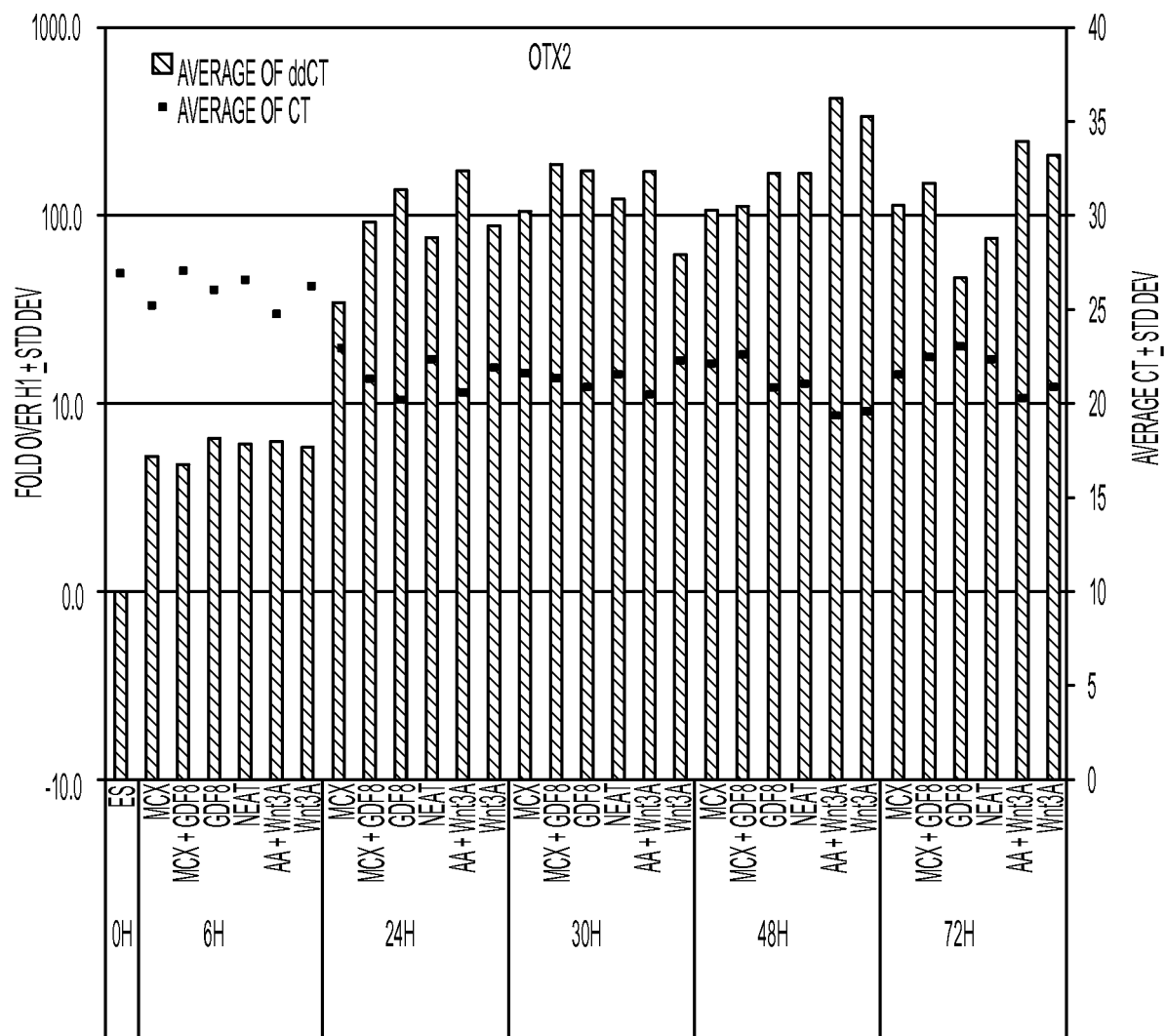


FIG. 88e
CONTINUED

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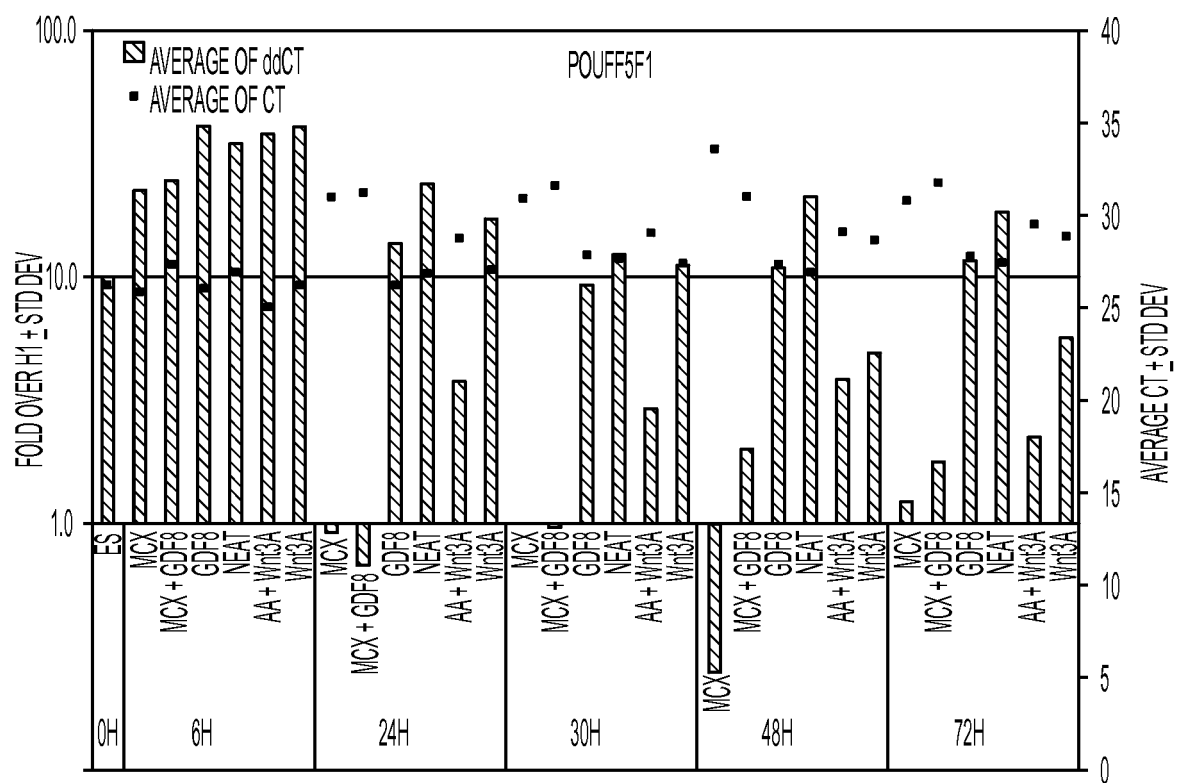


FIG. 88e
CONTINUED

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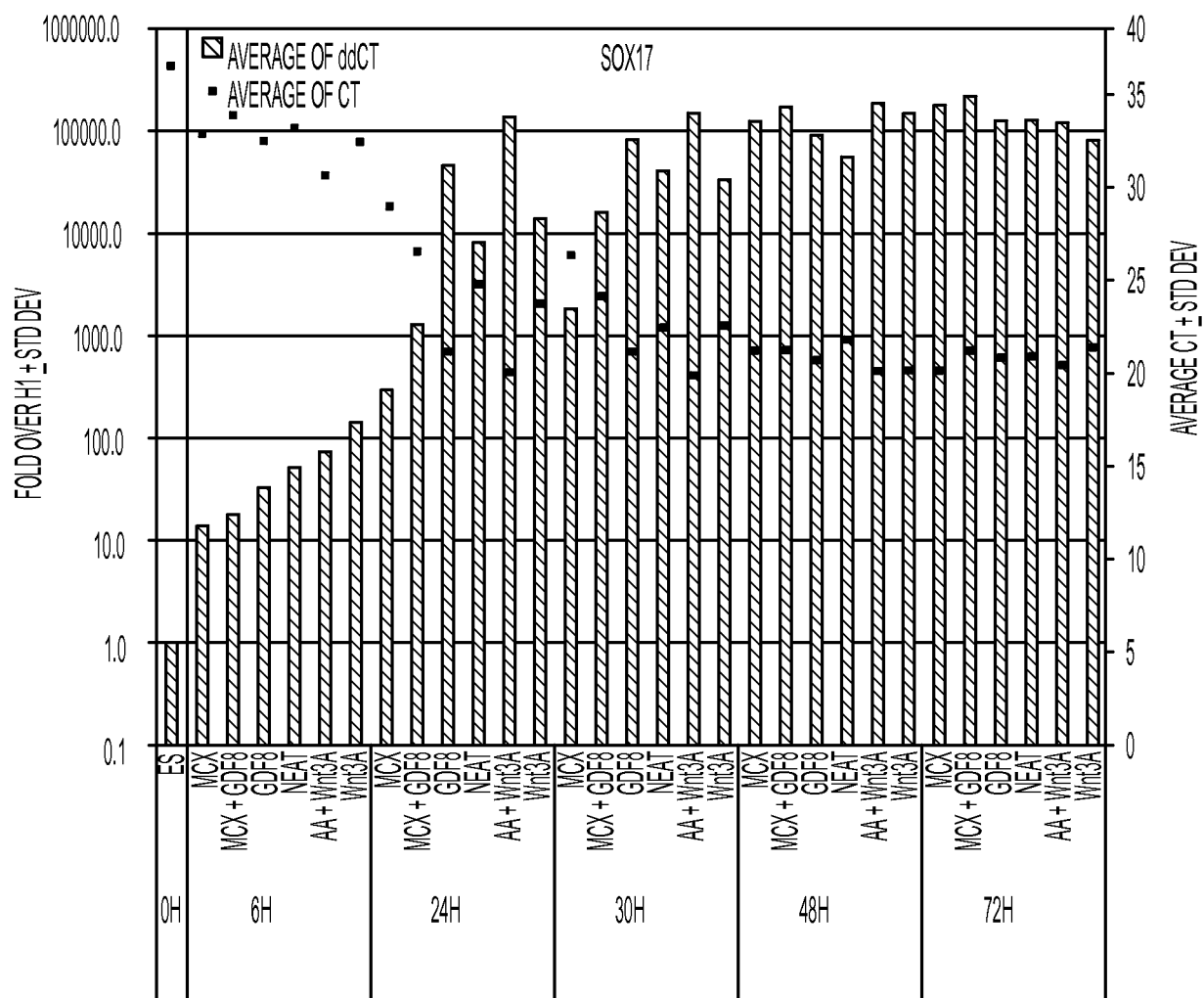


FIG. 88e
CONTINUED

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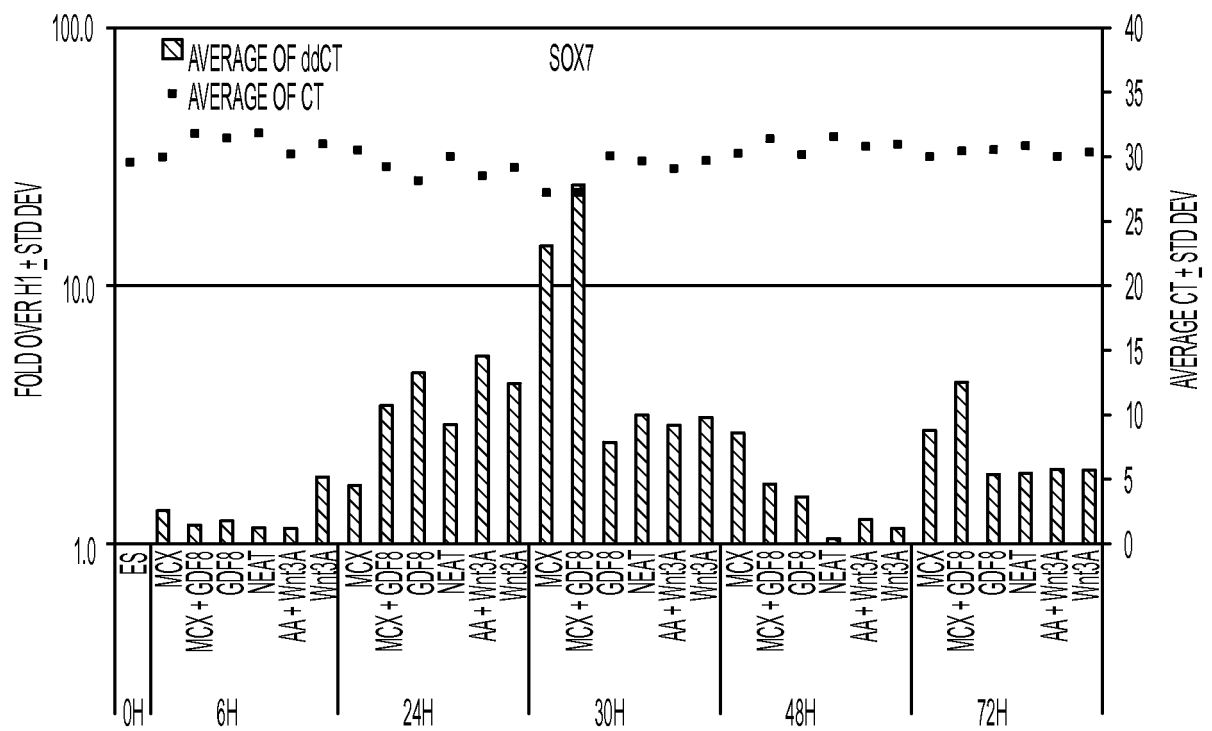


FIG. 88f
CONTINUED

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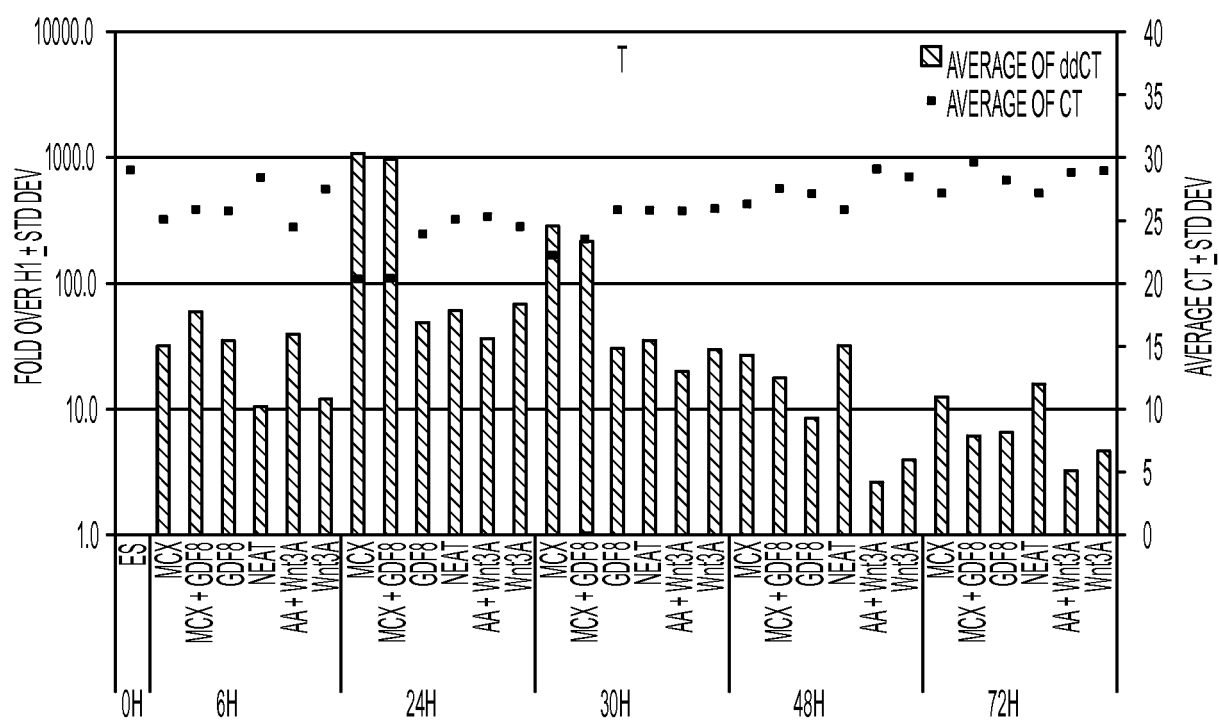


FIG. 88f
CONTINUED

Figure 89

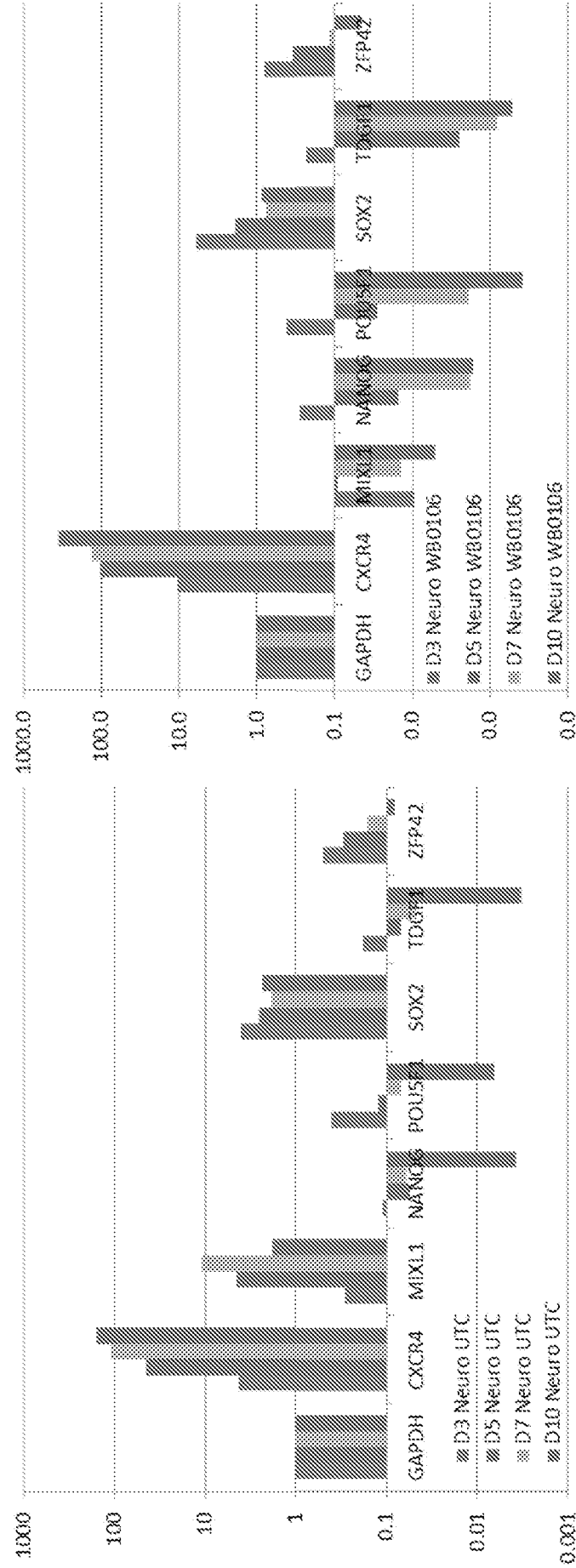


Figure 90

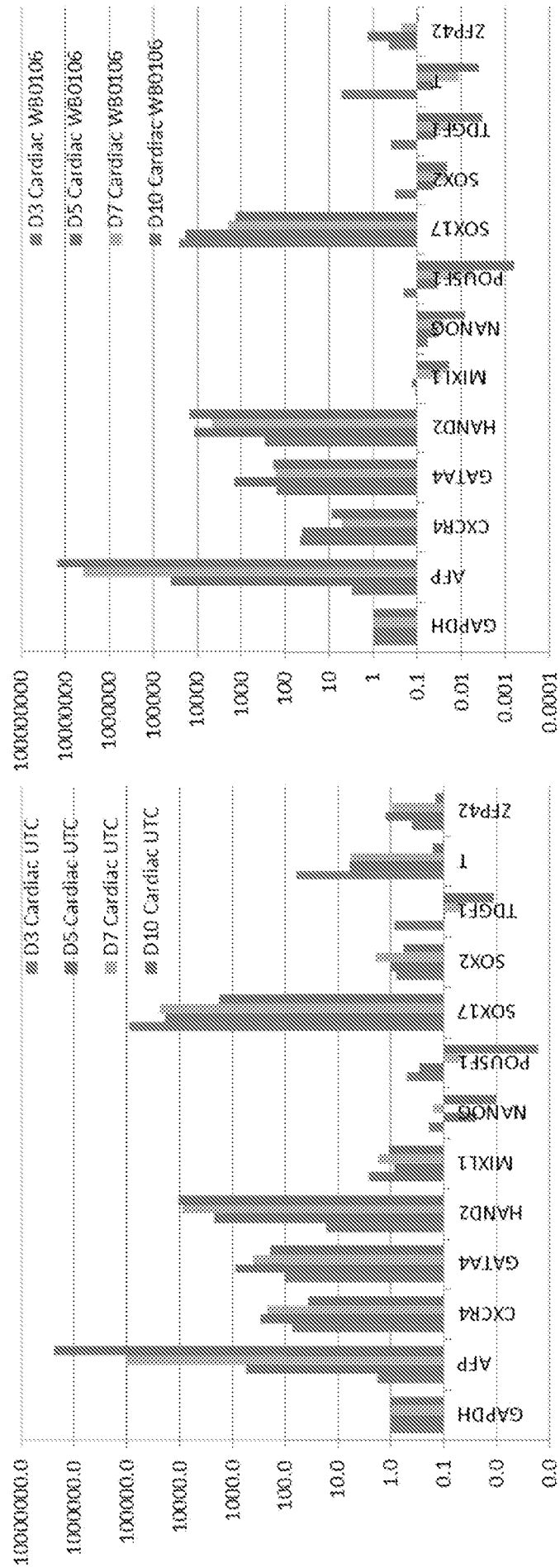
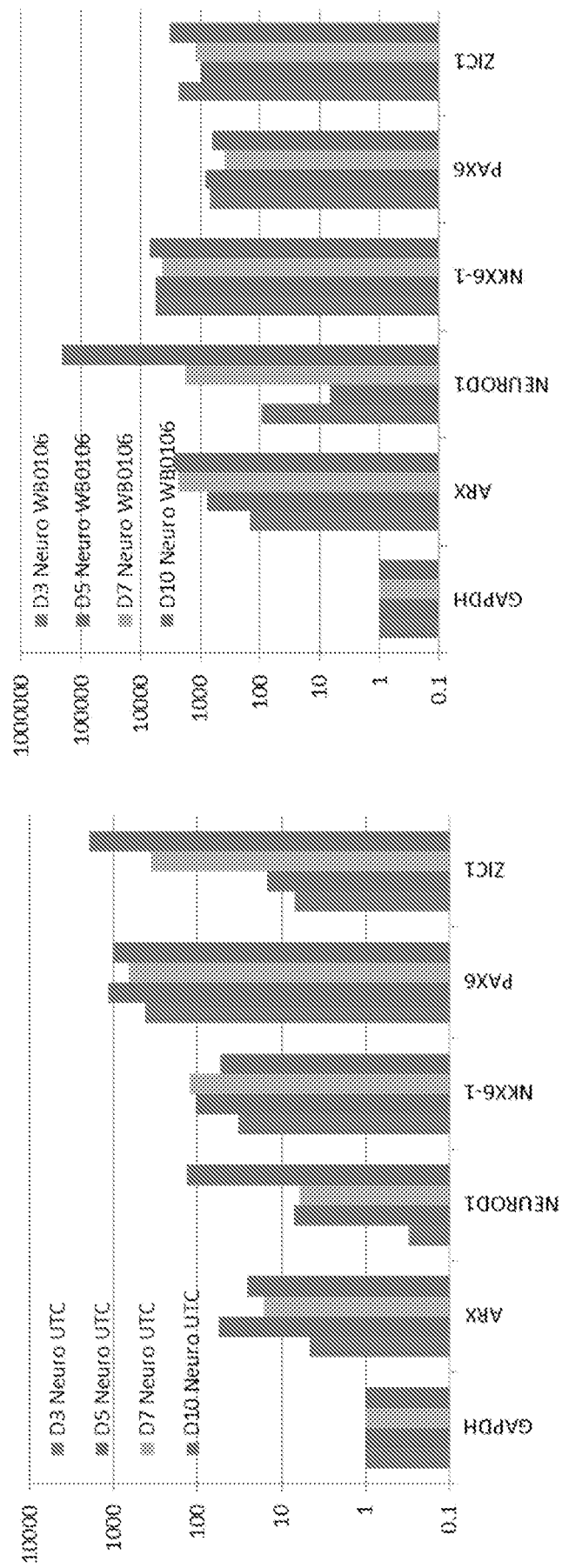


Figure 91



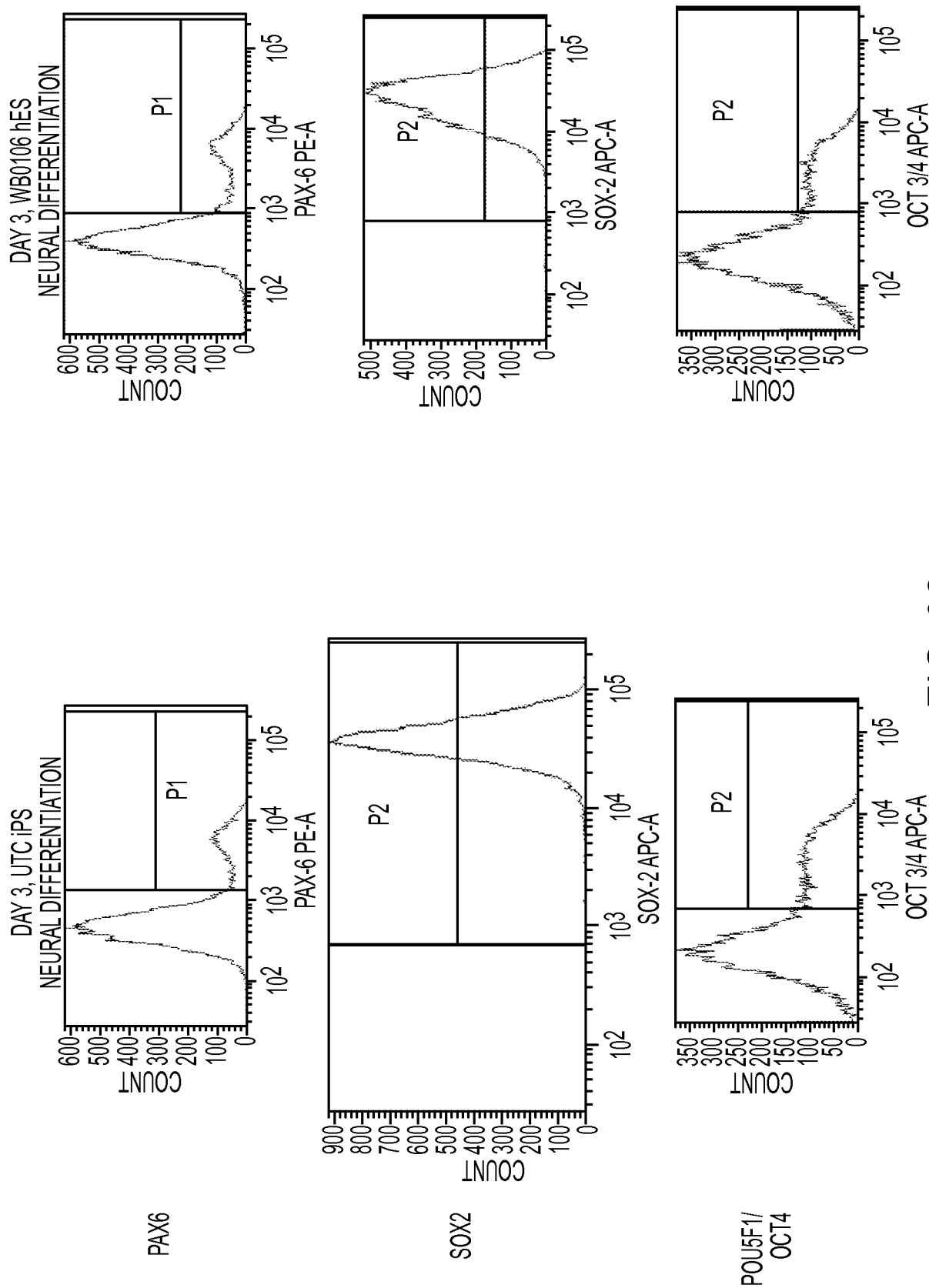


FIG. 92

Figure 93

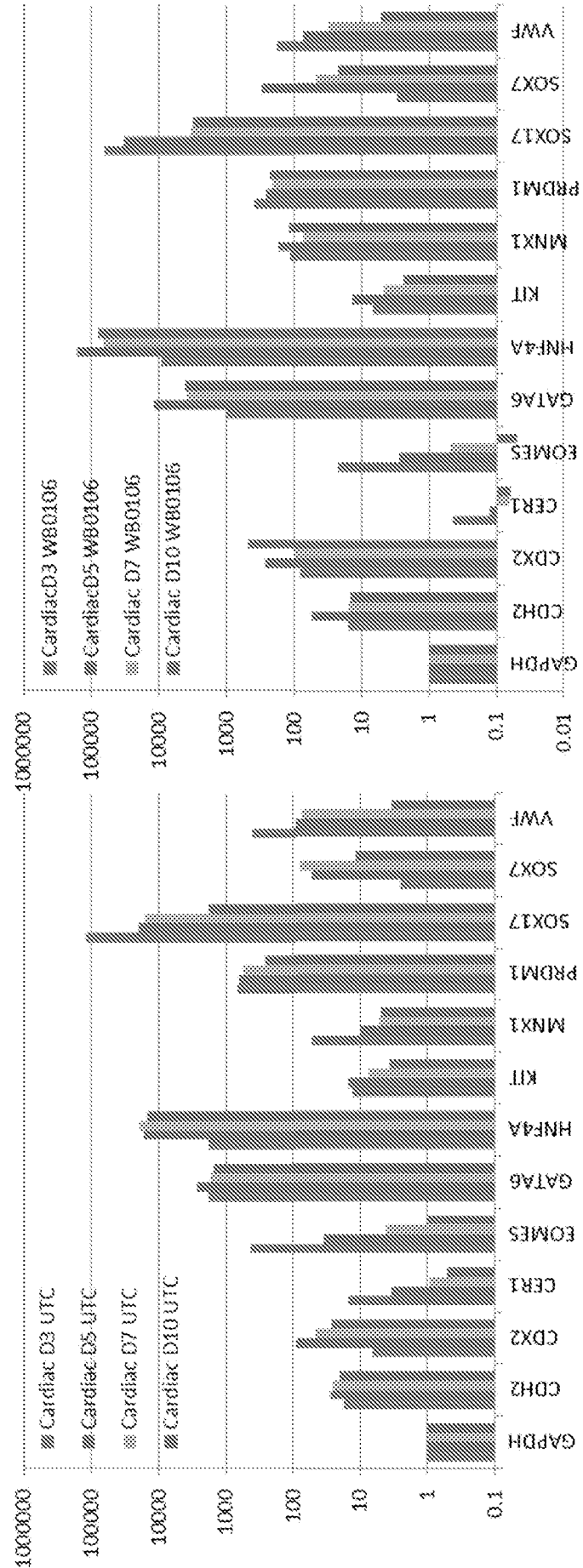


Figure 94

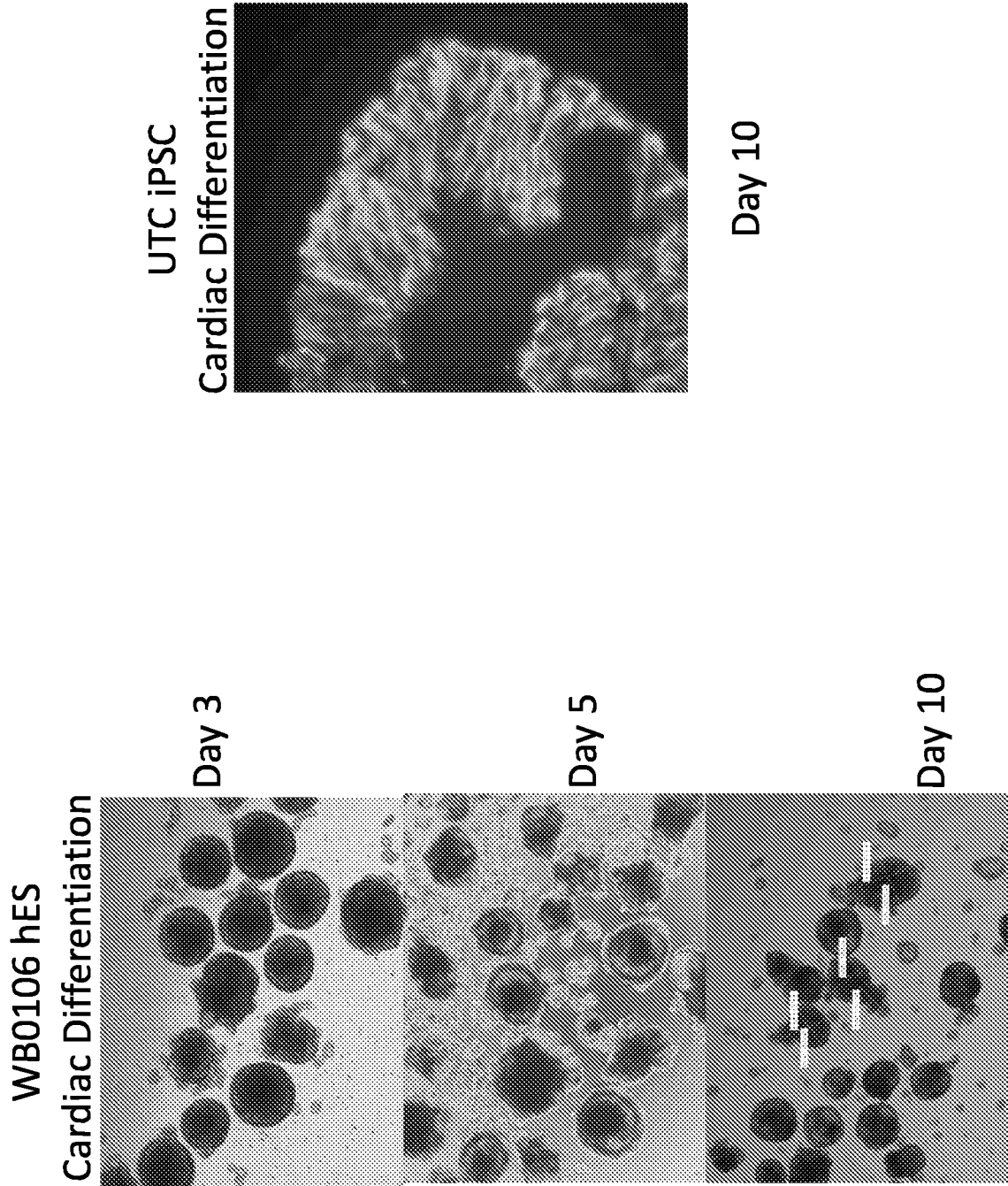
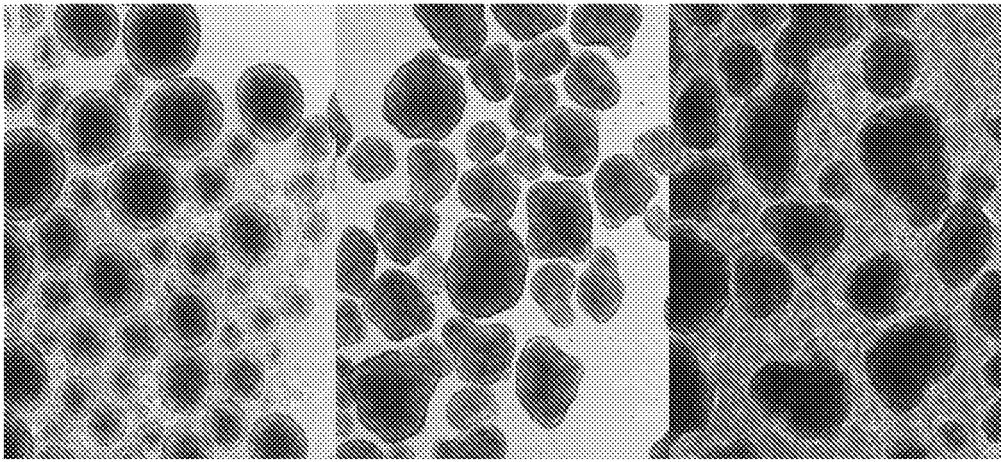


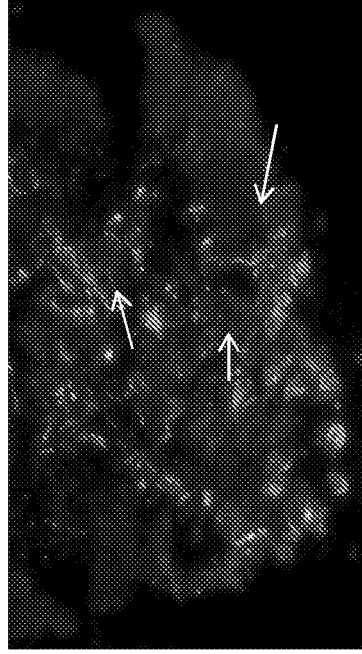
Figure 95

UTC iPS

Neural Differentiation



WB0106 hES
Neural Differentiation



Day 10